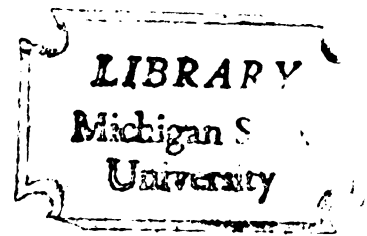


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thesis entitled
INTERACTION WITHIN A TYPICAL AND
HEARING-IMPAIRED PREPRIMARY SETTING:
AN INTENSIVE STUDY

presented by

Anne Keil Soderman

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Family Ecology

Eileen M. Earhart

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Date May 10, 1979



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1979

INTERACTION WITHIN A TYPICAL AND HEARING-IMPAIRED
PREPRIMARY SETTING: AN INTENSIVE STUDY

By

Anne Keil Soderman

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Family Ecology

1979

ABSTRACT

INTERACTION WITHIN A TYPICAL AND HEARING-IMPAIRED PREPRIMARY SETTING: AN INTENSIVE STUDY

By

Anne Keil Soderman

The purpose of this study was to identify characteristics in both the typical and hearing-impaired settings that promote or hinder positive peer interaction, to look specifically at the roles played by adults and children in that interaction, and to determine whether implementation of staff inservice between settings was effective in increasing positive peer interaction. The data for the intensive study were collected in two settings over three time periods on one subject, a four-year-old hearing-impaired male. Eighty-four half-hour observations were made between January 19, 1978, and May 24, 1978.

Data were obtained by systematic observation, using an event-sampling technique to measure frequency of initiated interaction and conflict. Seven major hypotheses relating to subject-peer interaction, subject-adult interaction, and conflict were analyzed using the Kruskal-Wallis One-Way Analysis of Variance by Ranks. Differences were found

between settings and phases in subject-peer and subject-adult interaction. While differences in total conflict and adult-resolved conflict were not significant, overall differences in child-resolved conflict between settings and phases were indicated. More specific differences related to the variables were identified between settings and phases when compared using post hoc procedures and White's Median Statistical Procedure.

The high adult-child interaction and low subject-peer interaction observed in Phase I in the typical setting were identified by participants in inservice conducted between settings as particular targets for intervention. Subsequent conscious reduction of adult-subject interaction in Phase II in the typical setting resulted in significantly increased subject-peer interaction.

A planned time lag of two months occurred between Phases II and III, during which there was no additional communication between staff in the preprimary settings or planned intervention. It was observed that, as adult-subject interaction again increased in the typical setting, or returned to Phase I frequencies, subject-peer interaction significantly decreased. It was concluded that manipulating a decrease in adult-subject interaction can result in increased peer activity.

The intensive design was extremely useful in that it yielded qualitative as well as quantitative differences within and between the two settings over time. Role strain

was detected in the subject as he attempted to adapt to the demands of a variety of structured settings. Role strain was also seen in the family, due to the handicapping condition of the subject and other social pressures.

. The intensive and holistic approach used in this study provided a clearer picture of the strengths and weakness operating within each preprimary setting and the interface between them. It allowed a greater understanding of the energy expenditures, communication flows, and feedback mechanisms operating within this particular family and between the family and other social systems in an attempt to deal with the handicapping condition of the subject. The need to strengthen that interface was evidenced in the varied perceptions of this child's strengths and weaknesses held by his family and individual agencies involved.

This study indicates that educational planners must be concerned about the overall ecology of the young child when planning for mainstreaming success. When they fail to do so, they chance missing the factors that could insure or deny that success. With impaired children, it is easy to suppose that mainstreaming failures (and, thus, children's failures) are due to their handicapping conditions when, in fact, there is failure to adequately perceive the child's total scheme. Moreover, as observed in this study, there must be synthesis between mainstreaming goals and educational objectives in typical settings if mainstreaming

is to be effective. Early childhood educators must begin to change their preprimary programs to better respond to individual needs, rather than changing special children to fit into ongoing programs.

To purple capes. May there be one for
every special child.

ACKNOWLEDGMENTS

Giving due credit to those teachers, co-workers, friends, and loved ones who contributed to this effort is more difficult, it seems, than writing the dissertation itself. Hopefully, they have been as aware of my appreciation as I have been of their support.

Eileen Earhart has been my advisor and chairman for the past five years. In the time I have known her, I have truly valued her friendship and wisdom. She has been a great source of encouragement, and I have been inspired again and again by her trust and her example. I hope I will be able to give to others some measure of what she has given to me.

Other members of my doctoral committee, Linda Nelson, Eugene Pernell, and Alice Whiren, have contributed in unique ways to my study, always giving freely of their time and expertise. Their abilities to interact well with one another, their fine senses of humor, and wide knowledge base kept our committee meetings constructive and productive. I am particularly indebted to Linda Nelson for her editorial expertise. Though Dr. Beatrice Paolucci was not a member of my committee, she greatly influenced my thinking about

the way children should be studied. I am pleased to have had the opportunity to study under her.

A study that is intensive in approach requires a great deal from those involved. The subject's mother, though she had very little support herself in many ways, and absolutely no leisure time, was extremely cooperative and always found time to assist me in the collection of qualitative data. I admire her for her resourcefulness and positive responsiveness to life. She, too, has a story that should be told. Though her small son was unaware of my reason for watching him so closely, he has contributed immeasurably to my understanding of hearing impairment in young children and the mainstreaming of such children. Indeed, all of the children in both preprimary classrooms contributed to that understanding.

Helen Ginsberg, a member of the Pathways staff, was of great assistance in identifying potential subjects for this study and the pilot study preceding it. Brenda Hull, Donna Howe, Debbie Lempicki and their aides were very cooperative and always open in allowing me to observe in their classrooms. Greg Sherbern, audiologist, contributed much to my knowledge about the subject and the history of his hearing impairment. Special children and their families who come in contact with these professionals will benefit greatly.

Others who have assisted me during important points in my professional development were my fellow graduate

assistants, Gayle Clapp, Lillian Phenice, and Trellis Waxler. I have valued their friendship and the sharing of resources that has gone on between us. Suatna Sookpokakit's willingness to explore new statistical procedures, her knowledge of computer programming, and her careful attention to detail were invaluable to me. I also appreciated Fayann Lippincott's excellent typing skills in the preparation of this final draft.

And my family--how can I tell you thank you? We have survived intact. Mike and John have learned to cook a little, wash and iron, and do many of the things they say "are supposed to be a mother's job." Randi has developed the most able and willing dishpan hands ever seen in a thirteen-year-old. I have appreciated you so much. I hope all of the kidding I received from you three about being a professional student--and all of the times you asked, "Are you still studying?" does not mean you were turned off to learning by the drudgery you saw. If so, you would miss the beauty of what can be uncovered with hard work. Finally, my heartfelt thanks and love to my husband Bob who has understood and supported something I needed to do. You have made this possible and it belongs to both of us.

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CHAPTER I

INTRODUCTION

Statement of the Problem

There appears to be widespread agreement today among educators that early education is not only beneficial for all children but may be advisable (Read, 1976, p. 4). It is believed that preschool educators share with parents the responsibility for promoting sound growth and learning in a period when growth is rapid and significant (Bijou and Baer, 1965; Bloom, 1964; Hebb, 1966; Hunt, 1961). Another prevailing trend among professionals is that of early identification of children with handicaps and developmental delay. Advocators of early intervention indicate that the "first three years of life are a prime time to redirect environmental influences that may positively affect growth in the areas of speech and language, perceptual-motor skills, socialization, and self-concept" (Abelson, 1976, p. 46). The current practice of integrating hearing-impaired children into typical settings has been based on the premise that these children have the right to "dignity, individuality, uniqueness, and, indeed, to an opportunity to become fully participating citizens within their culture to the degree permitted by

their abilities and capacities" (Bitter and Mears, 1978, p. 142).

Since the advent of special education, begun by the opening of a school for the education of deaf mutes in 1817 (Lance, 1976) and recently reinforced by present-day legislative action requiring that all diagnosed handicapped individuals three to eighteen years be publicly educated (Irvin, 1976), there is little doubt that sincere efforts have been made to add educational support to the handicapped. Questioning the efficacy of special class placement, however, many researchers have looked specifically at its value in terms of the socialization and academic achievement of children placed in special classes (Dunn, 1968; Seligman, 1972; Wolfensberger, 1972; Forness, 1974; Mercer, 1977). The particularly negative side effects of segregated placement for mildly handicapped children were explored by Schere (1974) who suggested it reflected a subtle social control.

Growing out of this concern is a strong push both by parents and some educators to include children with special needs in the "mainstream" of education or "normal" classroom settings. It is strongly felt that all children, "in unique ways, are exceptional and special individuals" (Dunlop, 1977). Conversely, the growing emphasis on "mainstreaming" or integration efforts has been criticized by many who believe that handicapped children may be less assertive in regular classrooms (Goldstein, Moss, and Jardon, 1965) and may exhibit negative, rather than positive, changes in behavior

(Vacc, 1971). Atypical children in normal classrooms may also suffer from peer rejection (Johnson, 1950; Bryan, 1974; Iano et al., 1974).

Other observations of early childhood integration have been more positive (Klein, 1975; Carlson, 1976, 1977), indicating that, among the advantages of "mainstreaming," integrated preschool programs give disabled children a chance to "plan and learn with children who will someday be their co-workers, friends, and neighbors. Both groups benefit most from being together on a regular basis during the years when their attitudes and perceptions of themselves and others are most pliable" (Klein, 1975, p. 318).

Martin (1974) has questioned what he calls the "pell-mell . . . naive, mad rush to mainstream children, based on our hopes of better things for them." He adds:

We cannot keep silent about some of the lies in our present (special education) system--the failure to provide service, the poor facilities, the failure to identify learning problems, the failure to move children out of institutions or out of special programs into regular settings. But we must also avoid those well-intentioned lies that ignore the weaknesses in a well-intentioned system because we are afraid that exposure will hurt our cause. We should not allow our belief in the promise of mainstreaming to cause us to be silent if we see fault in its application (p. 153).

Meisels (1977) concurs, noting that rapid adoption without sufficient preparation and understanding is the greatest danger confronting mainstreaming.

Tjossem (1976) suggests:

placement of handicapped children in these programs, then, remains a value judgment. Because enrollment occurs in a climate of presumed benefit, too little

attention has been given to possible adverse effects that might result for some children as a consequence of enrollment. Handicapped children, in particular, are vulnerable to such effects, and they deserve the protection that consideration of possible adverse effects affords" (p. 21).

This study was designed to identify characteristics in both the typical and hearing-impaired preprimary settings, which may promote or hinder positive peer interaction, to look very specifically at the roles played by adults and children in that interaction, and to determine whether implementation of staff inservice between settings is effective in increasing positive interaction.

Need for the Study

While it is apparent that issues related to the wisest educational treatment for special children are far from resolved, mainstreaming or integration of these children is occurring with rapid acceleration and is accompanied by confusion on the parts of concerned parents and educators in achieving their goals for handicapped children. Few, if any, studies have been designed to determine whether there is inter-consensus of educational and socialization goals between those educators whose primary responsibility is the education of typical children and those whose main educational thrust is directed toward the handicapped. A pilot study undertaken by this investigator (Soderman, 1977) in the spring of 1977 indicated that interaction between agencies may be parallel rather than cooperative in nature, the agency-participants differing widely in discipline, training,

concept, and approach. When their efforts become merely interdisciplinary, a lack of effective communication between agencies may introduce additional, conflicting values into a child's processing arena. Also indicated in the pilot study was the presence of negative peer interaction in the integrated setting as well as a high ratio of adult-child interaction that appeared to limit child-child interaction. Further research seemed indicated.

Sapon-Shevin (1978) suggests that research is needed that looks closely and realistically at the "mainstream" itself to assess its practical strengths and weaknesses and to determine whether or not positive peer socialization is, in fact, occurring.

Intent of the Study

This study was planned to be an intensive observation of one subject being "mainstreamed" into a typical preprimary setting while still attending a hearing-impaired program. The study was conducted in three phases. The first was designed to collect baseline data on the subject in both the integrated and non-integrated settings for comparison of observed behavior in subsequent phases (I and II). More than mere observation, however, was indicated. Indeed, Bronfenbrenner (1977) was once told, "If you want to understand something, try to change it" (p. 517). Therefore, intervention in the study was directed toward decreasing negative interaction patterns observed in Phase I. It was implemented

before Phase II data were collected to determine whether or not the intervention would produce significant and positive interactional changes in the integrated setting. A delayed observation (Phase III) followed a time lag of two months during which there was no additional intervention on the part of the investigator. This was done to see if changes observed between Phase I and Phase II could be sustained without further intervention.

Limitations of the Study

The following factors were seen as limitations in this study:

1. Generalizability. A study that is intended to be intensive or ethnographic in approach cannot be generalized to other individuals, groups, conditions, or settings. In order to do so, a series of systematic replications of this study would be necessary.
2. Staff make-up of the typical setting. Though opportunity to conduct research is one reason for the establishment of early childhood laboratories on university campuses, that research is often confounded in that students who assist the head teachers are in various stages of professional development. Moreover, these aides change as terms change and such was the case in this study. The student teacher and aide changed between Phases II and III. Therefore, though the physical environment, head personnel, and curricular

style remained stable during the entire study in the typical setting, aides helping to carry out program differed.

3. Emphasis on observation of subject in preprimary settings. Equal time was not given to observing the subject in his home, in the speech and audiology program, or in the home of his babysitter. Though these received consideration in looking at the subject holistically, contact was minimal when compared with the intensive time spent observing in the educational settings.

Objectives

The primary objective of this three-phase study was to do an intense observation and objective analysis of the social interaction between an impaired child and others in the integrated and non-integrated preprimary settings. Levels of interaction both within and between settings were compared. Specifically, answers to the following questions were sought:

1. Is there a difference in the level of social interactions between the integrating child and others in the two preprimary settings?
2. Is there a difference in the level of social interactions between the integrating child and others between phases?
3. What are possible adverse conditions affecting social interaction in the preprimary settings?
4. What are the positive conditions affecting social interaction in the preprimary settings?

5. Is staff in-service that provides for information exchange between settings effective in decreasing observed negative interaction and increasing/ maintaining positive interaction between phases?
6. How much conflict exists in interaction both within and between the two settings and is that conflict resolved more often by adults or by children?
7. Will social interaction between children increase when opportunity for adult-child and child-material interaction within the same setting is decreased?

Hypotheses

This study tested seven major hypotheses. A number of sub-hypotheses specific to the individual variables were also analyzed.

- H1: There is no difference in subject-initiated peer interaction in the two settings over the three phases of the study.
- H1₁: Peer interaction initiated by the subject will be significantly greater in the hearing-impaired setting than in the typical setting in Phase I.
- H1₂: Peer interaction initiated by the subject in the typical setting will be significantly higher in Phase III as compared to Phase I.
- H1₃: Peer interaction initiated by the subject in the typical setting will be significantly higher in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope.

- H1₄: Peer interaction initiated by the subject in the typical setting will be significantly lower in Phase III than in Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope.
- H2: There is no difference in the peer-initiated subject-peer interaction in the two settings over the three phases of the study.
- H2₁: Peer interaction initiated by the subject's peers will be significantly greater in the hearing-impaired setting than in the typical setting in Phase I.
- H2₂: Peer interaction initiated by the subject's peers in the typical setting will be significantly higher in Phase III as compared to Phase I.
- H2₃: Peer interaction initiated by the subject's peers in the typical setting will be significantly higher in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope.
- H2₄: Peer interaction initiated by the subject's peers in the typical setting will be significantly lower in Phase III than in Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope.
- H3: There is no difference in adult-initiated subject-adult interaction in the two settings over the three phases of the study.
- H3₁: Initiation of interaction with the subject by adults in Phase I will be significantly higher in the typical setting as compared to the hearing-impaired setting.
- H3₂: Initiation of interaction with the subject by adults in the typical setting will be significantly lower in Phase III as compared to Phase I.
- H3₃: Initiation of interaction with the subject by adults will be significantly lower in Phase II as compared to Phase I in the typical setting. This will be indicated by a decelerating slope or step-wise decrease in the median slope.

- H3₄: Initiation of interaction with the subject by adults in the typical setting will be significantly higher in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope.
- H4: There is no difference in the subject-initiated subject-adult interaction in the two settings over the three phases of the study.
- H4₁: Initiation of interaction with adults by the subject in Phase I will be significantly higher in the typical setting as compared to the hearing-impaired setting.
- H4₂: Initiation of interaction with adults by the subject in the typical setting will be significantly lower in Phase III as compared to Phase I.
- H4₃: Initiation of interaction with adults by the subject will be significantly lower in Phase II as compared to Phase I in the typical setting. This will be indicated by a decelerating slope or step-wise decrease in the median slope.
- H4₄: Initiation of interaction with adults by the subject in the typical setting will be significantly higher in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope.
- H5: There will be no difference in total conflict in the two settings over the three phases.
- H5₁: There will be significantly more conflict in the typical setting as compared with the hearing-impaired setting in Phase I.
- H5₂: There will be no difference in the amount of conflict in the typical setting as compared to the hearing-impaired setting in Phase II.
- H5₃: The amount of conflict in the typical setting will be significantly higher than that in the hearing-impaired setting in Phase III.
- H5₄: There will be significantly less conflict in the typical setting in Phase II as compared to Phase I. This will be indicated by a decelerating slope or step-wise decrease in the median slope.

- H6: There will be no difference in the amount of conflict resolved by children in the two settings over the three phases.
- H6₁: There will be a significantly higher amount of conflict resolved by children in the hearing-impaired setting as compared to the typical setting in Phase I.
- H6₂: There will be significantly more conflicts resolved by children in the typical setting in Phase III as compared to Phase I.
- H6₃: There will be significantly more conflicts resolved by children in the typical setting in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope.
- H6₄: There will be significantly less conflicts resolved by children in the typical setting in Phase III as compared to Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope.
- H7: There will be no difference in the amount of conflict resolved by adults in the two settings over the three phases.
- H7₁: There will be a significantly higher amount of conflict resolved by adults in the typical setting as compared to the hearing-impaired setting in Phase I.
- H7₂: There will be significantly fewer conflicts resolved by adults in the typical setting in Phase III as compared to Phase I.
- H7₃: There will be significantly fewer conflicts resolved by adults in the typical setting in Phase II as compared to Phase I. This will be indicated by a decelerating slope or step-wise decrease in the median slope.
- H7₄: There will be significantly more conflicts resolved by adults in the typical setting in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope.

Assumptions

The following assumptions underlie this study:

1. Positive peer interaction is one of the primary goals of mainstreaming. Both positive and negative peer interaction occur within typical preprimary settings.
2. Play is a primary factor in the process of socialization and cognition in the preprimary child.
3. Observation of interaction between adult-child and child-child is most appropriately done during free play when the setting provides equal and open opportunity for initiation and closure of interaction.
4. Interaction can be assessed using the observation technique of event sampling.
5. A decrease in negative or adverse interaction will result in increased positive interaction within any given system.

Conceptual Definitions

The following terms were used throughout this study:

Cognition.--Knowledge of the world; the product of an interaction between one's mental capacities or mental structure and those aspects of the world that one is capable of understanding at a given time in his development; an ever-changing condition (Gardner, 1978).

Consensus of Goals.--Agreement as to the end toward which a design is directed. Agreed aim or purpose (Fitzsimons, 1951).

Conflict.--Disagreement; dispute, clash in purpose or with prescribed guidelines of behavior for that particular setting.

Deafness.--A functional hearing loss of sufficient severity to prevent aural comprehension of speech even with hearing aids (Furth, 1973).

Ecological.--The interdependent nature of human beings, other organisms, and their environment, including support systems, energy flows, and communication.

Free Play.--A period of time within each class period in which children have relative freedom of selection in their interaction with other children, adults and materials present in the environment so long as their behavior is consistent with prescribed guidelines in that particular setting.

Handicapped.--By universal agreement, having a speech, hearing, or vision problem; learning-disabled, crippled, or mentally or emotionally disturbed. Gifted children and those disadvantaged by social or economic problems are not included (Molloy, 1975).

Hearing-Impaired.--A generic term indicating a continuum of hearing loss ranging from mild to profound as indicated on an audiogram (Northcott, 1978); denotes a loss of hearing as measured in decibels (intensity of loudness)

and/or frequency (pitch) ranging from a profound loss of 80 or more decibels to a light loss of approximately 20 decibels. Included is prelingual and postlingual hearing loss (Furth, 1973).

In-service.--Resulting from assessment of need; may include motivation, instruction, improvement, reinforcement, and/or implementation of skills for the purpose of achieving predetermined goals or objectives. Inservice actively may take the form of workshops, visitations, courses, staff exchanges, research, or individual activity, or group research or study (Stevens, 1977).

Integrated.--Containing a mixed population of handicapped and non-handicapped children where curricular programming is appropriate to the needs of both.

Interaction.--The child's empathic involvement with the environment--adults, other children, and the material world (Shapiro and Biben, 1972; Earhart, 1977).

Interdisciplinary.--Between different fields of study (Auserwald, 1968).

Mainstreaming.--The growing and legislatively-mandated practice of integrating handicapped children into the "regular" classroom (Dunlop, 1977; Meisels, 1977).

Observation.--There are two types of observation: systematic and nonsystematic. In nonsystematic observation,

the observer simply watches an individual in his or her environment and takes note of the behaviors, characteristics, and personal interaction that seem of significance. In systematic observation, the observer sets out to observe one or more behaviors. The observer specifies or defines the behaviors to be observed and then typically counts or otherwise measures the frequency, duration, magnitude, or latency of the behaviors (Salvia and Ysseldyke, 1974, p. 8).

Peer Interaction.--Child-child relations in same-age situations in which children vary in age by twelve months or fewer (Hartup, 1977); psychologically, the interaction of children at comparable levels of behavioral complexity (Lewis and Rosenblum, 1975). Positive peer interaction occurs when the following social reinforcers are activated: "Attention (attending to another), approval (praise or acceptance), affection (physical gestures or verbal statements), submissiveness (following a request or suggestion), and tokens (giving tangible objects)" (Skinner, 1953; Charlesworth and Hartup, 1967, p. 994).

Play.--Refers to a heterogeneous assortment of activities that differ from non-play in that: (1) control of the content of the behavior is largely under the child's control; (2) the motive for the behavior is intrinsic and not because of externally imposed reward; (3) imagination or cognitive extension transcends immediate constraints of reality (Neumann, 1971).

Preprimary Setting.--Prekindergarten public or private educational setting; a developmental preschool setting.

Socialization.--A broad term for the whole process by which an individual develops, through transactions with other people, specific patterns of socially relevant behavior and experience (Zigler and Child, 1973); the process by which we learn the ways of a given society or social group so that we can function within it (Elkin and Handel, 1978).

Conceptual Orientation

It is strongly felt that the study of any child must be conducted ecologically, i.e., the child may not be studied effectively or efficiently if one does not see him as affecting and being affected by his environment, both near and distant, and the systems that interact within those environments (see Figure 1).

Bronfenbrenner (1974), a strong advocate of ecological research in the field of child development makes the following points:

1. Research cannot be restricted to the laboratory, but must be carried out in the real life settings in which children live.
2. Human development must be studied as a function of systems at two levels. One level is the interaction between the child and the surrounding environments of home, school, peer group, work place, neighborhood, and community. The other level is the interrelations between these environments.

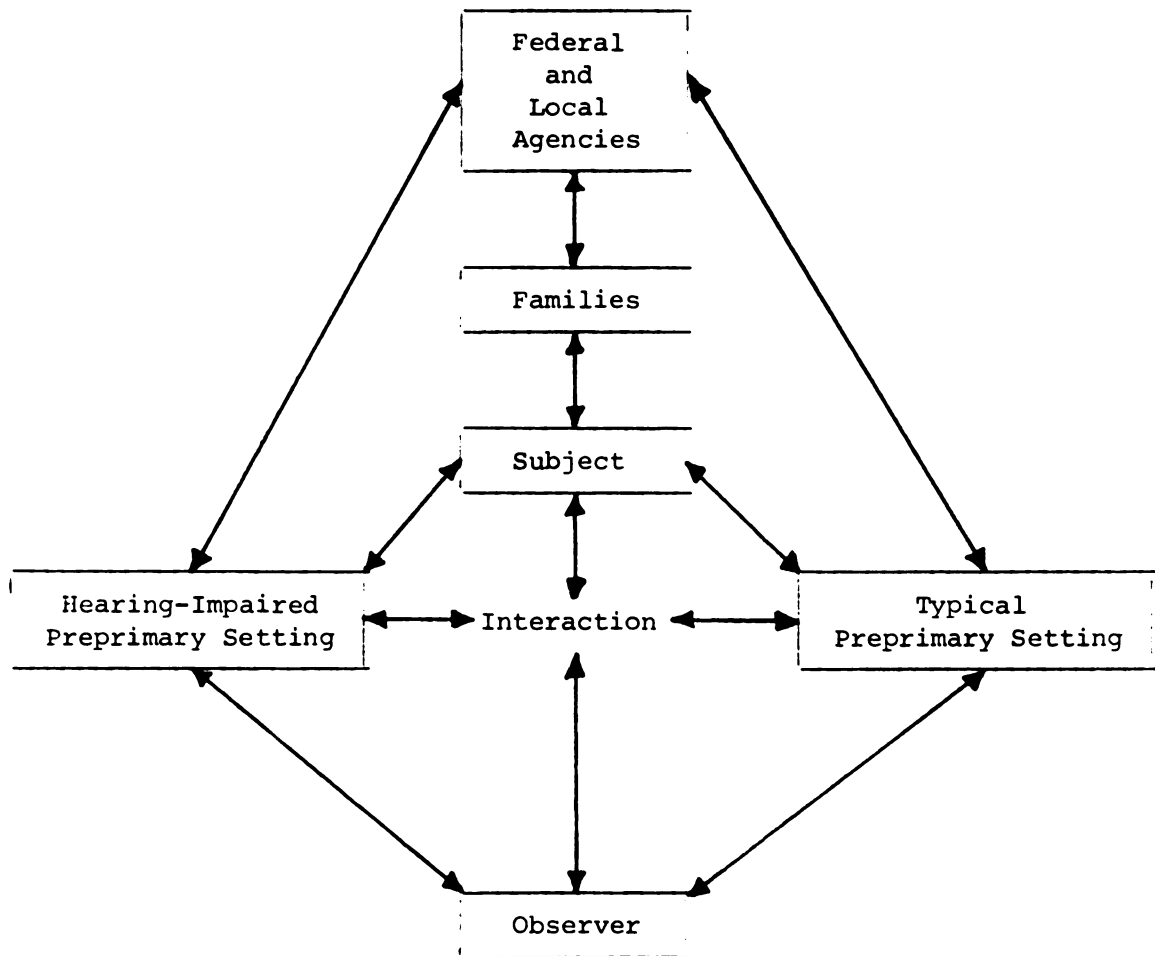


Figure 1. Model of method for an intensive study of interaction within a Typical and Hearing-Impaired Preprimary Setting. Communication, feedback, and energy flows are indicated by arrows.

3. Person-environment and environment-environment realities should be investigated through ecological experiments, which are systematic contrasts between two or more environmental systems, with efforts to control for and assess possibly confounding interacting components.

Elsewhere, Bronfenbrenner (1977) adds:

. . . Research on the ecology of human development should include experiments involving the innovative restructuring of prevailing ecological systems in ways that depart from existing institutional ideologies and structures by redefining goals, roles, and activities, and providing interconnections between systems previously isolated from one another (p. 528).

In an effort to draw together, or coordinate inter-agency research, a prominent research group concluded that, though ecological studies encompass many different approaches to research, including methodology, focus, content, and role, they all reflected "a common concern for not just the child, family, and environment in themselves, but the ecology of childhood--the systems through which children, and the people, institutions, and physical and social circumstances in their lives are interrelated" (Hertz, Mangus, Mann, and Wagner, 1977).

Care must be taken, however, that one does not confuse an ecological approach with that which is, in fact, interdisciplinary. Auserwald (1968) addresses this problem specifically, suggesting that, in any research, the ordering of the data within a selected framework will critically affect the nature and outcome of: (a) the analysis of that data, (b) synthesis of the results of analysis into hypotheses, (c) the formulation of strategies and techniques

(methodologies) to test the hypotheses, (d) the construction of a delivery plan for use of those strategies and techniques, (d) the implementation of the plan, and (e) the collection of data from the arena of implementation to test its impact (p. 203). He sees the sequence as cyclical. The interdisciplinary approach, he feels, maintains the vantage point of each contributor within his own discipline, resulting in a possible distortion and loss of structural aspect and clarity of context of the data. Auserwald (1968) noted:

The systems approach, on the other hand, changes the vantage point of the data collector. It focuses precisely on the interfaces and communication processes taking place there (p. 204).

Phenice (1978) adds that environmental agencies such as the family, the school, the peer group, media, and mass communication create a flow of informational input and output resulting in mechanisms for interactions between the social as well as the technological and physical environments (p. 14).

The bottom line may be that suggested by Meisels (1977): "The environmental gestalt provides the climate in which (hearing-impaired) children may become participants in the mainstream of life."

Overview

Chapter II contains a review of literature related to mainstreaming the hearing-impaired preprimary child. Methodology is set forth in Chapter III, including a

discussion of the research design, data collection procedures, and data analysis. A description of the subject, his family, and his environment is presented in Chapter IV. Analysis and discussion of results are found in Chapter V. The final chapter includes a summary and conclusions, as well as implications for further research.

CHAPTER II

REVIEW OF LITERATURE

The research literature pertinent to this study is reviewed under the following general headings: Individual Information Processing; Hearing Impairment; Preprimary Educational Settings; Play as a Factor in the Education of Young Children, including Play, Peer Interaction, and Socialization as well as Play and Cognition; Integration of the Handicapped into Typical Settings; The Intensive Design.

Individual Information Processing

How can you expect me to be human if you
deny me a clear perception of the effect
I have on my world? (Gardner, 1975,
p. 65)

It seems relevant here to consider information processing, in general, and as it may relate to the internalizing of social attitudes and cognitive symmetry.

The manner in which information is processed by the individual is the result of distance-regulating practices set up between the individual and the environment, including groups of other individuals with whom he interacts over time and space in access to targets of affect, power, and meaning. Kantor and Lehr (1976) postulated that

distance regulation "encompasses the systems concept of feedback loops, goal-seeking behavior, self-awareness, self-direction, and information processing" (p. 38), as can be seen in Figure 2. It is at the boundaries of systems that the "three access dimensions (affect, power, and meaning) regulate traffic between two or more systems, or between a system and a subsystem" (p. 40).

When one views information processing from a systems perspective, feedback (a process by which a system informs its component parts how to relate to one another and to the external environment in order to facilitate the correct or beneficial execution of certain system functions) becomes a crucial feature (see Figure 3).

As can be seen, a disturbance activates the system, which is steadied by the error signal. Output (or behavior) is the result and feeds back into the environment, possibly stimulating further activity.

When an individual detects some sort of pattern in matter energy flows, noise and uncertainty are reduced as the individual matches up or weighs that information against past experience, alternative outcome, relative possibilities of outcomes, and consequences which may affect those outcomes.

Buckley (1967), in considering the effects of positive and negative reinforcement in the interaction process wrote:

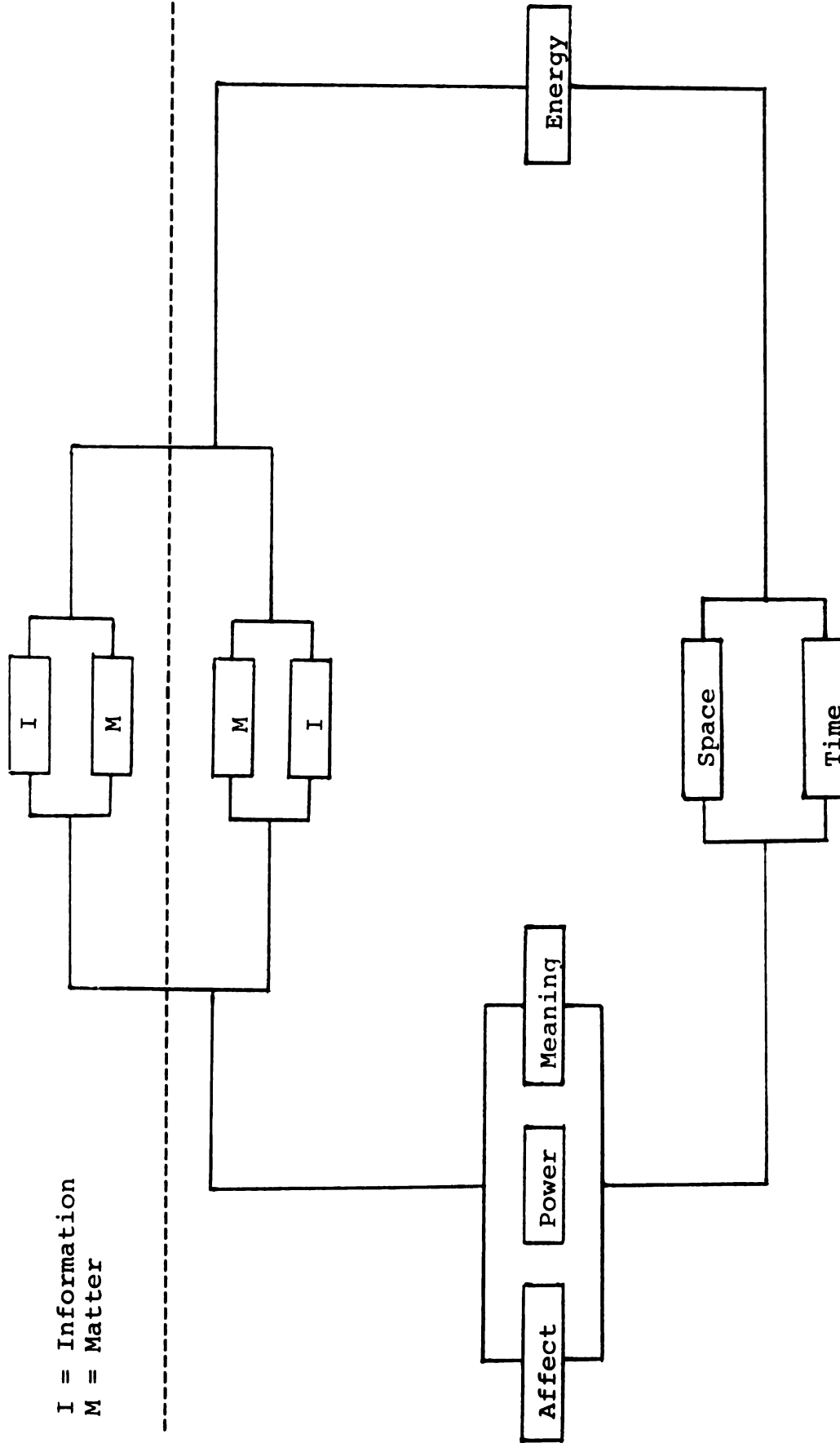


Figure 2. A self-regulating model of six-dimensional goal seeking activity (Kantor and Lehr, 1976, p. 39).

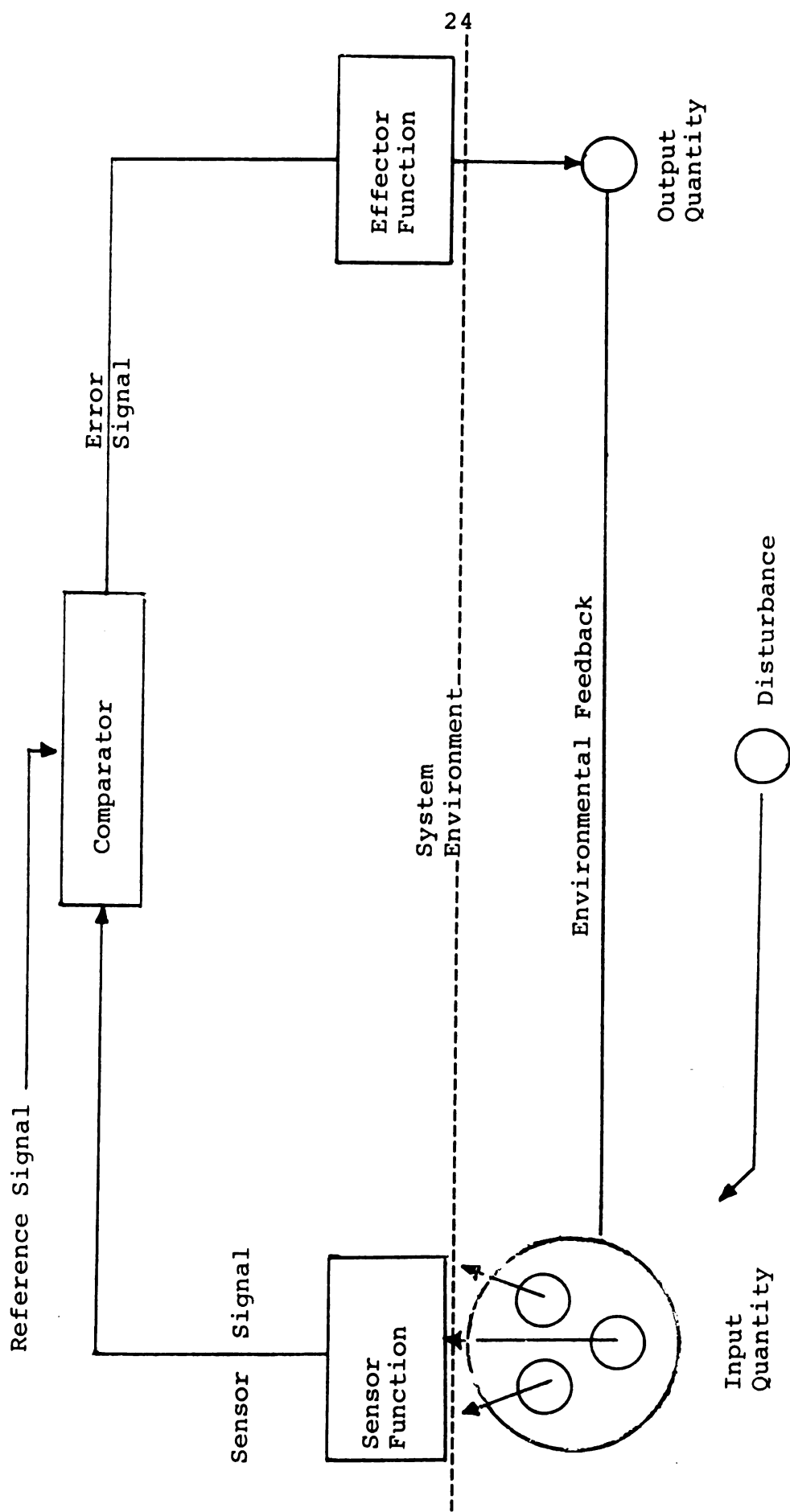


Figure 3. A basic control-system unit of behavioral organization (Kantor and Lehr, 1976, p. 13).

When . . . men engage in behavior that is rewarded or reinforced, they become conditioned to engage in that behavior at other appropriate times. Behavior is then viewed as a function of its payoff in terms of the rewards and punishments it fetches. Social behavior becomes an exchange of activity between two or more individuals that is more or less rewarding or costly. In interaction, each emits activities that entail the greatest profits--rewards, or units of values, less costs or punishments measured against some standard of distributive justice (p. 107).

He continued, later, to say that we need to be "prepared for the possibility that a social system may generate and maintain deviant and disorganizing forces in just as automatic a way as it generates mechanisms of conformity and organization" (p. 163).

It would seem, then, that two (or more) systems, which theoretically may have goal consensus in mind, must constantly be aware of feedback in the other system which may be of a conflicting nature and, hence, a long-range inhibitor of what are thought to be common goals.

Gardner (1975) has suggested a model of "the child as an open system"--as an active seeker and responder to environmental stimulation by employing a variety of alternative behaviors through which he also renovates and/or modifies his world (see Figure 4). In this model, the child filters all stimuli from his environment, choosing what he does and does not pull in, and subsequently integrates new, selected stimuli with previously stored information. The feedback, then, which results from the child's own actions into his perceptual system is seen as fundamental in revision of behavior.

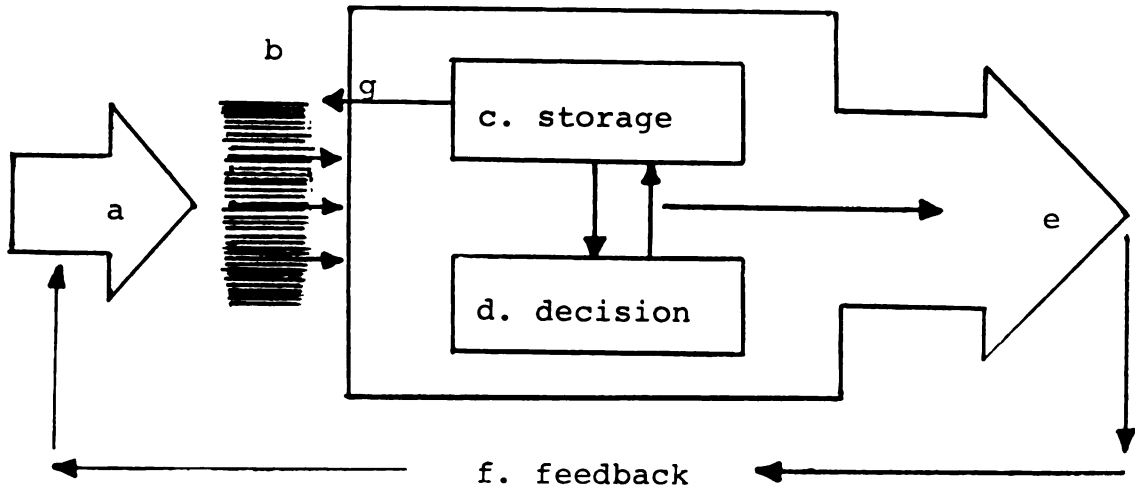


Figure 4. The child as an open system. a. Intake; b. Selected filter system; c. Storage or memory; d. Decision or executive function; e. Output; f. Sensory feedback; g. Filter revision process (Gardner, 1975, p. 63).

Gardner observed:

This notion of the child as an open system has, I believe, some implications for curriculum as well as for teaching strategies . . . If the child is an open system, we violate that system to the extent that we reduce the number of options available to him. If the child is an open system, we support that system to the extent that we increase the number of options available to him. If the child is an open system, we have little need to ask whether his behavior is, in a given instance, play or nonplay, work or nonwork. We are getting closer to the idea if we ask whether the people and the materials and the objects in a child's world are supporting the growth and elaboration of that particular open system (pp. 66-67).

Furth (1973) maintained that, when we investigate the thinking processes of the hearing impaired,

We must use procedures that do not contain in themselves, or in their instruction, a strong linguistic component. Otherwise we would observe nothing but the poor linguistic knowledge of deaf children, which would be as unfair to deaf persons as judging a normal person's

thinking skill by means of a verbal test conducted in a language he does not understand (p. 56).

Elsewhere, he suggested that only Piaget deals with intelligence in such a manner that the maturity of a hearing-impaired child's thinking can be appropriately assessed. Piaget's (1961) concept of information processing proceeds from simple motoric activity on the part of the individual, such as simply moving around or handling an object, to increasingly complex organization and coordination of environmental data into what he calls schemas. Involved in this process is assimilation, or quantitative change in schemata, and accommodation, or qualitative change and organization in the application of these schema. Underlining the importance of interaction, Furth (1973) explains the simple individual evolution of the thinking process:

By living in daily contact with the world, the child organizes his knowing contact with the world in a continuous progression that imperceptibly leads to stages of organization that are qualitatively different from earlier stages. These stages can be considered a general framework or perspective in which the person functions. Intellectual development is the progression from an infant's perspective to the adult's perspective (p. 26).

Hearing Impairment

In 1976, in the United States, it was estimated that there were approximately three million children with some degree of hearing loss. In the United States and part of the world where figures were available, 3 1/2 to 5 percent of school-age children have some degree of hearing loss (Siebens, 1976; Horton, 1976).

The Physiology of Hearing-Impairment

Setting forth the physical requirements of normal hearing, Lavett (1965) indicated:

To hear normally, the external ear canal must be open, the ear drum must be thin, intact, and able to vibrate. The middle ear space must be filled with air. The ossicles (malleus or hammer, incus or anvil, stapes or stirrup) must be able to vibrate, and especially the stapes has to vibrate into the fenestra ovalis, and the inner ear must be healthy and perfectly capable of picking up these sound waves. The nerve must be able to receive the sound waves and pass them further to the brain (p. 392).

Lavett cited three kinds of hearing loss--conductive or obstructive loss, nerve or perceptive loss, and a combination of conductive and perceptive loss.

Conductive loss can be due to any of the following:

- a. blockage of the ear canal due to infection, tumor, or foreign substance
- b. perforation or scars of the eardrum
- c. interference with the motion of the ossicles because of dislocation, infection, scarring, fluid in the middle ear, or otosclerosis
- d. blockage of the eustachian tube due to a swelling of the tissue as a result of an allergy or inflammation, adenoid enlargement, or tumor
- e. congenital causes in which the auricle, the ear canal, the tympanum, or the ossicles may be deformed at birth.

Characteristic of this type of hearing loss is that sound is not heard in sufficient volume, resulting in loss of high tones (p. 393).

Perceptual or sensory loss appears to be more serious than conductive losses in that they are not "amenable to medical or surgical treatment." Cause is often unknown but may be due to inherited defect during interuterine life or

anoxia at delivery. Among other causes are toxic nerve deafness, drug toxicity, syphilis, skull fracture, infection, tumors, and acoustic trauma (Lavett, 1965, p. 403).

Hearing losses may be of a profound or minimal nature. In 1937, the Committee on Nomenclature of the Conference of the Executives of the American Schools for the Deaf categorized or classified "at risk" hearing conditions as follows:

The Deaf: Those in whom the sense of hearing is non-functional for the ordinary purposes of life. This general group is made up of two distinct classes based entirely on the time of the loss of hearing: (a) the congenitally deaf: Those who are born deaf, (b) the adventitiously deaf: Those who were born with normal hearing but in whom the sense of hearing becomes non-functional later through illness or accident.

The Hard of Hearing: Those in whom the sense of hearing, although defective, is functional with or without a hearing aid (Oyer, 1969).

The Acquisition of Language

Occasionally, children who are deaf or severely hard-of-hearing have been mistakenly diagnosed as mentally retarded because of resulting handicaps of delayed language and speech. Kingery (1976) suggested:

One of the most remarkable and certainly one of the most important aspects of human behavior is the ability to learn and use language. A common language among individuals is the cement which binds society together.

Furth (1973) hypothesized that language, not speech, is the difficulty for children who have early profound or prelingual deafness. Deafness, often called the "invisible handicap," is frequently underestimated in the severity of

its handicapping nature because of its negative consequences in the area of communication. Spradley (1978), in his poignant account of his own experience in rearing his deaf daughter, presented evidence that 90 percent of the profoundly deaf never develop intelligible speech (p. 218). How the language process is interrupted or even severed can be easily understood when one views Wepman's (1976) model of central integrative thought processes (Figure 5):

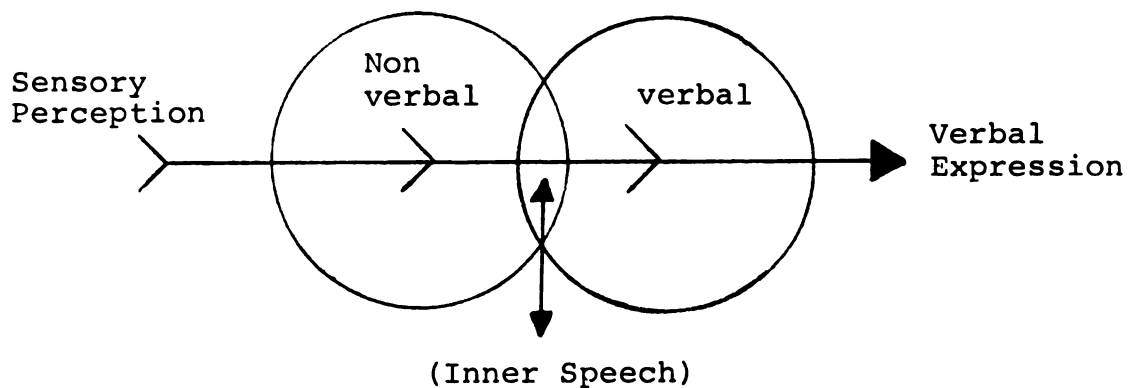


Figure 5. Central Integrative Thought Processes (Wepman, 1976, p. 113).

The kind of language the hearing-impaired child initially learns is probably determined by his parents. One option available is the auditory/oral method, which is also described as unisensory, auditory/global, aural/oral, acoupedic, and natural (Northcott, 1978). It calls for binaurally aided hearing and requires the child to listen carefully with available residual hearing and to develop short and long-term auditory memory. Attention is also given to speechreading but does not include signs and

fingerspelling, which are characteristic of the alternative, or simultaneous, method. Also known as "total communication," the latter method includes incorporation of aural, manual, and oral modes of communication to assure effective communication (American Annals of the Deaf, 1976, p. 358). Most parents prefer an auditory/oral method, at least initially, with the addition of the simultaneous method after the child has been stimulated to develop the skills needed for the former method (Luterman, 1976; Northcott, 1977). It has been demonstrated in the literature that individuals, particularly children under eight years of age, have trouble processing speechreading and sign language simultaneously, with resulting poor synchronization (Goeth, 1967; Goetzinger, 1974; Goetzinger and Proud, 1975; Stuckless, 1971; Gates, 1970).

Conversely, in support of fingerspelling, Quigley (1969) surveyed two hundred subjects in six public residential schools to determine differences in academic growth and communication skills between students using the oral method and those using a combined mode of communication. Though no statistically significant differences were found in speech intelligibility or speech reading, students employing manual methods were found to be significantly higher in most areas of educational achievement. Pushing for reform in teaching communication to the profoundly deaf, Ridgeway (1969) cited outspoken support for the manual method from both the

National Association of the Deaf and the Council of Organizations Serving the Deaf (p. 21).

Education of the Hearing-Impaired

Northcott (1978), in examining the historical perspective attached to education of the hearing-impaired, suggested that controversy revolves around two questions: (1) the best method for teaching language and speech to the hearing-impaired and (2) whether or not mainstreaming of the impaired child is appropriate. The best question, he contends, is to ask, "For which child" (p. 211)? He concludes that "no single method of instruction and/or communication (oral or total communication) or educational setting can best serve the needs of all hearing impaired children" (p. 212).

A survey to assess the extent of educational integration of the hearing-impaired (Bitter and Mears, 1973) revealed that 69 percent with mild hearing loss were fully integrated; 50 percent or 2,313 students with marked hearing losses were fully integrated; of the 6,345 students identified as having severe or profound hearing loss (response rate was 41 of 50 states), over 50 percent were in non-integrated settings.

Griffing (1970) offered some guidelines for evaluating educational potential in deaf children:

1. Onset of hearing loss.
2. Extent and configuration of hearing loss.
3. Auding ability (interpretative function in utilizing residual hearing).

4. Nature and extent of delayed speech and language development resulting from hearing impairment.
5. Developmental growth potential in the areas of receptive and expressive communication skills.
6. Potential for learning (intelligence, emotional status, social maturity, level of educational achievement, motor development, and perceptual level).

Effects of Hearing Impairment

Knapp (1948), who investigated the emotional aspects of hearing loss, concluded that, while chronic deafness might cause a less drastic sense of loss, it appeared to have a more warping effect than loss suffered in adulthood.

Findings by Mycklebust (1964) revealed that, as a whole, deafness may affect personality selectively on the basis of sex, age of onset, and degree of hearing loss.

Furth (1973) has described the deaf or hearing-impaired child as "a human child without a language" (p. 13). Looking at the developmental importance of play in symbol construction, he adds that the child naturally comes to know things and people around him, can produce symbols and understand them through play and fantasy, and can communicate by actions and gestures. Therefore, he concludes, the deaf child's world up until the approximate age of five is very similar to the known world of the hearing child: . . . "he plays and gestures and is alive and sociable" (p. 29).

Helen Keller, when asked whether she considered blindness or deafness her greater handicap, said that deafness was much the greater problem (Siebens, 1976).

When one considers the inherent communication problems and subsequent problematic areas related to interaction, it seems apparent that a hearing-impaired child must have a noticeable impact on his family, his peers, and his community and that intervention, if it is to succeed, must also be impactful.

Preprimary Educational Settings

Lillie (1975) and Mayer (1971) have pointed out that all preprimary models exist along a continuous plane that moves from an informal emphasis on the social and emotional to a formal, cognitive emphasis. In between exist the less formal sensory-cognitive models and the more highly structured verbal-cognitive models (see Figure 6):

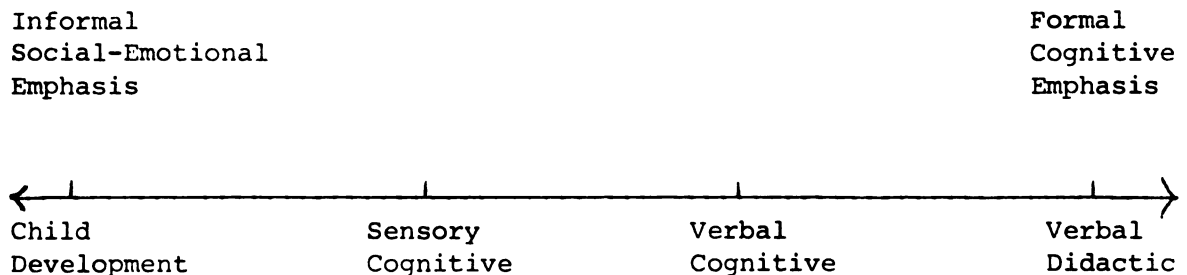


Figure 6. A Continuum Representative of Child-Teacher-Material Interaction (Ackerman and Moore, 1976, p. 683).

The verbal-didactic model is the most formal of the four major models considered in Figure 6. It is best illustrated by the language-based program and Distar materials developed by Bereiter and Engelmann (1966) and is recommended by others that appear to embrace a stimulus-response

behavioral view of learning (Bijou and Baer, 1961; Bushell, 1970; Haring, Hayden, and Allen, 1971; Karnes, Zehrback, and Teska, 1972; Miller and Camp, 1972; Resnick, 1967). Theoretically, the model springs from Skinnerian psychology and looks at the child as a passive organism whose behavior is shaped by his environment. The model is widely used in pre-primary special education settings. However, critics have questioned transfer of skills learned to subsequent problem-solving situations (Stevens and King, 1976).

The classroom that is organized around a verbal-cognitive, or cognitive-interactionalist, model has been heavily influenced by Piagetian theory (Beard, 1969). In the verbal-cognitive model, the child is viewed as an "action-oriented, searching, seeking, continually-adapting organism (who) learns through the interaction of spontaneous, active play with the environment and the people around him" (Stevens and King, 1976, p. 32). Perhaps most well-known have been the educational models developed by Weikart (1971), Lavatelli (1970), and Kamii (1972), which feature child-centered, self-discovery learning. Responses to particular activities are frequently elicited from the children and are often generalized to other situations in the classroom. Because of the heavy emphasis on the modes of child-material and child-adult interaction, child-child interaction often becomes secondary.

The most popular program representing a sensory-cognitive model is that instituted by Maria Montessori

(Evans, 1971). A learning environment is constructed for the child that is wholly child-centered, and the child is relatively free to explore actively a wide variety of manipulative materials. Because Montessori (1965a) viewed intelligence as the ability to order and to classify objects and concepts, the classroom materials are carefully sequenced. Montessori's belief in the value of exploring materials evolved from the work of Froebel (1902) and has been supported by Dewey (1938) and Piaget (1969). The model has been seen as appropriate for use with disadvantaged children (Fisher, 1971). Key aspects of the model are the emphasis on motor development and sensory involvement with didactic materials, the goal being preparation for academic success. Research by Dreyer and Rigler (1959) indicated that Montessori children were less socially oriented and creative but more task-oriented than the traditional nursery school subjects. Studies by Kohlberg (1968) and Berger (1969) indicated a significant increase in attentional responses basic to task persistence, motor impulse control, and field independence.

The least formal model has also been described as a "maturational" or "unit" model. Theory underlying it (Gesell and Ilg, 1949) views man as primarily the product of genetic influence and unfolding . . . and less influenced by environmental experiences. The preprimary child's learning is thought to be most effectively approached through

the free exploration of materials. Preset curriculum would be pejorative, and the children's interests, rather than the teacher's, would indicate any structuring of the environment. Stevens and King (1976) indicate that curricular experiences are organized around such units as the family and community helpers. The teacher provides appropriate activities and materials as dictated by the readiness of the child. Child-child interaction and social-emotional development are primary components of the model.

This investigator is aware of no studies, to date, that have been directed toward exploring the most appropriate preprimary model for specifically encouraging peer interaction between handicapped and typical children. Additional research is needed to determine whether or not a particular model promotes or hinders a goal of social interaction. Moreover, human and material components within preprimary settings that encourage or discourage interaction also need to be further identified.

Play as a Factor in the Education of Young Children

Play, Peer Interaction, and Socialization

There are many theories of socialization, including those of maturation (Gesell, 1946), psychosexual development (Freud, 1950; Erikson, 1963), and social learning (Hull, 1951; Skinner, 1938; Watson, 1959; Sears, 1951). According to Zigler and Child (1973), however, no single approach is

likely to yield complete understanding of a child's socialization and that what we are dealing with when we talk of socialization is the practical problem of how to rear children so that they will become adequate adult members of the society to which they belong. They suggested:

Regardless of whether a child and the people around him are aware of the genetically determined tendencies, general and particular, which he brings with him at birth, or are aware of the lively self that he gradually structures out of his interaction with the world, we can be sure these two are important components of the socialization process (p. 4).

Rogg (1977) concluded that, in socialization, what is often critical in determining an individual's life chances is not biological differences, i.e., sex, race, size, and strength, as well as aberrations that may improve or impair an infant's ability to function as a biological specimen and member of society, but the way cultures react to these differences. This theory is supportive of C. H. Cooley's (1902) "looking glass self" and Bierstaedt's (1974) view: "I am what I think you think I am" (p. 197). It is through this process of social interaction that human infants come to know the rules, values, and beliefs of their given societies and how to apply them to themselves, thereby creating their self.

One of the most important developmental phenomena in socialization, one which leads from self to society and from simple exploration of the environment to mastery, is that of play. According to Erikson (1950), it is a sequence in which

the young child moves through autocosmic, microcosmic, and macrocosmic levels of interaction. He states:

The child's play begins with and centers on his own body. This we shall call autocosmic play. It begins before we notice it as play, and consists at first in the exploration by repetition of sensual perceptions, or kinesthetic sensations of vocalizations, etc. Next, he plays with people and things. The microsphere, i.e., the small world of manageable toys, is a harbor which the child establishes, to return to when he needs to overhaul his ego. But the thing-world has its own laws: it may resist reconstruction, or it may simply break to pieces; it may prove to belong to someone else and be subject to confiscation by superiors. If frightened or disappointed in the microsphere, the child may regress into the autosphere, day dreaming, thumb-sucking, masturbating. On the other hand, if their first use of the thing world is successful and is guided properly, the pleasure of mastering toy things becomes associated with the mastery of the traumata which were projected on them, and with the prestige gained through such mastery (p. 194).

Whiren (1976) suggested that, though play is an important phenomenon in man, cultural values negating play have prevented much research on the subject. Therefore, many of the theories about play remain unsubstantiated or as "ancillary propositions associated with other theoretical constructs" (p. 26).

Classical theories of play in the literature include those of surplus energy (Tolman, 1932; Tinklepaugh, 1942; Alexander, 1958); relaxation or renewal of energy (Lazarus, 1883; Patrick, 1914) in which energy is replenished for less familiar cognitive activity; instinctive behavior (Groos, 1898, 1908), which suggests that children play as preexercise for adult activities; recapitulation (Hall, 1907), a process ridding the organism of primitive and unnecessary instinctual

skills carried over by heredity; and, finally, ego-expansion (Claparide, 1934) or expression and completion of the ego and the rest of the personality through play, an exercise that concomitantly strengthens the developing cognitive skills, and aids the emergence of additional cognitive skills.

Other theories growing in popularity, which make use of pieces of the classical theories, are called infantile dynamic theories of play (Piaget, 1951; Lewin, 1935; Buytendijk, 1934). Collectively, they suggest a process through which a child passes from egocentric thinking to adult rationality and in which reality is bent to fit one's existing forms of thought rather than adjusting behavior to fit reality. Piaget hypothesizes that all living organisms have a tendency to make repeated contact with any slightly novel event, thereby forcing new awareness, new habits, new expectations, and new distinctions regarding the environment as a whole. Newer theories also include the psychoanalytic or cathartic theory of play (Carr, 1902; Freud, 1922; Erikson, 1950), in which the child's play is seen as an attempt to master situations that are difficult for him, and a stimulus-seeking theory (Ellis, 1973) that involves exploration and manipulation of the environment or the symbolic representation of experience.

Stone (1971) stated that society's task of making the lives of its members meaningful is accomplished by the differentiation and integration of the child's self through play. Thus children are brought into meaningful communication with adults and one another, establishing their selves as objects "so they can refer the other objects of their world to such established selves, thereby imbuing these worlds with significance. Play has a major part in the accomplishment of these tasks" (p. 9).

Light and Keller (1975) proposed that the peer group is an important agent in the enculturation or socialization of children. Moreover, there is widespread agreement among behavioral theorists of many theoretical persuasions that healthy child development is partly dependent upon peer interaction (Carmichael, 1970; Hoffman and Hoffman, 1966; Hetherington, 1975; Mussen, 1960; Lewis and Rosenblum, 1975). It is through peer interaction that the child forms the egalitarian relationships that are impossible to form with parents and teachers because of their authority and power.

Hartup (1977), in his consideration of the emergence of aggression skill and control through play in young children, would concur. He maintained that children learn a great deal in their rough-and-tumble activity with peers that is not possible in adult-child interaction. They learn how to defend themselves, to make others angry, and, in turn,

to "turn off" that anger, thus resisting the temptation to attack.

There is also evidence that sexual and moral development are in part dependent upon the trial and error interaction, modeling, and information-gathering that goes on among peers in a non-authoritarian atmosphere (Kinsey, Pomeroy, and Martin, 1948; Piaget, 1932). Rogg (1977) suggested that the classroom provides a social environment for this interaction in which children may experience adaptation to peers and strangers, learn to share, take their turn, not be distracted, and become members of society.

In a comprehensive consideration of the role of play in social development, Caplan and Caplan (1974) indicated that social development, then, may be measured in terms of a child's mobility, communication ability, self-care, self-directed activity, and social attitude and behavior. They add:

Social competency also includes techniques for expressing interest and friendship, for welcoming and including others in play, and for initiating and carrying on group activity. No child enjoys an adequate social life unless he has acquired the ability to play with other children. Each child wants to be part of a group of children his own age (p. 75).

Research directed toward examination of play patterns of preprimary children in early childhood settings has revealed chronological age should not be the only consideration in determining a child's readiness for group play. Individual differences, rate of development, and temperament are also cogent factors. Also, though the average four-year-old may enjoy cooperative and imaginative play, all young

children will not necessarily attain like success with their peer group in the beginning. Smilanski (1975) commented:

We do know that a large number of children in the United States and in other countries come to preschool and kindergarten with a very low performance in play and that their capability does not develop significantly during their education in preschool and kindergarten years . . . I also feel that we possess a considerable amount of knowledge which can enable us to try experimentally some of the ways of intervention which will raise significantly the ability of these children (p. 45).

Implications are that adults may need to offer assistance by planning an environment that actually encourages social interaction between children (Caplan and Caplan, 1974).

Gewirtz (1971) suggests that it requires a purposeful consideration of ecology and functional environment:

. . . the functional environment is comprised of objects and events in a physical space that actually or potentially affect behavior. Upper limits to the functional environment are set by the available physical space and the materials and persons positioned in that space. We shall use the term "ecology" to stand for these limiting physical factors. It is apparent that the gross amount of space available will affect behavior.

When people are considered part of the environment, questions immediately arise as to the age, number, and gender distribution of the children and caregivers who are to be present. Various age and sex ratios are likely to promote different patterns of interaction and thus varying responsive environments. The ratios of materials and persons to the available physical space also can be manipulated to foster constructive use of the props or desirable interaction patterns among persons (p. 202).

Proshansky et al. (1970) found that space, administrative guidelines, furniture, and number of people within an ecosystem (or natural setting) greatly influenced characteristic behavior patterns and, furthermore, that those patterns could be altered by restructuring that setting (p. 27).

Positive attitudes and knowledge of significant adults about play and peer interaction have been questioned. Kuschnor and Clark (1977) charged that it is necessary that one take seriously the concept of interaction as it relates to children and materials if one is to provide the best educational environment possible for young children. It is through a child's interaction with materials and with others that development and learning come about. Teachers' abilities to structure a classroom appropriately depend upon their understanding of various developmental concepts and their close observation of children at play. It has been suggested by Keasey (1971) that peer interaction is usually looked on as something to be held in check rather than used by educators to the child's advantage, in spite of the fact that many studies have shown the effectiveness of using peer models in learning transfer between young subjects (Miller and Dollard, 1941; Hartup, 1977).

In underlining the absolute necessity for play activity in the optimal development of the child, Brauchlin (1970) and Stensaasen (1964) indicated that too much adult interference and organization can hamper play spontaneity. Moreover, as has been suggested by Hutt (1971) care must be taken in labeling activity participated in by young children as play simply because the "young animal performs it" (p. 248). Traditional definitions of play suggest that true play is usually enjoyable, spontaneous, goal-free, highly motivated, and self-initiated (Mitchell and Mason,

1934; Gilmore, 1971). Sutton-Smith (1971) suggested that, if it isn't playfulness, it isn't play and describes the playing child:

He spends a tremendous amount of time exploring or copying or building. He is very serious and very redundant. He repeats over and over again until mastery is established (p. 19).

In a study of spontaneous social play among preschool children, Parten (1971) concluded the following:

1. Preschool children most frequently play in groups of two.
2. The size of play groups increases with age.
3. Two-thirds of the two-child groups are unisexual.
4. The majority of the child's favorite playmates are of the same sex.
5. I. Q. has little influence on the preschool child's friendships.
6. Age and home environment influence friendships.
7. Siblings show a marked preference for each other's society.
8. Playing house is the most social type of play engaged in by nursery school children.
9. Sand play and constructive work with clay, paper, beads, and paints are characteristically parallel play activities.
10. Younger and older children differ in the manner in which they play with toys and hence the social value the toy has for them (p. 95).

Play and Cognition

Through play a child learns what no one can teach him (Sher, 1977, p. 134).

The phenomenon of play has been viewed, and particularly recently, as an essential medium for cognitive learning (Sponseller, 1976) and as it contributes to social, physical, and emotional learning. Spodek (1976), in examining the history of what he calls "the problem of play," wrote:

One of the interesting characteristics of the field of early childhood education is the need to justify our use

of play in programs for children, as well as the need to justify ourselves as professionals whose prime concern is children's play. How do you justify a serious concern with play in the puritanical world in which we live today? Often what we do is deny our concern with play by twisting the words around so that play is considered something else. We say, for example, that "play is the work of the child," thus equating work with play and turning play into work. If we call play work, we can be serious about it, thus maintaining our professional self-esteem.

The problem with such obfuscation is that we miss the whole point by denying our real concerns. We should not hide the fact that we are concerned with play, that we are involved in helping children to play. We need to become serious about play as play. If play is legitimate, then it needs to be accepted within its own right without confusing issues. We need to see play in its proper form in order to use it wisely rather than hiding it (p. 7).

He concluded with a discussion about where the problem of viewing play as a genuine tool for cognition lies: with adults rather than with children. He suggests that, if we begin to understand the reasons for children's play and its consequences, we will no longer see it as a problem--but as a potential.

Carini (1977) suggested that observing children at play can be an effective tool in identifying children's learning interests. She addressed the problem of allowing children serious time to play:

Play and interest are reciprocal. Children play what interests them. Both of these words worry adults, especially some educator adults, a lot. Play is contraposed to work and reality, and the interesting is contraposed to the serious and demanding--while both imply frivolity and trivia. Interest originally meant "to be in and among things, at the center of things," and what we call play is the child's world, his or her reality. We know that the absence of play or interest suggests pathology in the child. Through play, the child's innermost themes and world are represented and completed (p. 16).

Herron and Sutton Smith (1971) have raised the question of whether or not there may be some critical interdependencies between the time at which imaginative activity is most abundant and its availability for the development of abstract processes. They suggest that perhaps the integration of imagery and action through imaginative play in the preoperational stage acts to rid children of their object cathexes, thereby freeing them for the imaginative tasks of reading and numbers.

According to Piaget (1961), development of intelligence in the young child results from action and interaction beginning with external sensory-motor investigations of the environment and maturing into internal, thinking actions that include comparing, counting, classifying, and matching. The importance of play in this process is set forth by Sher (1977) who suggested that it serves a wide variety of purposes in the child's life, including the facilitation of intellectual skills--concept of size, liquid measure and volume, distinguishing between fantasy and reality, problem solving, developing social skills and emotional values. He writes:

They acquire concepts, skills, understandings and attitudes. Much play requires observation, inquiry, and problem solving, all of which leads to a high level of thinking. When a child learns through play the learning becomes internalized and becomes part of her being (p. 133).

Sher added that teachers should structure some play experiences but also make sure that children have opportunity

for spontaneous play where imagination flourishes. Included should be four kinds of educative play: manipulative play, physical play, dramatic play, and games.

Noting that children's thinking is qualitatively different than an adult's, Weybright (1977) maintained that a child constructs intelligence, not through "passive, didactic instruction but through social interaction and cooperation with others" (p. 96). He further suggested that an active conceptualization of intelligence depends upon teacher support and classroom organization that allows children to act directly upon meaningful materials and to interact closely with children and adults.

Lieberman (1965) concluded from a study of ninety-three kindergarten children that play, games, and cognitive development are functionally related. Research by Sutton-Smith (1971) supported the concept that expressive phenomena called on in play produce a wealth of cognitions as well as adaptive or creative readiness to deal with the environment.

Integration of the Handicapped into Typical Settings

The goals of early education for handicapped children are two-fold: Stigma reduction/removal and competence enhancement (Guralnick, 1978, p. 264).

Integration or mainstreaming of the handicapped into typical or normal classroom settings has received considerable space in the literature, especially recently, because of its heightened popularity; legislative action at the federal

level, such as the 1972 federal mandate that no fewer than 10 percent of the places in Head Start go to the handicapped and Public Law 94-142 has strengthened implementation. There has, however, been widespread dissent in the fields of education and special education as to the merits of integration (as was indicated in the Statement of the Problem) and, as was noted by Cornett (1977), the term Mainstreaming of itself does not denote success or failure in improving the lot of the handicapped. In spite of the inherent difficulties, the discussion here will be directed with the assumption that mainstreaming, at least for the present, is a distinct given, and not just a possibility.

Sapon-Shevin (1978) expressed concern that children somehow have to qualify with a certain readiness before they can be admitted to the mainstream:

The very concept of mainstreaming tends to imply that the mainstream is inaccessible and unamenable to change. This orientation puts the burden of change on those being introduced into the environment. The educator's task is seen as that of making children ready to enter the mainstream.

Mainstreaming must be conceived of not as changing the special child so that he will fit into the unchanged regular classroom, but rather as changing the nature of the regular classroom so that it is more accommodating to all children (pp. 119-120).

Martin (1973) has also urged educators to view children as exhibiting a variety of unique learning and behavior styles. He suggests the end of "dichotomous constructs" that result in segregated settings and a

reconceptualization of teacher education that would broaden teacher competency to deal with a broader range of abilities.

In order to measure existing preschools' readiness to mainstream handicapped children, a survey was conducted by Abelson (1975) in a large, urban community. The investigators concluded that the vast majority of preschool teachers revealed a positive attitude toward integration. Most frequently accepted handicaps were speech delay and mental retardation; least desirable included confinement to wheelchair, upper extremity problems, and blindness.

Few preschools were observed that did not have some sort of architectural barrier and other problems appeared to be no parking space, no drop-off space, and poor toilet facilities for the handicapped. Management styles of teachers and the availability of various learning materials and accessories were not assessed but it was concluded that most schools offered "about the same type of programs, with a more limited range of experience that is expressed by their goals and philosophies" (Abelson, 1975, pp. 46-47).

In speaking of the challenges teachers will meet in the integration effort, Ginsberg (1976) related:

One is challenged to find ways of providing deliberate, structural experiences for children in areas which are more commonly taken care of in the course of development from infancy to childhood. These are skills which every teacher must master in dealing with the typical variations among children. This same ability to provide specific enrichment and developmentally appropriate stimulation of the child is highlighted and accentuated when dealing with special children (p. 7).

Moreover, as was pointed out elsewhere by Sapon-Shevin (1978), organizing a classroom so that it is not solely teacher-centered but, rather, makes use of the combined strengths of classroom members, will greatly ease the burden of the teacher. It is also a necessary characteristic of the mainstreamed classroom if effective communication between children is to occur. Clark (1976) investigated the communication patterns and friendship choices in a mainstreamed preschool setting in which there were five communication handicapped and four normal children. Results indicated that teachers were doing most of the talking and the handicapped children were being talked to the least by their peers. A focal study of one handicapped subject indicated that she was more often talked to in comparison to initiating talking to others, that teachers and the normal children were the most frequent interactors, that the subject usually did not respond verbally when talked to, and that the subject interacted more with normal than with handicapped classmates. There appeared to be a relationship between the severity of the handicap and social acceptance. It was concluded that intervention on the part of the teacher appeared necessary in order to develop interactions between mainstreamed handicapped and normal children.

Wright (1962) pointed out that one of the benefits of integration will be a pooling of resources and knowledge about normal and exceptional children that will lead to more

certainly about child development in general. He saw evaluation by the teacher of the impaired child's impact on the normal program as critical so that the experiences of normal children are not jeopardized. He suggested, however, that we often underestimate the ability of children to accept other children, and their limitations, physical or emotional, that it is beneficial for children to come in contact, early, with variations, which will certainly be a part of their adult life. Regularly enrolled preschool children are more apt to express curiosity than hostility toward integrated handicapped children (Carlson, 1977).

Jackson (1976) in a study looking at the effects of integration on twenty handicapped preschoolers indicated that handicapped subjects were found to have a much lower self concept than non-handicapped and that, although the nonhandicapped peers outperformed the handicapped subjects, the mean difference in task orientation and social behavior between the two groups was significantly reduced over the course of a year.

Guralnick (1976) warned, however, that interaction between handicapped and nonhandicapped children by itself does not provide the sort of social context that facilitates either social or cognitive learning:

If early education teachers want to influence young children's development, they need to know about procedures that promote peer interactions. This knowledge is especially important for teachers who work with handicapped and nonhandicapped children in integrated early education settings. In order for handicapped

children to receive many of the benefits of integrated programming, they must interact routinely with nonhandicapped children. However, teachers who "expect" handicapped and nonhandicapped children to interact with one another are likely to be disappointed (p. 55).

Supporting the fact that individual differences and experiences cannot simply be ignored in the "blending" of human beings in social situations, Laing (1967) wrote:

Human beings relate to each other not simply externally, like billiard balls, but by the relations of the two worlds of experience that come into play when two people meet (p. 63).

Four factors were identified by Haring, Stern, and Cruickshank (1950) as critical to the success of integrating handicapped children into typical classrooms, i.e., the extent to which

1. The classroom provides for all needs of the child.
2. The child can become a contributing member of the group.
3. The physical facilities of the school are amenable to the child's needs.
4. The teacher with whom the child is placed understands and accepts him.

Research by Wynne, Ulfelder, and Dakof (1975) supported the idea that the ability and attitude of the teacher appears to be the most "important factor in the success of the integration program" (p. 75). Dunlop (1977) cites additional classroom practices that seem to promote integration success as:

1. Open, sensitive, and honest classroom discussion of differences between children

2. A teacher who focuses intensively on the development of positive learning sets, which involves expectation for the attainment of realistic goals
3. Some time set aside each day to evaluate and plan for the progress of each child in the classroom
4. Children allowed and encouraged to undertake activities independently
5. Cooperative activities planned and built into the curriculum that will encourage social growth of all the children
6. Parents involved in classroom activities whenever possible (pp. 29-31).

The Intensive Design

Many who have been involved more recently in evaluating research related to young children seem to be gaining interest in the intensive design, or N=1, which is distinctive from group design in its conception of individual variability. Dukes (1965) reported 246 single-subject studies in the period from 1940-1965. Careful observation and critical description is used to determine more effective ways to help individuals change.

Two criticisms leveled at N=1 designs are (1) its deficiency in meeting several of the accepted standards of experimental research, the first being a lack of control over individual variation, and (2) its lack of generalizability. Thoresen (1972), an advocate of the design, argued that in intensive design, "individual variability is not looked upon as intrinsic or accidental, but as imposed or learned by the conditions under which it occurs. Each subject serves as his own control."

Campbell and Stanley (1963) have supported this point. They note that the time series design, which approximates the intensive design, controls for all the major internal variability that might confound experimental results during an investigation. Originally, it was typically used to analyze a student's work under various conditions (Allport, 1920; Sorokin, 1930).

On generalizability in group design, Chassen (1967) remarked, "Even if such (group) comparisons are statistically significant, the observed mean difference between groups still does not clearly demonstrate that the difference was generally effective for all subjects." Thoresen noted, "in fact, the obtained differences can be the result of a few who changed dramatically while most changed very little. The effect on the particular individual remains obscure."

Bridge (1973) suggested, "Generalization is gradually established through a series of systematic replications with the same subject (intraindividual) or across subjects (interindividually)."

The general format of the time-series design is set forth by Simonton (1977) as follows:

First, the dependent variable is observed over time; then, at some predetermined point in this observational sequence, an "intervention" is made with the expectation of a change in the dependent variable (p. 489).

Observation as a data-gathering device has been most useful when specialized information is needed. Salvia and Ysseldyke (1974) maintain that they can provide highly

accurate, detailed, verifiable information not only about the person being assessed but also about the contexts in which the observations are being made (p. 8).

Gottman, McFall, and Barnett (1969) concluded that the intensive design was a powerful approach to such research areas as psychotherapy, education, psychophysiology, and operant research. Suggesting also that the approach can be applied in either the laboratory or natural (field) setting, they claimed that it was responsive to ecological considerations while permitting satisfactory experimental control. They indicated that a time series design must demonstrate "that the perturbations of a system are not uncontrolled variations, that is, noise in the system."

Gottman (1973) suggested elsewhere that time series designs:

do indeed offer an alternative when a traditional experimental design is not feasible. However, their most important contribution is that they offer a unique perspective on the assessment of interventions. Experimental designs in the Fisherian tradition may obfuscate important observations about the form of the intervention effects across time. Simultaneous randomized designs have become so much the method of investigating treatment effects that behavioral scientists have lost sight of the fact that these designs were originally developed for use in evaluating agricultural field trials (p. 95).

Commenting on other problems connected with using pure experimental research designs in the social sciences, Bronfenbrenner (1977) wrote recently:

It can be said that much of contemporary psychology is the strange behavior of children in strange situations with strange adults for the briefest possible period of time (p. 513).

Thoresen listed eight attributes of intensive designs:

1. The specific actions of individuals are the unit of focus, rather than an average comparison between groups.
2. The frequency, magnitude, and/or variability of the individual's actions can be examined continuously during each phase and between phases of the investigation.
3. The individual subject serves as his own control in that the magnitude and duration of change is compared to his own baseline of actions. Past and individual differences are carefully controlled.
4. Experimental control of variables is greatly facilitated, thereby reducing the need for statistical control through complex inferential statistics.
5. The effects of treatments administered simultaneously on one or more client behaviors (dependent variable) can be examined over time for a particular individual by use of multiple baselining.
6. Causal relationships can be established by replication (reproductability) of specific results by means of certain intervention techniques across individuals. Evidence of generalization is systematically gathered without recourse to the untenable assumption of random sampling.
7. The clinician can determine the extent of relevant changes in client action continuously during treatment and after treatment, if necessary, based on the data provided.
8. An intimate method for controlled inquiry of covert (internal) behavior of individuals is provided. This makes it well suited to humanists (Thoresen, 1972, p. 12).

Summary

In this chapter, the factors related to interaction within the integrated and hearing-impaired preprimary settings have been reviewed. It was observed that the child

is an open, active processor of information flows and who, in turn, acts upon those flows.

A review of the factors related to hearing-impairment was presented, including the physiology of hearing loss and its impact on language development. A brief, historical perspective of education of the hearing-impaired was included, as were the effects of hearing-impairment on the developing personality. The severity of the handicap is dependent upon the degree and type of hearing loss as well as on the onset of the loss, and the effectiveness of the intervention for teaching coping strategies to the individual.

Educational settings in which young children learn and interact with their peers, materials, and adults were defined, and examples of advantages and disadvantages of several models were set forth. It was suggested that additional research is needed to identify the most appropriate preprimary model for promoting peer interaction between typical and handicapped children.

Space was also given to a discussion of play as an integrating factor in the education of preprimary children, including the contribution it makes in the areas of peer interaction, socialization, and cognition. Play was seen to be a critical, yet underrated, tool in preprimary development. It was not to be assumed that all children had the necessary skills to interact well with their peers in play

settings. Also, as was demonstrated, it may be necessary to actively structure these settings in such a way as to enhance or encourage positive interaction among children.

There was consideration of current issues related to integrating the handicapped into typical settings. A brief review included legislation, responsibilities of integrating agencies, and key factors that appear to be predictive of successful mainstreaming.

Finally, the merits of the intensive, or time-series, design as a powerful tool for research in the social sciences was discussed. The design has been well accepted for cases where a traditional experimental design is not appropriate and where assessment of intervention is necessary.

CHAPTER III

STATISTICAL PROCEDURES

Population

The population from which the subject was selected was that of hearing-impaired preschoolers in a medium-sized city in the north-central region of the United States who attended both a non-integrated and an integrated educational preprimary setting. Non-integrated educational settings are those that are characterized by intervention geared toward a particular type or types of handicapping conditions and whose population is made up only of children who have been determined by staff at the intermediate school district to be handicapped. At the time of this study, all hearing-impaired preschoolers fitting this category attended a particular elementary school where there were two classes for the preprimary hearing-impaired. The school also contained classes for the orthopedically-impaired as well as regular classrooms for typical children and mixed classes of typical and impaired children, grades prekindergarten through six.

Integrated educational settings are those composed characteristically of children who are not considered to be

handicapped, but whose population does contain one or more children who are handicapped.

Sample

A sample of one subject was selected for observational study. Because of the general unavailability of subjects fitting the narrow population described above, it was determined that the subject would be the first hearing-impaired preprimary child whose parents would consent to participate in the study and who attended the elementary program for the preprimary hearing-impaired as well as one of the early childhood laboratories housed on the local university campus. The period of selection and study was set for the 1977-1978 school year.

During the time of this study, an on-going project funded by the Bureau of Education for the Handicapped was being administered through the local university's Institute for Family and Child Study. The primary purpose of the project was the successful integration, or mainstreaming, of impaired children into typical preprimary classrooms. Training sites for the project included the on-campus early childhood laboratories. Each classroom was staffed with a professionally-trained head teacher, student teachers, and student aides; the students were currently enrolled in the early childhood training courses offered at the university. Contact was maintained with the project staff and the preprimary teachers at the elementary school for the

hearing-impaired so that a possible subject for observation could be identified. The subject selected was characterized as follows:

1. He was a four-year-old, hearing-impaired male.
2. He had been diagnosed as having a moderate-to-severe hearing loss.
3. He would be attending half-day preprimary classes four mornings per week at the local elementary school for the hearing-impaired.
4. He would also be attending half-day classes four afternoons per week at the nearby university laboratory school.

An appointment was then secured with the local school district's director of special education services to explain the purpose and intended procedure of the study. Oral permission was received on condition that the subject's parents were in agreement. A letter of permission was sent to the parents and, following a personal interview, permission was granted. A letter explaining the study was also sent to the Early Childhood Studies Committee, a university agency that meets to review the intended purpose and procedure of all research conducted in the early childhood laboratories. Clearance was received from that committee as well as from the Committee for Research on Human Subjects. Finally, permission for observation in the classroom was asked for in writing from each of the preprimary teachers and was granted.

Research Design

In this study, the intensive, or time-series, design (Thoresen, 1972) was employed. Event sampling of integration between a single subject and others within two preprimary settings and over three phases of observation was done. A graphic model of the design is as follows (Figure 7):

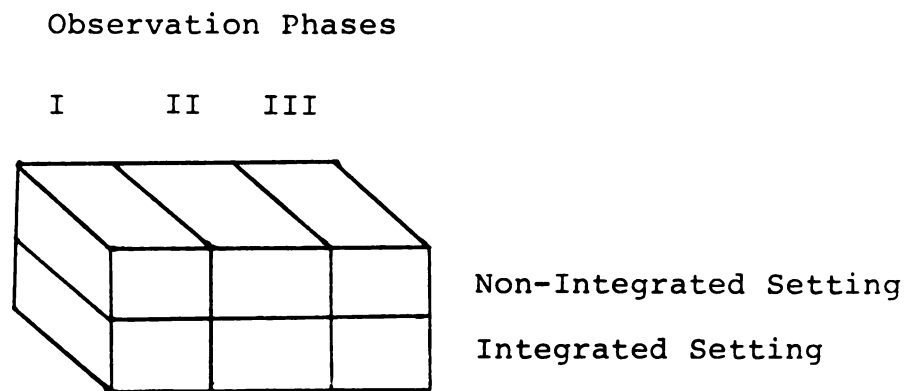


Figure 7. Graphic Model of the Design.

Treatment effects were contrasted over the two independent variables of time (Phases I, II, and III) and setting (Preprimary program for the hearing-impaired and the typical early childhood laboratory setting) and the following dependent variables:

1. Subject's initiation of interaction with peers
2. Peers' initiation of interaction with subject
3. Subject's initiation of interaction with adults
4. Adults' initiation of interaction with subject

5. Total conflict resulting from environmental interaction of subject with
 - a. peers
 - b. adults
 - c. materials
6. Amount of total conflict resolved by adults in setting
7. Amount of total conflict resolved by children in setting

Data Collection Procedures

Each preprimary teacher participating in the study was asked to respond to a Teacher's Behavioral Guideline Survey, which was developed by the investigator, so that any differences in classroom expectations related to the subject's behavior could be determined (see Appendix B). Conflicts would consist of deviations from expectations indicated by teachers as "Always expected/reinforced" or "Often expected/reinforced" in that behavior in any of the following ways:

1. In interactions between subject and his peers
2. In interactions between subject and adults
3. In interactions between subject and materials

Earhart (1977) has identified three kinds of interactions that occur between individuals, groups, and/or materials as follows:

1. Verbal--includes brief to lengthy vocal interaction in the form of statements, questions, and/or phrases.

2. Non-verbal--includes body gestures and facial expressions that indicate such affective postures, as pleasure, displeasure, interest and assurance.
3. Physical--includes touching, pushing, clinging, and hugging, as well as imitation of other physical behaviors such as running, jumping, and skipping.

Observation was done by the investigator. Because the intensive design approximated, in this case, an ethnographic or case-study approach, much of the qualitative data would have been lost to the investigator if another observer had been used. Moreover, the motivation for an ecological overview or understanding of the mainstreaming process called for personal and intense involvement of the investigator in all settings and over all time periods.

In order to provide objectivity, observer reliability was established prior to the study. Before baseline data were gathered (Phase I), the observer met with another doctoral student in the integrated preprimary setting to establish observer reliability. A subject was randomly chosen for simultaneous observation by both observers. Observation periods were set for ten minutes each. At the conclusion of each, comparisons were made by the observers on the following:

1. Number of subject-child interactions.
2. Number of subject-adult interactions.
3. Total number of conflicts.
4. Number of conflicts resolved by children.
5. Number of conflicts resolved by adults.

Fifteen 10-minute observation periods yielded an overall average agreement of 96.73 on initiation of interaction between children and adults and between children in the setting, including any conflicts. At no time was agreement less than 75 percent and, in eleven out of fifteen observations, agreement was 100 percent. Objectivity was further insured by the quantitative nature of the actual data gathering. The event-sampling procedure and continuous recording of observed interaction (see Phase I) served to eliminate subjective interpretation on the part of the investigator. A sample of this procedure may be found in the Appendices.

Phase I. Beginning January 19, 1978, data were collected during Phase I, or the baseline period (seven days), for two half-hour observation periods per day in each pre-primary setting, for a total of fourteen half-hour observations per setting. Observation was made only during free play or periods when activity was relatively unstructured so that interactions were the result of free choice or spontaneous activity. Observation as a technique for collecting data on the social interaction of children has been employed formally since the 1930s (Berne, 1930; Parten, 1933). Recent application has been made to studies looking at children's preferences of play objects to peers (Scholz and Ellis, 1975), exploratory behavior and peer play (Hutt, 1955), and differential effects of group density on social behavior (Hutt and Vaisey, 1966). The greatest benefit in observation

of children's interaction in naturalistic settings, rather than experimental settings, is that the setting is "ecologically sound," i.e., the child is on "familiar ground" (Kerlinger, 1967; Eubank, 1976). Smith and Conelly (1972) have suggested that a combined time-and-event sampling technique may be the most appropriate technique for observing overt behaviors.

Using an event-sampling procedure, continuous recording was made on an observation form of all interactions between the subject and others in his environment. Initiation of interaction was indicated by noting first who made contact (p--peer; s--subject; a--adult) and an arrow was drawn toward the intended contact (ex. s→p, p→s, a→s, s→a). Continued interactions between participants were counted as one observation. If a period of three seconds of silence (counted as 1001, 1002, 1003) occurred after initiation, subsequent initiation was counted. All interactions within group situations that were directed toward the subject or by the subject were counted. Purpose of interaction, length of interaction, and particular responses to initiation were recorded only as running observation; the factors were not isolated for subsequent analysis as they were not specifically related to the hypotheses under investigation. Conflict was recorded, however, and notes were made as to whether it was resolved by adults or children in the setting, or unresolved. Any aggression related to conflict

was also noted and differentiation was made between hostile (person-directed) aggression and instrumental (object-directed) aggression.

Intervention at the end of Phase I and preceding Phase II consisted of the following:

1. An Inservice Questionnaire was sent to the subject's parents,* to each of the preprimary teachers, and to the clinician working with him at the University's Speech and Audiology Clinic. Each was asked to assess the following:
 - a. The subject's strengths
 - b. The subject's most pressing needs
 - c. Their goals for him for the current school year
 - d. Specific steps already taken to see that the goals were being accomplished.
 - e. His progress related to those goals
 - f. Adjustments they felt necessary for effective achievement of their goals
 - g. Concerns they had about the mainstreaming process
 - h. Any other comments, observations, or suggestions they felt would be helpful.
2. Each preprimary teacher was asked to observe the subject in the other preprimary setting for an entire class period, at least.

*The subject's parents were unable to participate more fully because of other responsibilities.

3. The clinician was asked to observe the subject in both settings.
4. Following the observations, the following were invited by the observer to attend an inservice session for discussion:
 - a. The subject's parents
 - b. The preprimary staff from both centers, including the student teacher from the typical setting and the teacher aide from the hearing-impaired settings.
 - c. The clinician from the Speech and Audiology Clinic.
5. The observer acted as moderator of the session and encouraged participating members to share their goals, concerns, and observations about the subject's progress in the typical setting. It was hypothesized by the observer that there appeared to be a direct relationship between the high adult-child interaction in the integrated setting and the correspondingly low rate of child-child interaction in the same setting. Other participants agreed, and adult-child interaction in the typical setting was subsequently identified as the target behavior for intervention. A written communication (see Appendix C) was sent to all participating adults in the integrated setting by the teacher in an attempt to heighten awareness about the value of

child-child interaction. For a two-week period following Phase I and preceding Phase II observation, students and aides participating in the integrated setting were reminded often during the pre-session planning by the head teacher and student teacher to monitor their interaction with the subject. At the same time, they were to encourage the subject's interaction with his peers.

6. The clinician from the Speech and Audiology Clinic agreed to visit the integrated setting, bringing some hearing aids and other equipment related to hearing-impairment so that all children in the integrated setting could become more familiar with them.
7. The teacher in the integrated setting planned some special play sessions where she took the subject and several other children into another playroom so they could become more familiar with one another in a smaller group setting.

Phase II. At the end of the two-week period following staff in-service and follow-up with the above strategies, data were again collected in Phase II of the study. Procedures followed were identical to those in Phase I. Fourteen half-hour observations were collected in each preprimary setting.

Phase III. Following a delay of eight weeks, during which there was no additional communication between pre-

primary settings or planned intervention by the investigator, data were again collected in the final phase of the study. Phase III of the study was completed by May 24, 1978. Again, procedures followed were the same as those in Phases I and II. Fourteen half-hour observations were done in each pre-primary setting.

Data Analysis

The seven major hypotheses, testing whether or not there were differences in the dependent variables between the two settings over time, were analyzed using the Kruskall-Wallis One-Way Analysis of Variance by Ranks. The test is an extremely useful one for deciding whether K independent samples are from genuinely different populations or whether they represent merely chance variations such as are to be expected among several random samples from the same population (Siegel, 1976, p. 184). A summary of the procedure follows:

1. Rank all of the observations for the k groups in a single series, assigning ranks from 1 to N.
2. Determine the value of R (the sum of the ranks) for each of the k groups of ranks.
3. If a large proportion of the observations are tied, compute the value of H from formula (8.3). Otherwise use formula (8.1).
4. The method for assessing the significance of the observed value of H depends on the size of k and on the size of the groups:
 - a. If $k=3$ and if $n_1, n_2, n_3 \leq 5$, Table O may be used to determine the associated probability under H_0 of an H as large as that observed.

- b. In other cases, the significance of a value as large as the observed value of H may be assessed by reference to Table C, with $df=k-1$.
- 5. If the probability associated with the observed value of H is equal to or less than the previously set level of significance, α , reject H_0 in favor of H_1 . (Siegel, 1967, p. 192).

A post hoc procedure developed by Marascuilo and McSweeney (1967) was used by test sub-hypotheses looking at differences between settings or between phases I and III. The post hoc trend analysis is used following the rejection of the null hypothesis by a nonparametric test such as the Kruskal-Wallis or the Friedman test performed on rank data (Marascuilo and McSweeney, 1967, p. 407). It is based upon a chi-square analog of Sheffe's theorem.

Those sub-hypotheses that were limited to comparison between subsequent Phases in the typical setting only were analyzed for significant trend by using White's (1972) Median Statistics. The technique is an outcome analysis specifically suited to the kind of dynamic information gathered in the intensive design and provides the researcher with descriptive as well as practical results. Median statistics have also proven to be a more useful approach than traditional inferential statistics based on the mean. As White points out:

The greater the difference between any single score and the rest of the data, the greater the singular influence that score will have in the determination of the mean. The mean, in a sense, emphasizes the importance of deviant scores. On the other hand, the median is not affected by largely deviating

scores, only by the fact that they are greater or less than the other scores in the distribution (p. 12).

As a second point, demonstrating the usefulness of the median, White states that:

Using the median, we may be assured of meeting our expectation 50 percent of the time; using the mean, on the other hand, we might base our estimates heavily on his (the subject's) best or worst days--resulting in either an over or under estimate of the majority of his performances (p. 14).

White suggests that typical research standards are not obtained using this particular technique for analysis unless at least 9-11 data points are available. This study used fourteen.

Specific steps taken in the data analysis included the following:

1. Construct the median slope for each of the seven variables per setting and time by dividing fourteen data points into quadrants and identifying the median points in the right and left halves.

2. Determine step (immediate upward or downward change in performance) and progress change (slope, that is, the difference between the slope of the line of progress and the dotted, or predicted acceleration, line) in subsequent comparisons.

3. Statistically test the data.

Previous studies (Bridge, 1973; Schmickley, 1976) utilizing White's analysis procedure have followed median

slope construction with the binomial test (Siegel, 1956), a nonparametric procedure that approximates the parametric t-test.

The assumption of independence was a concern and the possibility of violation was considered in that data were collected on one subject. White (1972) addresses this problem:

When the source of data is a group of individuals, operating independently of one another, assumptions of independence are justified. In the case where all data are obtained from a single individual, however, and especially where those data are (as they must be) distributed over time, assumptions of independence must be rejected (p. 8).

White's dismissal of the importance of this assumption was later challenged by a group of statisticians at Stanford University who conducted a number of studies to determine the effect of the following types of dependency:

1. Drift
2. Sequential dependencies, including acute and cyclical cases.

Results of their study revealed that, although there was no theoretical reason to believe that tests such as the binomial would be appropriate modes of analysis, in fact they were. Effects of drift, they determined, were counterbalanced by White's dynamic, rather than static, approach to analysis. The directional trend of the median slope is extended into the next phase (differentiated as a broken line) and contrasted to the solid line of the median slope

particular to that phase. Sequential dependencies that may be cyclical in nature (i.e., related to such factors as seasonal conditions) are reduced or eliminated because of the dynamic, rather than static form of analysis. Data are collected over time, thereby enabling the investigator to determine how variables have changed as well as if they have changed. White suggests:

A dynamic approach to analysis will try to determine the nature of the dependency in the data and remove or utilize that information to more accurately assess the differences between conditions (p. 9).

Summary

The population for this study was preprimary hearing-impaired children enrolled in both a non-integrated and integrated educational setting in a medium-sized city in the north-central region of the United States. The sample consisted of a single subject who was four years old and had a moderate-to-severe loss of hearing. He attended a program for hearing-impaired preschoolers operated by a local, public elementary school as well as an integrated preprimary program at one of the early childhood laboratories on the nearby university campus.

An intensive, time-series design was used. Running observation and event sampling over seven dependent variables related to interaction were recorded in two settings and in three time phases. A total of eighty-four half-hour observations were made between January 19, 1978 and May 24, 1978.

Planned intervention, based on observation of interaction during Phase I, occurred before Phase II data were collected. A common goal agreed upon by all attending the inservice was the fostering of peer-subject interaction in the integrated setting by consciously decreasing subject-adult interaction.

Data were analyzed using (1) the Kruskal-Wallis One Way Analysis of Variance by Ranks, (2) post-hoc comparisons suggested by Marascuito and McSweeney (1967), (3) White's (1972) Median Statistical procedure.

CHAPTER IV

DESCRIPTION AND DISCUSSION OF THE SUBJECT AND HIS ENVIRONMENT

A study that is intended to be ecological in scope and approach requires at least minimal consideration of the subject's entire contextual condition. In the case of a child's educational progress, some knowledge of the child's beginning and life away from the school setting is extremely useful in determining how to structure the learning environment most effectively. When the child is impaired, close communication with, and knowledge about, the child's family may be even more critical in order to implement successful intervention. In this chapter, a discussion of the presenting condition of the subject will be followed by a descriptive profile of his family and of the preprimary settings in which he was living and developing during the study. Information about the presenting condition of the child from conception through the time of the study was obtained from numerous oral and written communications with the subject's mother, including a home interview. Clinical records describing diagnostic evaluations were shared with the investigator by the attending audiologist. Following the

1975 divorce of his parents, the subject resided only with his mother and sister. As a result, the investigator's contact with the child's father was minimal. The father was present during the home interview but participated only minimally, despite an attempt to draw him in.

Information about the preprimary settings and staff was supplied by those members as well as gained during the actual observation phases.

The Presenting Condition of the Subject

Prenatal and Postnatal Condition

The child under study was conceived in March 1973 and was born December 10, 1973. A previous pregnancy of the mother had been unusual in that she had lost eleven pounds prior to the birth of her first child. However, delivery and condition of the child, a daughter, were described by the mother as "normal." Her second pregnancy four and one-half years later approximated the first in that there was little weight gain.

Toward the end of the pregnancy, the pediatrician involved had begun to suspect a problem when instruments for measuring prenatal growth detected no progress in the fetus. The subject's mother noted that she had not been overly concerned at the time. X-rays and amniocentesis confirmed, however, that the child was indeed small and that "there might be some problems." The fetus had apparently been receiving insufficient oxygen. Trying to prepare

themselves for the worst, the parents discussed what they would do if the child were abnormal at delivery. They decided they would withdraw permission for life-extending medical treatment.

When the child was born, the attending doctor placed him on his mother's abdomen. She refused to look at him, telling the doctor that she didn't want to see him if he wasn't "all right." The doctor told her he could not be sure but that her son looked fine; he was just small. The child was removed from his mother so that routine procedures could be carried out. Afterwards, when she had been assured that he appeared healthy, the mother remembered, "I was willing to hold him then. I just wanted them to tell me he was all right. I wanted to hear that . . . I thought, then, there was a chance."

The child was taken to the nursery. Less than an hour later, the doctor reappeared, wanting the mother to sign a form so medication could be administered. The child was having convulsions. The medication, however, had serious side effects and could cause blindness in young infants.

The mother became upset. The child's father, saying he was not willing to see her become "emotional" about the problem, left the hospital. The subject's mother, remembering the ordeal, related, "I felt sorry for myself . . . I wondered how I was going to cope. My first feeling was that God was punishing me for something I had done. I'm not religious

in the sense that I go to church on Sunday, but I cried and cried, especially at night . . . asking Him why He had to do that to (subject), why He just didn't do something to me instead." She added that she had been having marital difficulty with her husband and felt guilty in that she had not wanted the baby. Moreover, she felt she had not taken proper care of herself during the pregnancy. Her nutritional intake had been poor and she had smoked a great deal, she said.

When she left the hospital, the baby did not leave with her but remained in an incubator for an additional five weeks. She returned to work just a week after the child was born but continued to visit him daily at the hospital. She was encouraged by her doctor to hold him through the portholes in the incubator, to feel his weight. She reported that she was afraid to touch him and did not do so for three days. She was reluctant to establish contact with the child because "she didn't know for sure if he would live and did not want to become emotionally involved with him." When she finally gained courage enough to push her hands through the portholes to lift her child who was "wired up . . . his brain . . . his heart . . .," she said that she could feel "every bone in his little head and shriveled body. There was nothing to him . . ." The day she took her son home, however, his mother noted, "I saw two one and one-half pound twins. I thought, 'He's not

that bad, anyway.'" Later, she noted, "I guess everything is relative . . ."

After she took the baby home, there were many problems. He was described as "crying constantly" and could take very little food at one time because of complications with his tongue and the shape of his mouth. He also appeared to have problems with his esophagus, and his internal organs were slightly misplaced. Though the mother was working during the day, she continued to get up with the child every two hours at night. She noted, "There were a lot of times when I thought I couldn't do it . . . when I felt like giving up . . . crawling into a hole to escape. The thing that kept me going was (my daughter). She needed me."

Infancy

Though the child continued to experience "problems" in his overall development, his motor development appeared to be progressing normally. He was sitting up at six months and crawling by nine months. He was beginning to attempt walking when his mother noted a "lifting" of the depression she had experienced. "I began to feel 'Why are you feeling sorry for you? He's the one who has the problem.'" She continued to be concerned about him. She pressed the doctor about the child's small fingers and his abnormally shaped thumbs. The doctor refused to say there was anything wrong. She cited his failure to talk. The doctor suggested it could

be a possible sign of retardation but they would have to wait." He reminded her not to let the child point or merely signal for what he wanted, but to encourage him to speak. She said, "I stopped pushing. Finally, I got to the point where I just accepted it . . . I didn't worry anymore about it. It had happened, and that was it."

The child's mother continued to work and took an additional job in the evenings to pay the pressing medical bills that their insurance would not cover. Her husband was out of work and was not able to contribute financially to the family income. The children were dropped off in the morning at a babysitter's house a few blocks from the school the daughter now attended. The babysitter was described by the subject's mother as "very stable, in her 40's, and with four boys of her own." The children remained there three to four evenings a week. Their mother picked them up about eleven o'clock on those evenings, after work.

Toddlerhood and Early Childhood

When he was approximately two years old, the subject was referred by his pediatrician to the Speech and Hearing Clinic at the local university for a routine hearing evaluation. The purpose of the evaluation was to determine if a hearing loss was present. At that time, the parents reported concern over his continuing "slow development" and absence of speech. There had also been a history of ear infections. COR (Conditioned Orienting Response) revealed

responses by the subject at a moderate loudness level (30dB-40dB). He was reported by the audiologist to show a startle response at approximately 110dB, H1, warble tone, and to localize well in response to noisemakers. Because of the smallness of his ear canals, impedance audiometry could not be accomplished. It was recommended that the child be seen again by his pediatrician and to return in three months for re-evaluation.

At the age of two years and four months, the child was again tested at the Speech and Hearing Clinic. At that time, COR audiometry indicated a moderate to severe flat hearing loss (see Figure 8). Bone conduction testing could not be attempted due to the child's aversion to the bone vibrator. However, impedance audiometry revealed slight stiffness of the left tympanic membrane; impedance measurements of the right ear were impossible due to lack of cooperation by the child. Conduction involvement was suspected. It was recommended that he be seen for medical treatment of the middle ear condition and that his hearing be re-evaluated after completion of such treatment.

When he was two years and six months, the clinic recommended that the subject be seen regularly at the clinic for several sessions to condition him to the acceptance of the equipment and to play audiometry techniques. Amplification was being considered if indicated during the conditioning period. A subsequent hearing evaluation was conducted by the county Otolaryngology Clinic. At that time,

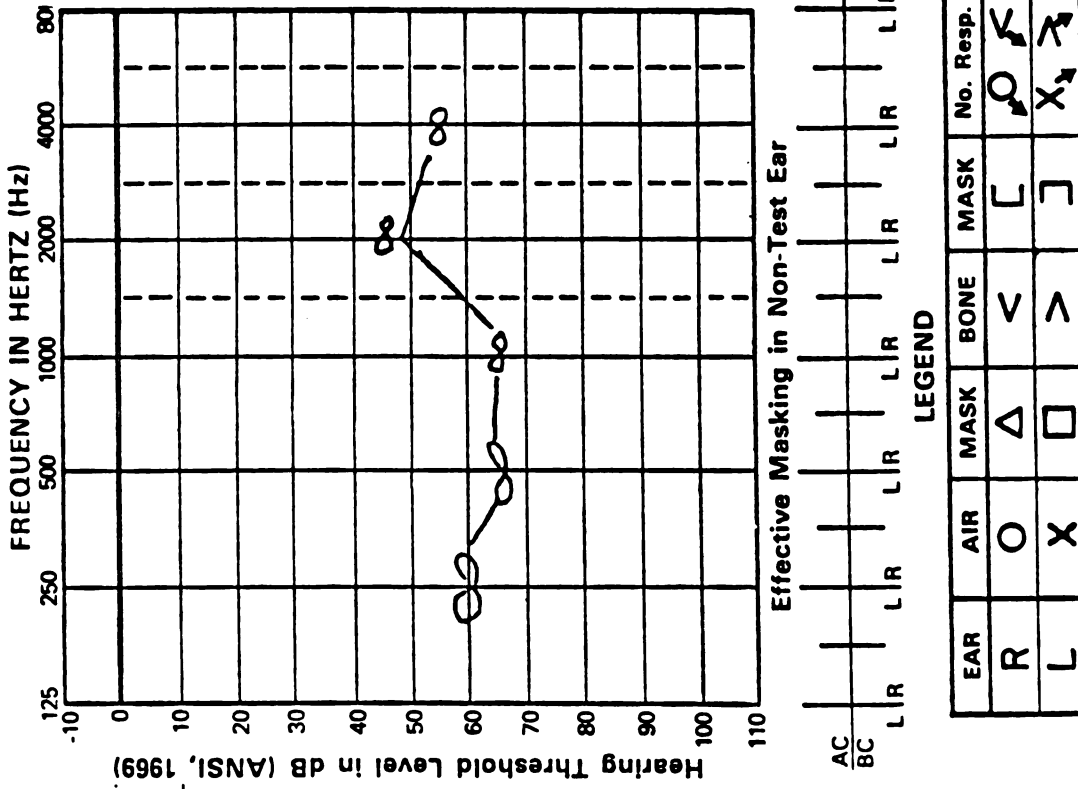


Figure 8. Audiological Evaluation of Subject at Two Years and Four Months.

SPEECH AUDIOMETRY							UCL
	BRT SAT	PTA	DISCRIMINATION				
			%	HTL	Mask	S/N	List
R							
L							
SF	60						
AID							

no abnormalities were detected in the subject's ears, nose, or throat. Tympanic membranes on both sides were mildly retracted but intact. It was suggested that he receive further evaluation.

At two years and ten months, the subject was re-evaluated, and it was recommended that his right ear be fitted for an earmold. Results of an evaluation of four hearing aids indicated the Audiotone A 24 R2 hearing aid would be beneficial because of acoustic frequency response and the child's acceptance of the aid. It was also recommended that he receive binaural amplification upon adjusting to the monaural amplification.

When the subject was three years of age, he began attending preprimary classes for the hearing-impaired at the local elementary school. About six months later, he was tested at the university genetics clinic in an effort by his mother to identify what had "malfunctioned" in his prenatal development. The report was that he had a rare hereditary disease known as Treacher-Collins syndrome. After thorough examination, the clinic reported that there was "no reason why, after adequate correction of his hearing with appropriate hearing aids, he should not develop and function normally," though he would probably be at the lower end of the scale on a normal growth curve. It was during this period that the subject's mother again became pregnant. Feeling she "couldn't take it again," she underwent an abortion and subsequent sterilization. She and the subject's

father continued to experience marital difficulty and were finally divorced. The entire financial responsibility for rearing the children continued to be shouldered by the subject's mother. She felt, however, that she was "coping" and that the problem seemed to be resolving somewhat, as were her feelings of guilt. She commented, "I believed that I had amended the sin, whatever it had been." She continued to work full-time during the day as well as three evenings a week. She had grown used to her schedule: "You do it. You make every minute count. I have no social life and can't attend the kids' school affairs, but I tell them why . . . I try to make them understand."

Upon turning four, the subject began attending four afternoon sessions per week at the university laboratory preschool in addition to the four morning sessions per week at the preprimary hearing-impaired program. In addition, he was being seen for one morning session per week at the university speech and hearing clinic. It was not unusual for him to fall asleep in the van that transported him between the programs. He ate lunch at the elementary school before leaving for his afternoon session with typical children. After school, the van again transported him to his babysitter's where he and his sister played and waited to be picked up by their mother.

Though the subject had lived in the same apartment building for four years, his mother reported that he had no

playmates in the neighborhood: "After school, he has his sister to play with. He doesn't go outside without me. I really don't even trust him with his sister outside."

In the spring of the study (3-17-78), the subject was again seen for a hearing evaluation, including impedance measurements and a hearing aid check. Previous evaluation had suggested a moderate-to-severe hearing loss bilaterally with a conductive component present. There appeared to be improvement in his hearing sensitivity and, for the first time, a sensorineural hearing loss was ruled out (see Figure 9). Results suggested only a moderate conductive loss in at least "the better ear." Bone conduction thresholds were within the range of normal hearing. Following this evaluation, tubes were inserted in the subject's ears for aeration of the middle ear. Subsequent re-evaluation indicated a significant improvement in hearing sensitivity (Figure 10). A mild, bilateral loss was observed, but sensitivity had improved by approximately 20-25dB, leaving the subject with borderline normal hearing. Speech reception thresholds were in good agreement with pure tone results. Based on this information and dramatic change, the following recommendations were made by the audiologist:

1. (The subject) is to continue to receive close otologic and audiological management to help insure the continued good use of his residual hearing.
2. (The subject) is to discontinue the present use of his two hearing aids for a one-month trial period. His mother reported that since his surgery he will often complain that the hearing aids are too loud.

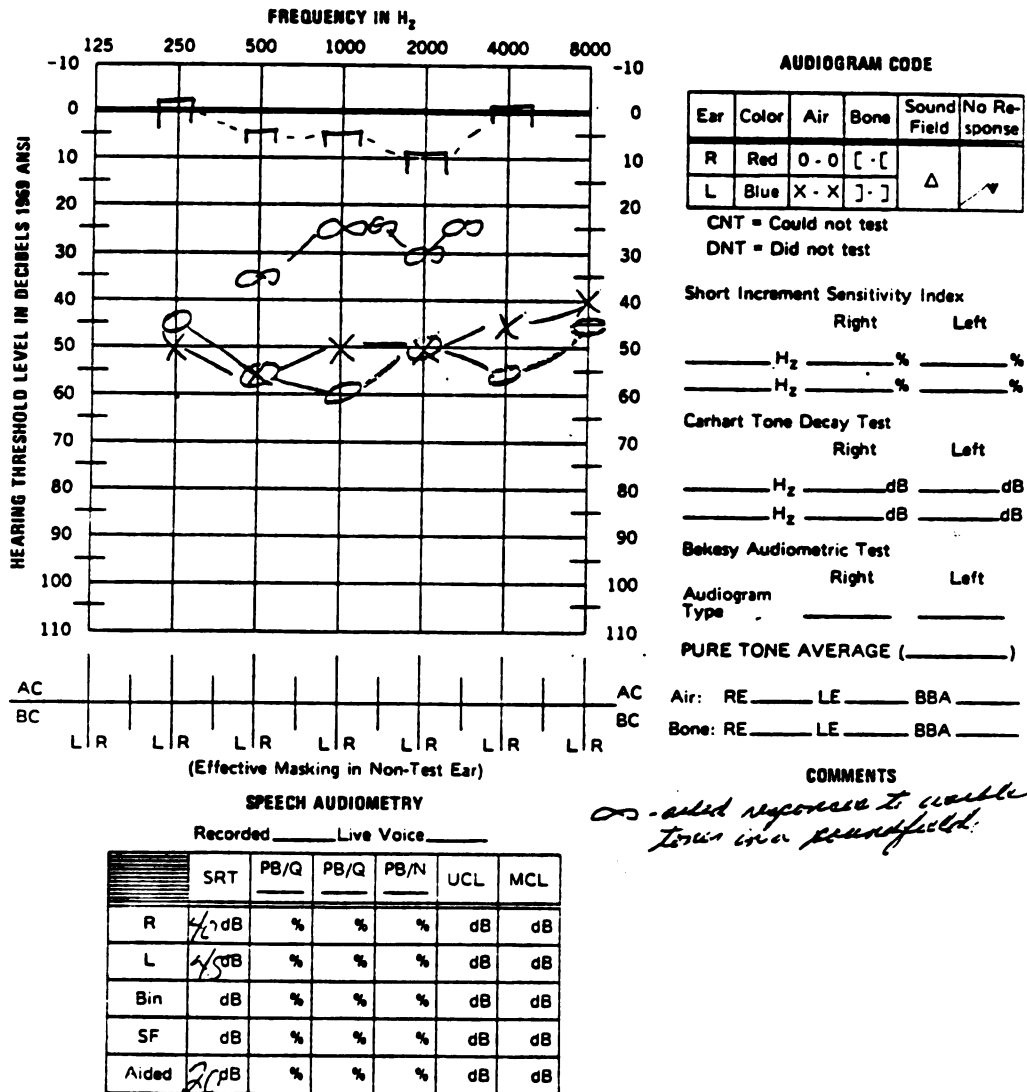


Figure 9. Audiological Evaluation of Subject at Four Years and Three Months.

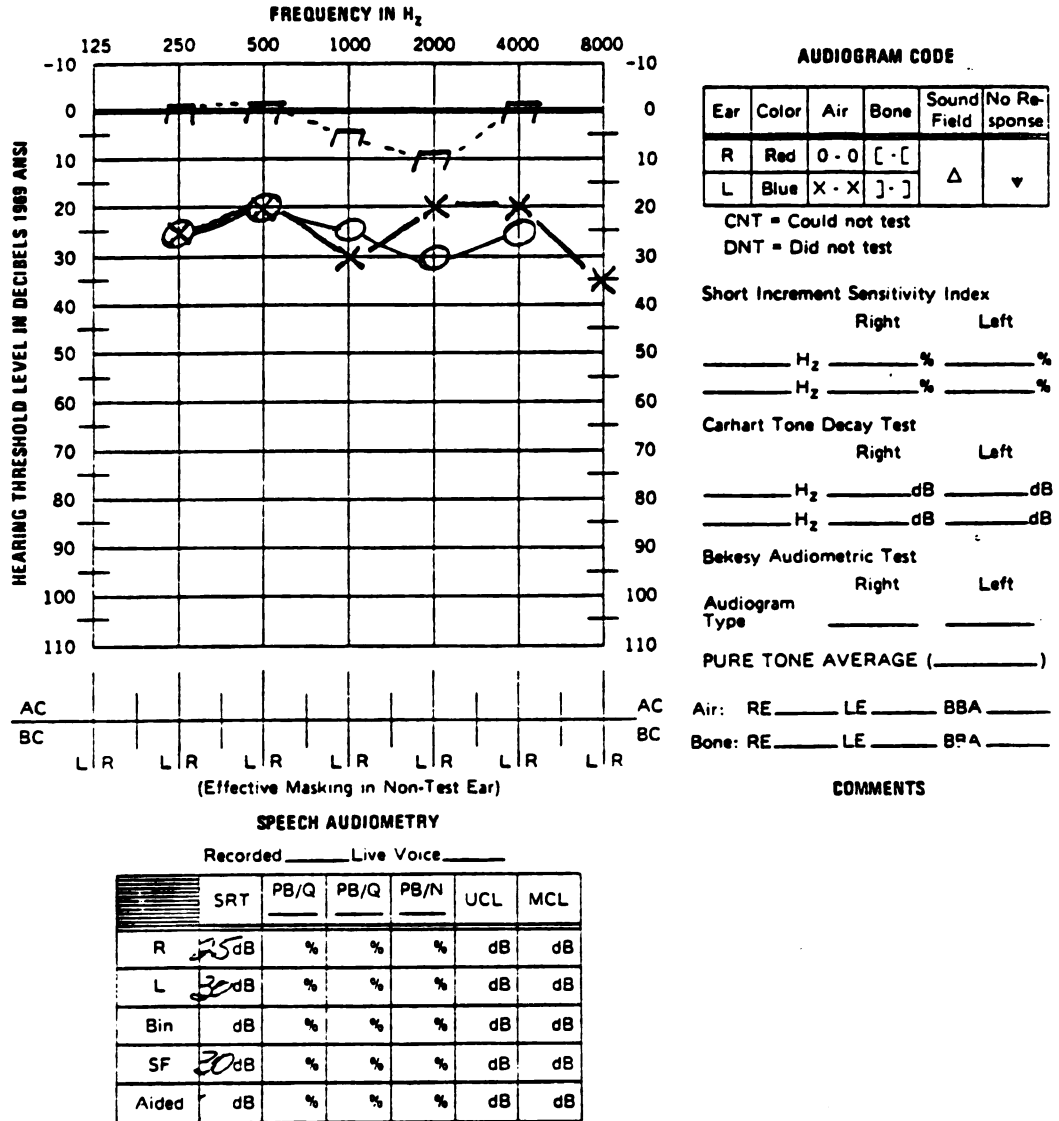


Figure 10. Audiological Evaluation of Subject at Four Years, Five Months and Following Insertion of Aeration Tubes.

(Subject) will be checked repeatedly for any possible detrimental effect of not wearing the present aids.

3. (The subject) is to continue to receive intensive language therapy since he does function as a language-delayed child. His present speech pathologist reported excellent progress this past school year with nine months language growth in nine months of therapy.

Profile of the Subject's Family

The Home

The family makes its home in a group of condominiums that are quadrex in nature, each of the four, two-story apartments opening directly to the outside. Evidence of children, a locked bike and a "big wheel," could be seen on the porch alongside a grill for outdoor cooking. There was very little outdoor play space. The mother reported that she was presently "buying into" the condominium and that it had been their home since shortly after the subject's birth.

Inside, the apartment was very well furnished. The furniture was new and of extremely good quality. There were pictures of the children on the tables and walls, as well as other art forms. These included interesting three-dimensional objects. Magazines and books were in a wicker basket, which was on the floor next to a tape player. Cassette tapes were nearby. During an evening visit, lighting was very soft and included a lighted globe on one table. The comfortable living room opened widely into a kitchen where the subject sat at the table finishing his evening meal. His mother and sister had finished their dinner and were cleaning up. The

child was eating his serving of a casserole of meat and potatoes, salad, and milk. His ten-year-old sister took a sponge and began wiping the table. She was praised by the mother for doing so. The children's shoes, which had been polished, were lined carefully on newspaper on the counter.

The Family

The mother was very open and cooperative during the interview. Shortly after the investigator had arrived, the subject's father entered the apartment. He stayed briefly to listen to an explanation of the study and then went upstairs to watch television with the children. Before leaving, he disagreed with the subject's mother about the cause of the child's hearing-impairment. It had not been the result of Treacher-Collins Syndrome, he said, but the fact that his son had suffered anoxia at birth. The subject's mother did not respond to his comment.

The family is nuclear in composition. Paternal grandparents, who live on the western side of the state, do not visit the family. Therefore, they see the children only twice a year, when their daughter-in-law visits them. The maternal grandparents are seen more often, exchanging visits with their daughter and her children approximately every two months. Neither parent belonged to social clubs or organizations and neither was involved in volunteer work. One or two vacations are taken per year, as well as shorter, planned trips.

The child's father was 32 years old at the time of the study. His occupation was described by his ex-wife as "househusband," though they are divorced. He is a high-school graduate and attended college for two years. He was described by his wife as having a difficult time displaying emotion. His reaction to his infant son's impairment was outwardly very unemotional: "It happened. We just deal with it." He added, when questioned by the investigator about his reaction, "It doesn't bother me. Medical facilities are adequate. It's just a matter of finding out what the long-range problems are."

Responding to a questionnaire about his son (prior to in-service sessions), he indicated that, educationally, the child had strength in no area and that his son's most pressing need was an ability to communicate with his peers. His concern with mainstreaming was that (subject) would not be able to "keep up with" his non-handicapped peers. He also responded that he wanted a professional opinion as to whether his child's "mental understanding and reasoning" were normal for a child his age or, if he were behind, a comparable age level.

The subject's mother, 30 years old at the time of the study, had graduated from high school and then gone on to secretarial work. For the past ten years, she had been employed full-time at a credit union, working as an administrative assistant. She also worked at the credit union during the evening for an additional 21-39 hours per week.

The family's income averaged between 12,000 and 15,000 dollars annually, all of it earned by the subject's mother.

Though she described her life, in general, as "mostly satisfied," she described her feelings about her marriage as "unhappy." Feelings about her family life were mixed. Though she openly and frequently expressed joy and pride in her children, she noted the weight of carrying such a heavy financial burden by herself. Health insurance had covered approximately two-thirds of the medical bills incurred since the birth of the subject. Medical expenses had been considerable, and the child's mother was having a difficult time dealing with the remaining bills. The task had completely exhausted her leisure time and, she noted, robbed her of time she would normally have spent with her children. Moreover, she had very little money for "extras." At this point in her life, the subject's mother felt she had to be more concerned about economic and psychological security than in opportunities for creative and expressive living. However, she noted some dissatisfaction for her current life style, admitting that her income and her responsibilities had reordered her priorities. Though she felt life, itself, a matter of "luck," she also felt in control of it, or at least presently able to cope with what "luck had dealt her." Overall, she expressed positive feelings about herself and the way she was meeting her present responsibilities.

The subject's sister was ten years old and attended the fifth grade in the same elementary building that housed the preprimary hearing-impaired program. Several times during the study, the observer noticed her looking into the subject's classroom to smile and wave to him. During a home interview, she attended to him several times when he appeared to need help. Each time, she treated him very patiently and affectionately. "Sissy," as the subject called her, had made friends in her neighborhood and belonged to a girl scout troop. She told the investigator, "When I grow up, I might be a teacher. It would take a long time, though, wouldn't it?"

The Preprimary Settings and Staff

The Early Childhood Laboratory Setting and Staff

The typical setting in which the subject was mainstreamed during the study was established as a parent cooperative preschool in 1948. The laboratory served the university community in providing students with opportunities for laboratory experience, class projects, observation, and research. It was also serving as a demonstration site for a federally funded project to support families of exceptional children in ongoing preschool programs. Though the center was open to the community, the majority of the children were from university student and faculty families. To ensure adequate attention to individual needs, an adult/child ratio of 1:4 was maintained.

Two types of programs operating within the school included two parent cooperative groups and a parent-toddler interaction series designed to meet the special needs of families with young children. The facility included children from two to five years of age, and the program was designed to foster physical, social, emotional, intellectual, and creative development. The goal for all children enrolled, as stated in a written overview of the program, was to encourage their growth "toward independence with a positive image of self and the environment."

The particular group in which the subject was enrolled met four times weekly in the afternoons for 2 1/2 hours per session. A head teacher was aided by parents and university students in implementing a program based primarily on Piagetian theory. Field trips and resource persons were included in the program. Learning centers had been set up (see Figure 11) to facilitate the children's exploration of materials in the following areas:

- Block and large motor play
- Housekeeping/dramatic play
- Science/social studies
- Art Media
- Manipulative materials
- Sand/water/woodworking

The program format included an hour of free play, a large group session, snack, outdoor play, and small group activity. During free play, an adult was positioned near each of the areas to encourage the children's interaction with the materials and to stimulate conversation about them.

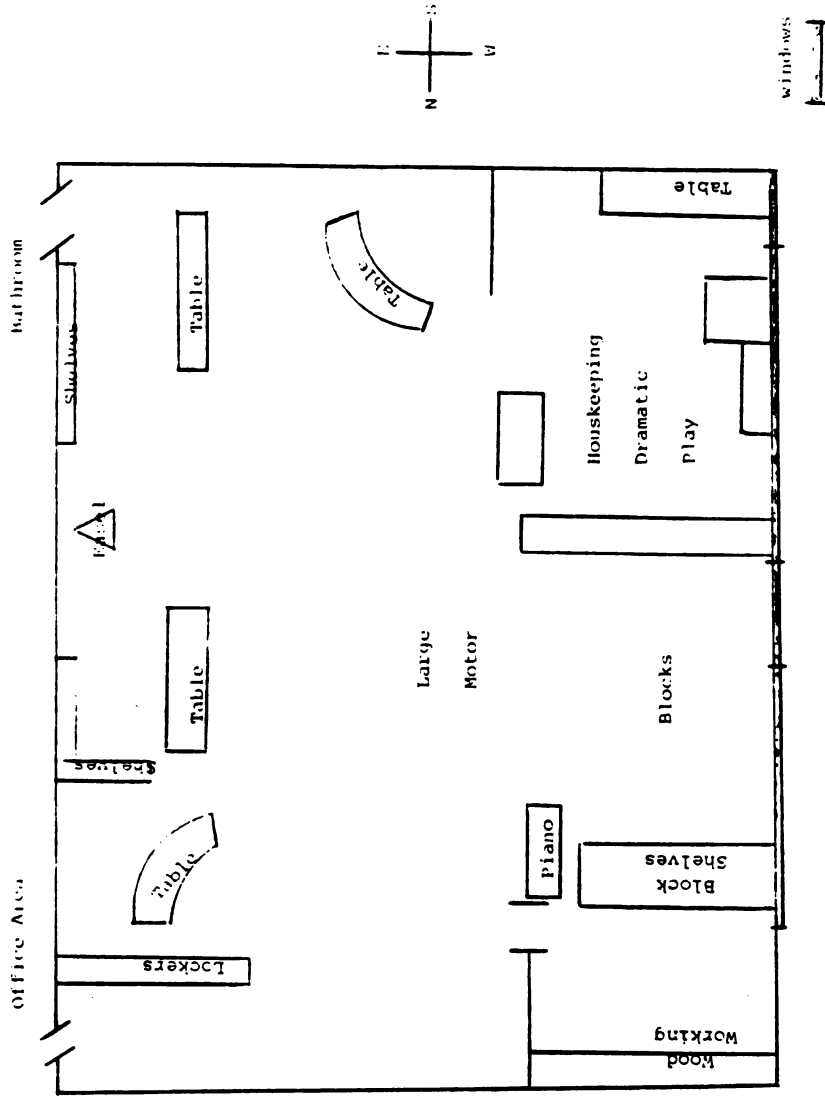


Figure 11. The Preprimary Early Childhood Laboratory Setting.

Use of the materials was largely restricted to the particular area in which they were found. Program planning was done by the student teacher with the approval and guidance of the head teacher. Materials and equipment were diverse and plentiful.

The head teacher in this setting earned her B.S. in 1969 in child development and elementary teaching. She received an M.A. in child development from the same university in 1971. During the study, she was currently certified for elementary and preprimary teaching. She had been a cooperative nursery school teacher for six years and had considerable experience working with parents of preprimary children in various capacities. In responding to an inservice questionnaire following Phase I, the head teacher felt the subject's most pressing need was to gain clarity of speech. Though no formal goals had been established (see questionnaire, Appendix C) for his progress, she expressed hope that he would be interacting comfortably with his peers. Specific steps had not been taken to achieve this prior to Phase II. His teacher wrote, "So far, we have pretty much been letting (subject) explore the environment and become an accepted member of the group with some teacher initiation of interaction on suitable occasions." She also felt at that time that the subject had been "accepted by most children" and that those who were unaccepting were also having difficulty interacting with others. She further noted

that his good attention span, adaptability, and positive self concept were strong features in the child.

The student teacher was a senior, enrolled in the university in the early childhood curriculum. She was assisted by other students, who were also moving through the early childhood sequence, and by parents of the children in the cooperative program.

The Hearing-Impaired Setting and Staff

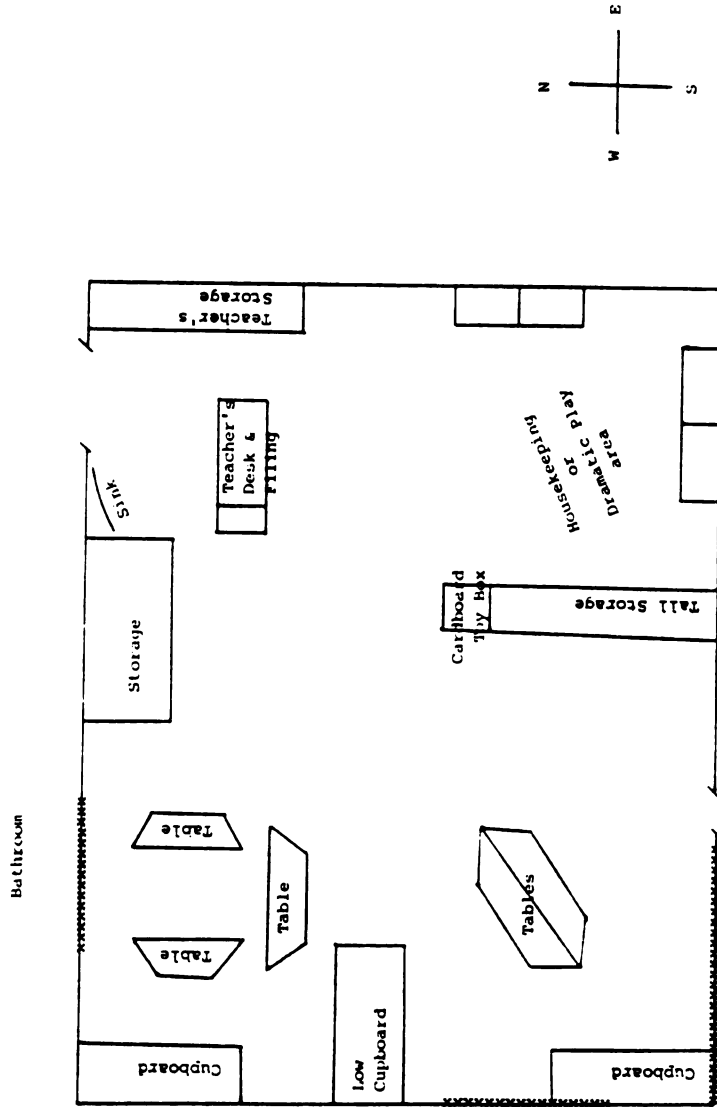
Identified hearing-impaired preschoolers in the subject's educational district were enrolled in a centralized tri-county program housed in a local elementary school. The school, which opened in 1976, also served as a district-wide preprimary and elementary educational facility for orthopedically-impaired children. Children with moderate-to-severe impairment were primarily served in self-contained classrooms. Adjunct services included physical education and library, as well as individual use of specialized and county intermediate personnel such as psychologists, physical therapists, and speech and audiology clinicians. Following established guidelines in PL 94-142, these children were placed in the "least restrictive environment." Whenever possible, they were mainstreamed into other classrooms in the building, which were primarily populated with non-handicapped children. The building did not contain a preprimary classroom for typical children, serving the non-handicapped population only in grades K-6.

The adult/child ratio in the classroom serving moderately-to-severely impaired children was held to 1:5. Typically, a head teacher and one aide were responsible for ten children. Only six children, including the subject were presently being served in his classroom at the time of the study, though capacity in that particular classroom had been set for ten. Another hearing-impaired preprimary classroom was also operating in the building. The adult/child ratio in that classroom was also considerably lower than the maximum, with six children being served by a head teacher and aide. Frequently, the two classes were combined during the second half of the three-hour morning program for snack and language lessons. With the exception of the subject, who attended only mornings and was mainstreamed into the university program in the afternoon, the children met on Monday, Tuesday, Thursday, and Friday from 8:30 a.m. to 11:30 a.m. Lunch followed from 11:30-12:30. The afternoon session began at 12:30 and ended at 3:30. On Wednesdays, children did not attend classes; the entire day was reserved for program planning and teacher in-service. The two pre-primary hearing-impaired classrooms were somewhat different in the makeup of the children being served. Though several of the children in the subject's classroom were profoundly deaf, the level of overall functioning in that particular classroom was considerably higher than that in the other classroom where hearing-impairment was often complicated by

additional handicaps such as emotional impairment. Too, the children in the subject's classroom tended to be slightly older, chronologically, than the children in the other classroom.

The program began in the morning with the children, accompanied by their teacher or aide, marching in a line from their lockers near the entrance to their classroom. Following a brief period of exploration, the children again lined up for "toileting." Bathrooms were located a short distance from the classroom. This period was followed by a period of free play during which the teacher selected individual children for one-to-one concept teaching. Other children were free to select play materials from a large cardboard carton (see Figure 12) or from shelves. They were free to use the materials in any part of the room and in any way they wished, so long as safety standards were not overlooked. During this period, direction from the teacher or aide was infrequent and only occasionally were play materials such as puzzles or slide viewers set out on the tables for the children's use. It was during this period that weekly trips to the school library or gymnasium were scheduled.

At approximately 9:45 a.m. - 10:00 a.m., the children were alerted that it was "snack time." They were then joined at that time by the other class of children, taking their places at low tables. Certain children were selected by the teachers to hand out napkins or straws. Then began a daily, laborious process of dispersing food. Often the snack



xxxx = bulletin boards

Figure 12. The Preprimary Hearing-Impaired Setting.

consisted of cereal, toast, or cookies and milk. One at a time, children were sequentially offered a spoon, a dish, or bowl, the dry food, and milk. They were required to make the proper sign for each article or to speak if they were able. If they were not willing to do so, they did not receive the article. If their attempt was genuine, they were praised for their "good talking."

Snacktime was followed by a large group session with the children again seated around tables at the "language center." Didactic teaching materials such as visual aids and mimeographed sheets were used to promote skill-building in conceptual and expressive language. The subject's teacher expressed her concern to the investigator about the severe language lag experienced by most hearing-impaired children. She noted that the controversy over oral vs total communication for the deaf often resulted in pre-kindergarten hearing-impaired children coming to her very much like a "blank slate," with little receptive and/or expressive language. She suggested that hearing-impaired children could benefit greatly if signing were begun at a time when they were most sensitive to language input. The argument that signing could deter speech was incomprehensible to the subject's teacher. The primary purpose of the preschool hearing-impaired classroom, as she saw it, was to give the children a means of communication, to help them understand their environment, and to prepare them for their educational career. Clearly, the model she had chosen to implement those goals was the

behavioral or verbal-didactic model based on a stimulus-response view of learning. The most appropriate and effective mode to stimulate language development was thought to be total communication rather than the oral/aural method specified by the local university. There existed a conflict in that some of the children, including the subject, were enrolled in this program favoring signing and were also receiving services at the local university speech and audiology clinic where signing was considered a deterrent to speech and language development.

The teacher in the hearing-impaired setting had earned a B.A. at a state university in 1977 and subsequent hours at another state university in special education. Her certification included a state elementary provisional certificate for grades K-8 with endorsement for teaching the hearing-impaired in grades K-12. She had been employed since the beginning of the 1977 school year with the local school district teaching pre-kindergarten hearing-impaired.

The aide assisting the teacher in this setting had a high school diploma. She had been employed by the school district on a full-time basis since 1970 as an aide with the hearing-impaired. Tasks given to her were largely clerical or custodial. She assisted by helping to prepare the snack, bulletin boards, and teaching materials. She also helped the children make transitions from place to place and with their hygiene during toileting. Applied instructional

activities were taken care of by the teacher. The children received attention from the adults largely in structured teaching situations and were left during free periods to devise their own play. The adults used the children's play time to plan lessons and to prepare the environment for upcoming instructional periods. They usually responded to the children only to answer questions or to remind them to obey classroom guidelines.

Prior to the in-service session, the teacher was questioned about her goals for the subject and to identify his strengths and needs. She suggested that his ability to communicate, attending skills, and good social interaction with his peers were strengths. His most pressing needs appeared to her to be speech and language development and improvement in his fine motor skills. Behavioral objectives that she had established for his successful integration or mainstreaming were as follows:

Criteria for Integration:

1. (Subject) will continue to use and develop the receptive and expressive skills of communication (speech, language, and speech-reading) well enough to function successfully in the regular preschool program.
2. (His) social and emotional maturity level must remain at its present stage of development and not regress or become suppressed.
3. (He) must be attentive to directions and follow them to complete his work.
4. The teacher must always be aware of (subject's) handicap and have an opportunity to devote her time to him when he is confused or not understanding tasks.

5. Consideration of the noise level in the room must be given to (subject) as it may interfere with his hearing directions or instructions.
6. (Subject) must be accepted by the other members of the classroom as a member of the class and given the same consideration they expect to give each other.

Objectives for Integration:

1. Upon arrival to the new situation (subject) will select from three choices one object to play with (such as car, truck, airplane). This one activity should take place no longer than six times.
2. (He) will sit with a large group instruction for at least five minutes each time the group meets.
3. (He) will participate when called upon to do an activity in the large group at least three out of four times.
4. (He) will select one area out of five small group activities in which to participate for at least five minutes. (Building corner, art table, creative dramatics, paint corner, and readiness table).
5. (He) will select one area out of five small group activities until the activity or project is completed three out of four days.
6. (He) will play with another child who approaches him three out of four days.
7. (He) will approach another child to play with two out of three days.
8. (He) will share his toy with another child at least one time a week.

These objectives will have been met when it is agreed upon by the teachers concerned with (Subject) that he works and plays well with others.

Goals

1. Increased language and improvement in speech.
2. Social interaction and acceptance by others.

3. To function and be able to keep up with the demands made in a regular preschool.

Summary of the Contextual Condition
of the Subject

The four-year-old male under study manifested a moderate-to-severe hearing loss, which had been present since birth. Genetic investigation indicated presence of Treacher-Collins syndrome, a rare hereditary disease. Some question existed as to whether the child's hearing-impairment was directly due to the inherited disease or to related, secondary complications caused at birth. The impairment had resulted in language delay.

The child resided with his mother and ten-year-old sister. His mother worked several evenings a week in addition to a full-time job during the day. The subject consequently was cared for after school by a babysitter until his mother called for him.

He attended classes for the preprimary hearing-impaired at a local elementary school where the program was behaviorally-oriented. Specific criteria for his mainstreaming had been outlined by the teacher in that setting. He had been mainstreamed into an early childhood laboratory program at a nearby university. Programming in that typical setting was Piagetian-based and no specific goals had been formulated.

In responding to a questionnaire related to educational goals for the subject, his parents did not feel that

he was strong in any educational area. They saw his most pressing need to be an ability to communicate with his peers. Conversely, the teacher in the hearing-impaired setting identified his ability to communicate with others and good social interaction as strengths. She felt his most pressing need, however, was further development of speech and language. In the university laboratory setting, the child was viewed as needing clarity of speech. His strengths were assessed to be a positive self-concept, good attention span, and adaptability.

CHAPTER V

ANALYSIS OF RESULTS

The results of the data analysis are presented in seven sections based on the major hypotheses regarding subject-initiated and peer-initiated subject-peer interaction, subject-initiated and adult-initiated subject-adult interaction, and conflict in the typical and hearing-impaired settings over the three phases of the study. The results of the interaction variables and variables related to conflict will accompany each section. A summary of results will conclude the chapter.

Mean ranks of dependent variables by setting and time are reported in Table 1.

Subject-Initiated Peer Interaction in the Typical and Hearing-Impaired Settings over the Three Phases

H1: There is no difference in the subject-initiated peer interaction in the two settings over the three phases of the study.

Results of the chi-square test of the Kruskal-Wallis One-Way Anova (corrected for ties), with 5df, was 51.4606. The test was significant at .0000 ($\alpha > .05$). H1 was therefore rejected, indicating that there was a difference between

Table 1.--Mean Ranks of Dependent Variables by Setting and Time.

Variable	Phase I		Phase II		Phase III	
	Hearing-Impaired Preprimary Setting	Typical Preprimary Setting	Hearing-Impaired Preprimary Setting	Typical Preprimary Setting	Hearing-Impaired Preprimary Setting	Typical Preprimary Setting
V ₁ SP Subject-initiated peer interaction	47.0	16.1	70.7	33.5	61.0	26.7
V ₂ PS Peer-initiated subject-peer int.	47.6	14.5	52.3	38.7	65.0	37.0
V ₃ AS Adult-initiated subject-adult int.	21.0	64.2	32.6	49.5	41.0	46.6
V ₄ SA Subject-initiated subject-adult int.	27.6	53.1	40.9	30.2	62.7	40.5
V ₅ TC Total Conflict	48.6	41.2	46.5	26.6	45.4	46.7
V ₆ CRC Child-resolved conflict	51.9	32.5	53.1	23.3	54.9	39.3
V ₇ ARC Adult-resolved conflict	45.2	58.1	38.9	33.4	34.8	44.6

settings and phases in subject-initiated peer interaction. Results of the Anova may be seen in Table 2. The following four alternative hypotheses were subsequently investigated:

- H1₁: Peer interaction initiated by the subject will be significantly greater in the hearing-impaired setting than in the typical setting in Phase I.
- H1₂: Peer interaction initiated by the subject in the typical setting will be significantly higher in Phase III as compared to Phase I.
- H1₃: Peer interaction initiated by the subject in the typical setting will be significantly higher in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope.
- H1₄: Peer interaction initiated by the subject in the typical setting will be significantly lower in Phase III than in Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope.

Table 2.--Results of Kruskal-Wallis One-Way Analysis of Variance by Ranks: Subject-Initiated Peer Interaction.

V ₁ SP Situation	1	2	3	4	5	6
Number (Data Points)	14	14	14	14	14	14
Mean Rank	47.0	16.1	70.7	33.5	61.0	26.7

Cases	Chi-square significance		Chi-square significance corrected for ties	
84	51.2965	.0000	51.4606	.0000

Post-hoc examination of the difference in interaction between settings in Phase I was computed at an alpha level of .05 using the following equation (Marascuilo and McSweeney, 1967):

$$\hat{\psi} = \bar{R}_1 - \bar{R}_2 = 0$$

$$\text{Var } \hat{\psi} = \frac{N(N+1)}{12} \sum_{K=1}^K \frac{a_K^2}{n_K}$$

$$\text{Range} = \sqrt{\chi_5^2 (.05)} \sqrt{\text{Var } \hat{\psi}}$$

$$\text{Confidence Interval} = \hat{\psi} \pm \text{Range}$$

Results revealed that subject-initiated peer interaction was significantly greater in the hearing-impaired setting than in the typical setting in Phase I. Therefore, $H1_1$ was retained.

Examination of $H1_2$ did not support the alternative hypothesis. Subject-initiated peer interaction in the typical setting did not prove to be significantly higher in Phase III as compared to Phase I. The point differences, lower limits, upper limits, and decision for $H1_1$ and $H1_2$ may be seen in Table 3.

As can be seen in Figure 13, an acceleration in the median slope indicated higher subject-initiated peer interaction in the typical setting in Phase II than in Phase I ($H1_3$). To determine the statistical significance ($\alpha = .05$) of the difference between the actual trend (solid) line and

Table 3.--Results of Marascuilo and McSweeney Post-Hoc Paired Comparisons Analysis: Subject-Initiated Peer Interaction.

Sub-hypothesis	Point Difference ($\hat{\psi}$)	Lower Limit ($\hat{\psi}$ -range)	Upper Limit ($\hat{\psi}$ +range)	Decision
H1 ₁	30.9	.2	61.6	Retain
H1 ₂	9.6	-21.1	40.3	Reject

the predicted (dotted) line, a binomial test was done using the following formula:

$$P(r=n) = N^C_r (P)^r (q)^{N-r}$$

where P is the hypothesized probability, q is 1-p, and c indicates a combination.

Since results indicated that the change in slope was significant at .0056, H1₃ was retained.

As indicated by the deceleration in the median slope and binomial test (results = .00001), subject-initiated peer interaction in the typical setting (H1₄) proved to be significantly higher in Phase III as compared to Phase II. Data summaries for all alternative hypotheses analyzed by the median slope and the binomial test are provided in Table 4.

Peer-Initiated Subject-Peer Interaction in the
Typical and Hearing-Impaired Settings over the
Three Phases

H2: There is no difference in the peer-initiated subject-peer interaction in the two settings over the three phases of the study.

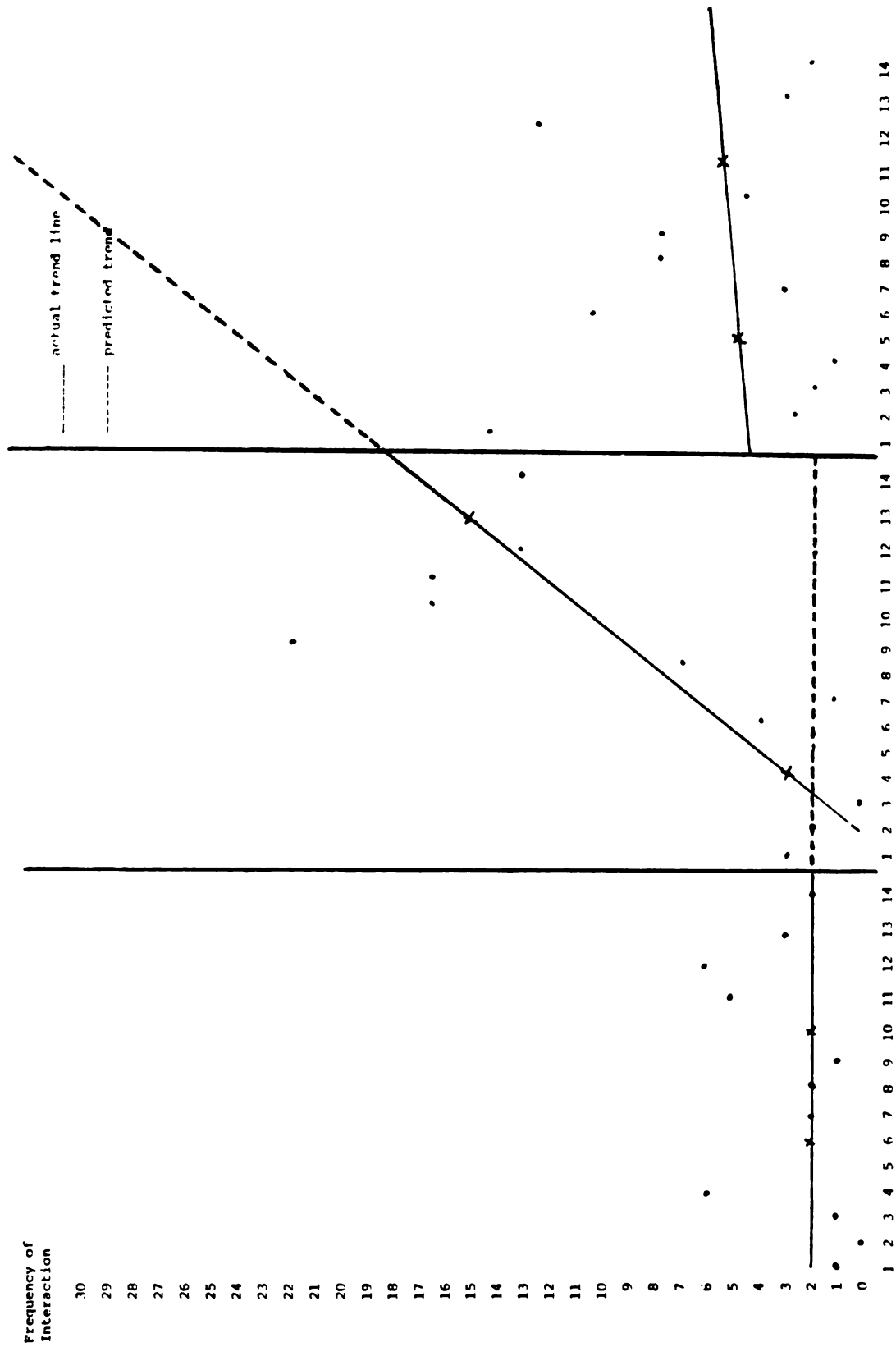


Figure 13. V_1 Median Slopes: Subject-Initiated Peer Interaction Over Setting and Time.

Table 4.--Data Summary: Analysis by Median Slope and Binomial Test.

Alternative Hypothesis Tested	Predicted Direction of Slope (Dotted Line)	Actual Test Results (Solid Line)	Data Points Above Predicted Line	Data Points Below Predicted Line	Results of Binomial Test	Decision: Retain Null Hypothesis or Alternative Hypothesis is:
H1 ₃	Flat	Accel.	12	2	.0056	Retained*
H1 ₄	Accelerating	Decel.	0	14	.00001	Retained*
H2 ₃	Accelerating	Sharp Accel.	9	5	.0036	Retained*
H2 ₄	Sharp Acceleration	Decel.	0	14	.00003	Retained*
H3 ₃	Acceleration	Decel.	3	11	.0027	Retained*
H3 ₄	Deceleration	Accel.	14	0	.00003	Retained*
H4 ₃	Acceleration	Accel.	14	0	**	Rejected
H4 ₄	Acceleration	Decel.	1	13	**	Rejected
H5 ₄	Accelerating	Decrease in Step	0	14	***	Rejected
H6 ₃	Accelerating	Decel.	0	14	**	Rejected
H6 ₄	Decelerating	Flat, Accel. Step	14	0	**	Rejected
H7 ₃	Accelerating		0	14	***	Rejected
H7 ₄	Accelerating	Flat Dec. Step	2	12	***	Rejected

* Significant at $\alpha = .05$.

** Reversal in slope indicated no significance, Binomial test not needed.

*** Null was retained; therefore alternative hypotheses rejected.

As indicated in Table 5, the null hypothesis was rejected. Differences in peer interaction between the settings and over the three phases were proven to be highly significant by the Kruskal-Wallis One-Way Anova (.00001). The alternative hypotheses explored to detect those differences were the following:

- H2₁: Peer interaction initiated by the subject's peers will be significantly greater in the hearing-impaired setting than in the typical setting in Phase I.
- H2₂: Peer interaction initiated by the subject's peers in the typical setting will be significantly higher in Phase III as compared to Phase I.
- H2₃: Peer interaction initiated by the subject's peers in the typical setting will be significantly higher in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope.
- H2₄: Peer interaction initiated by the subject's peers in the typical setting will be significantly lower in Phase III than in Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope.

To determine whether or not peer-initiated subject-peer interaction was greater in the hearing-impaired setting than in the typical setting in Phase I, the two settings were compared using the post hoc procedure (see Table 6). The alternative hypothesis (H2₁) was subsequently retained, indicating greater interaction in the hearing-impaired setting.

The same test revealed no significance when peer-initiated interaction was compared between phases I and III in the typical setting. Interaction did not significantly

Table 5.--Results of Kruskal-Wallis One-Way Analysis of Variance by Ranks: Peer-Initiated Subject-Peer Interaction.

V_2^{PS} Situation	1	2	3	4	5	6
Number (Data Points)	14	14	14	14	14	14
Mean Rank	47.6	14.5	52.3	38.7	65.0	37.0

Cases	Chi-square significance		Chi-square significance corrected for ties	
84	34.2590	.0000	34.3829	.0000

Table 6.--Results of Marascuilo and McSweeney Post Hoc Paired Comparisons Analysis: Peer-Initiated Subject-Peer Interaction.

Sub-hypothesis	Point Difference ($\hat{\psi}$)	Lower Limit ($\hat{\psi}$ -range)	Upper Limit ($\hat{\psi}$ + range)	Decision
$H2_1$	33.1	2.4	63.8	Retain
$H2_2$	22.5	-8.2	53.2	Reject

increase. Therefore, the alternative hypothesis ($H2_2$) was rejected.

In $H2_3$, it was hypothesized that peer-initiated subject-peer interaction in the typical setting would be significantly higher in Phase II than in Phase I. This was supported (see Figure 14) by a sharp increase in the median slope. Binomial analysis revealed that the difference between the predicted line and actual slope was significant at .0036.

The fall in slope between Phase II and Phase III in the typical setting supported $H2_4$. There was a significant (.00003) decrease in peer-initiated subject-peer interaction between the two phases in the typical setting.

Adult-Initiated Subject-Adult Interaction
in the Typical and Hearing-Impaired
Settings over the Three Phases

H3: There is no difference in adult-initiated subject-adult interaction in the two settings over the three phases of the study.

The Kruskal-Wallis One-Way Anova disclosed the presence of significant differences (.0001) between settings and phases in adult-initiated subject-adult interaction (see Table 7). Sub-hypotheses related to this variable included the following:

$H3_1$: Initiation of interaction with the subject by adults in Phase I will be significantly higher in the typical setting as compared to the hearing-impaired setting.

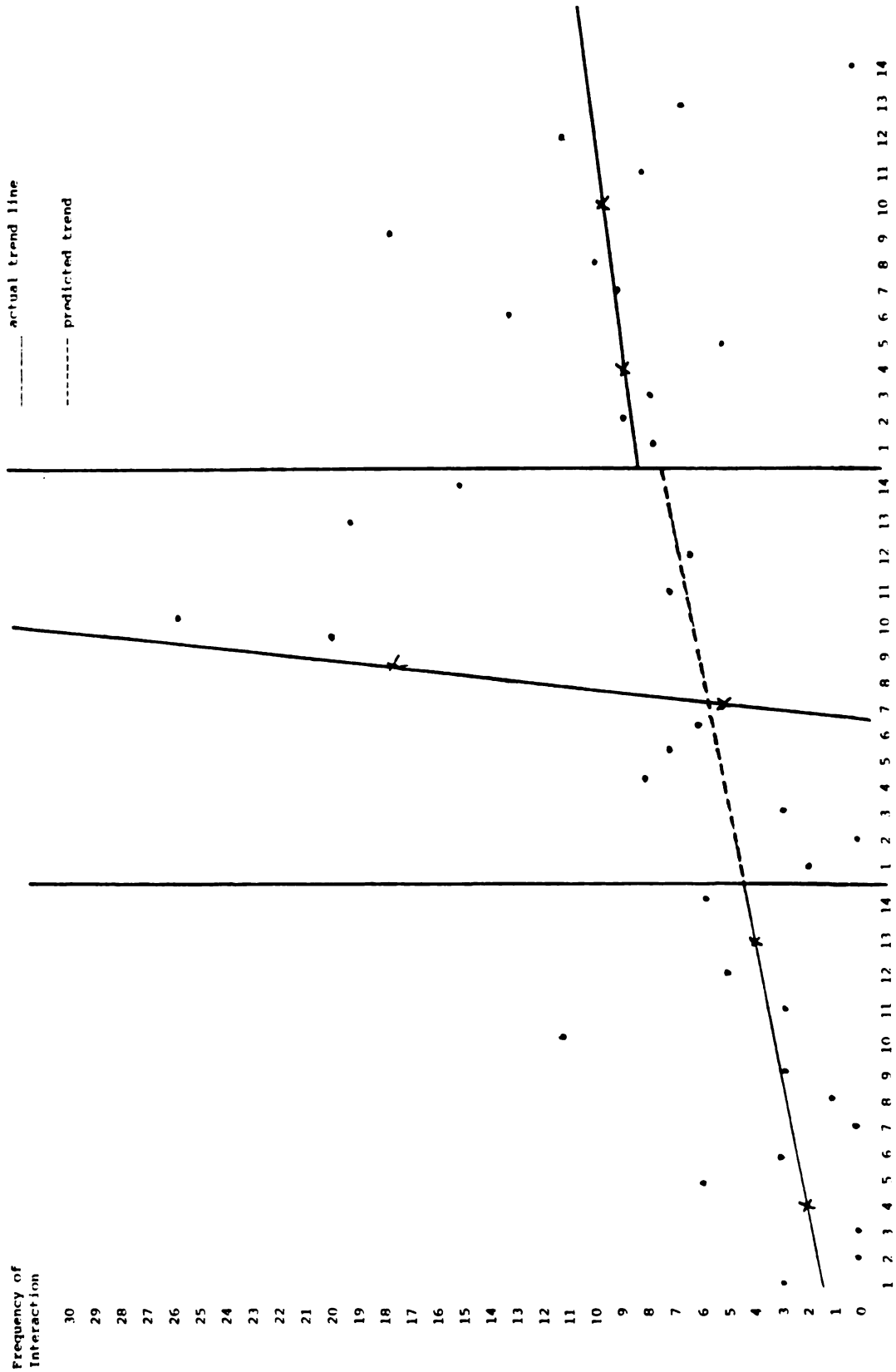


Figure 14. V_2 Median Slopes: Peer-Initiated Subject-Peer Interaction Over Setting and Time.

Table 7.--Results of Kruskal-Wallis One-Way Analysis of Variance by Ranks: Adult-Initiated Subject-Adult Interaction.

V ₃ AS						
Situation	1	2	3	4	5	6
Number (Data Points)	14	14	14	14	14	14
Mean Rank	21.0	64.2	32.6	49.5	41.0	46.6

Cases	Chi-square significance		Chi-square significance corrected for ties	
84	25.8330	.0001	25.9674	.0001

H3₂: Initiation of interaction with the subject by adults in the typical setting will be significantly lower in Phase III as compared to Phase I.

H3₃: Initiation of interaction with the subject by adults will be significantly lower in Phase II as compared to Phase I in the typical setting. This will be indicated by a decelerating slope or step-wise decrease in the median slope.

H3₄: Initiation of interaction with the subject by adults in the typical setting will be significantly higher in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope.

H3₁ was supported by post-hoc comparison of Phase I interaction within the two settings. Adults in the typical setting initiated interaction with the subject significantly more often than did adults in the hearing-impaired setting. H3₂, however, was rejected. There did not prove to be an overall decrease in adult-initiated interaction with the

subject in the typical setting between phases I and III. Results of the post-hoc procedures may be seen in Table 8.

Table 8.--Results of Marascuilo and McSweeney Post Hoc Paired Comparisons Analysis: Adult-Initiated Subject-Adult Interaction.

Sub-hypothesis	Point Difference ($\hat{\psi}$)	Lower Limit ($\hat{\psi}$ -range)	Upper Limit ($\hat{\psi}$ +range)	Decision
H3 ₁	43.2	12.5	73.9	Retain
H3 ₂	17.6	-13.1	48.3	Reject

As shown in Figure 15 by the deceleration in the median slope in Phase II, adult-initiated interaction with the subject in the typical setting decreased significantly from Phase II. The binomial test (sig. at .0027) supported retaining the alternative (H3₃).

Subsequent increase in adult-initiated interaction between Phase II and Phase III in the typical setting was indicated by a reversal in the direction of the slope. The binomial test indicated the significance of the probability to be .00003. Therefore, H3₄ was also retained.

Subject-Initiated Subject-Adult Interaction
in the Typical and Hearing-Impaired
Settings over the Three Phases

H4: There is no difference in the subject-initiated subject-adult interaction in the two settings over the three phases of the study.

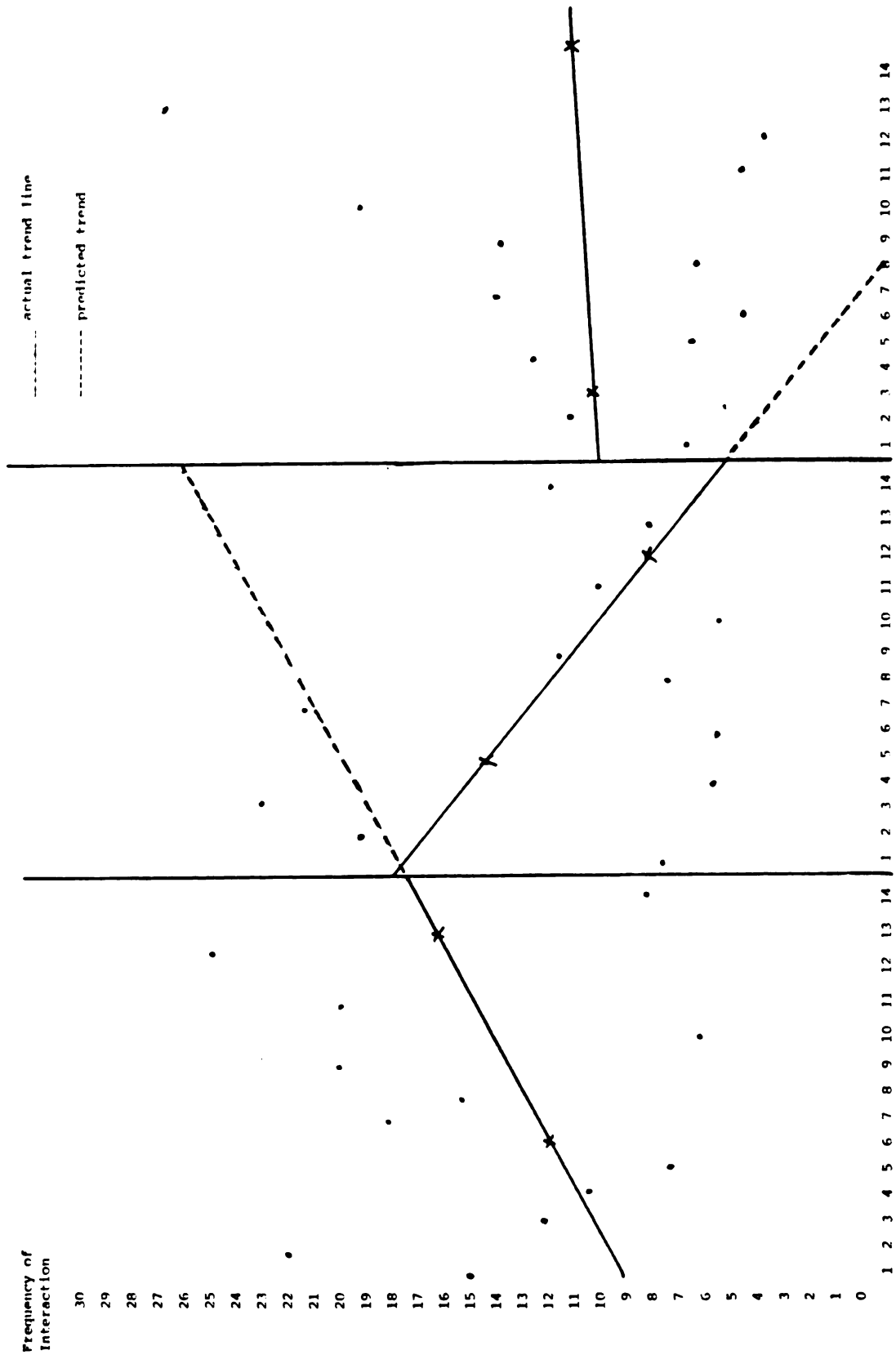


Figure 15. V_3 Median Slopes: Multi-Initiated Subject-Peer Interaction Over Setting and Time.

Again, as indicated in Table 9, the One-Way Anova supported rejection of the null hypothesis. Specific differences between settings and phases related to subject-initiated interaction with adults were investigated under the following alternative hypotheses:

- H4₁: Initiation of interaction with adults by the subject in Phase I will be significantly higher in the typical setting as compared to the hearing-impaired setting.
- H4₂: Initiation of interaction with adults by the subject in the typical setting will be significantly lower in Phase III as compared to Phase I.
- H4₃: Initiation of interaction with adults by the subject will be significantly lower in Phase II as compared to Phase I in the typical setting. This will be indicated by a decelerating slope or step-wise decrease in the median slope.
- H4₄: Initiation of interaction with adults by the subject in the typical setting will be significantly higher in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope.

Table 9.--Results of Kruskal-Wallis One-Way Analysis of Variance by Ranks: Subject-Initiated Subject-Adult Interaction.

V ₄ SA Situation	1	2	3	4	5	6
Number (Data Points)	14	14	14	14	14	14
Mean Rank	27.6	53.1	40.9	30.2	62.7	40.5

Cases	Chi-square significance		Chi-square significance corrected for ties	
84	25.8330	.0001	25.9674	.0001

Post hoc analysis of the subject's initiation of interaction with adults indicated that it was not significantly higher in the typical setting, rejecting $H4_1$. That it did not decrease significantly in the typical setting between Phases I and III is illustrated in Table 10. Consequently, $H4_2$ was also rejected.

Table 10.--Results of Marascuilo and McSweeney Post Hoc Paired Comparisons Analysis: Subject-Initiated Subject-Adult Interaction.

Sub-hypothesis	Point Difference ($\hat{\psi}$)	Lower Limit ($\hat{\psi}$ -range)	Upper Limit ($\hat{\psi}$ +range)	Decision
$H4_1$	25.5	-5.2	56.2	Reject
$H4_2$	12.6	-18.1	43.3	Reject

Though it was expected that subject-initiated interaction with adults would decrease or continue to decrease between Phase I and Phase II in the typical setting, interaction increased as can be seen in Figure 16. Therefore, $H4_3$ was rejected. Similarly, initiation of interaction with adults was expected to increase between Phases II and III in the typical setting. It did, in fact, decrease, also causing rejection of $H4_4$.

Total Conflict in the Typical and
Hearing-Impaired Settings over
the Three Phases

H5: There will be no difference in total conflict in the two settings over the three phases.

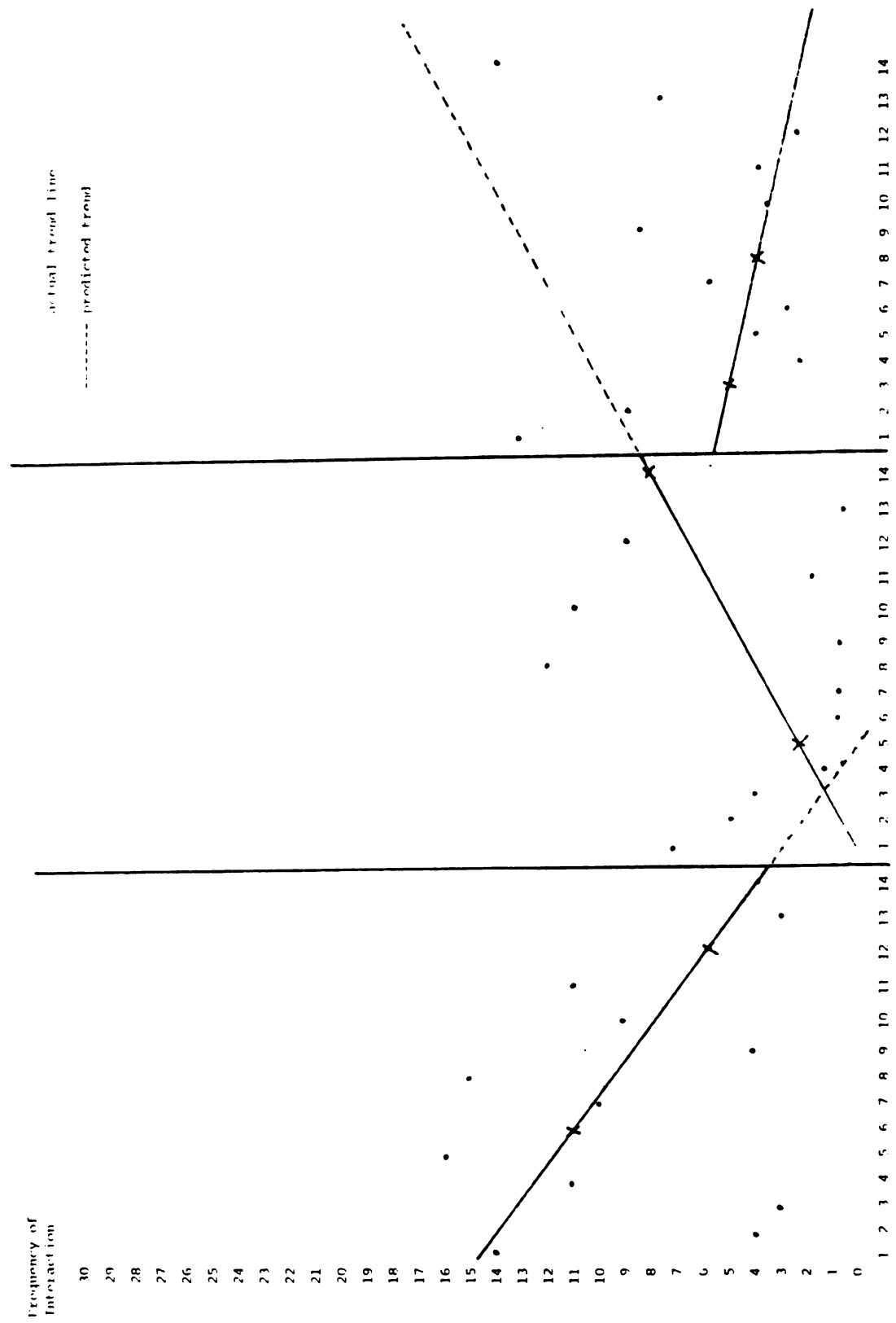


Figure 16. V_4 Median Slopes: Subject-Initiated Subject-Adult Interaction Over Setting and Time.

The Kruskal-Wallis One-Way Anova (see Table 11) did not indicate significant differences in conflict in the two settings over the three phases. Therefore, the null hypothesis was retained, causing rejection of the following alternative hypotheses:

- H5₁: There will be significantly more conflict in the typical setting as compared with the hearing-impaired setting in Phase I.
- H5₂: There will be no difference in the amount of conflict in the typical setting as compared to the hearing-impaired setting in Phase II.
- H5₃: The amount of conflict in the typical setting will be significantly higher than that in the hearing-impaired setting in Phase III.
- H5₄: There will be significantly less conflict in the typical setting in Phase II as compared to Phase I. This will be indicated by a decelerating slope or step-wise decrease in the median slope.

Figure 17 displays the calculated slopes within the typical settings between phases.

Table 11.--Results of Kruskal-Wallis One-Way Analysis of Variance by Ranks: Total Conflict.

V ₅ TC						
Situation	1	2	3	4	5	6
Number (Data Points)	14	14	14	14	14	14
Mean Rank	48.6	41.2	46.5	26.6	45.4	46.7

Cases	Chi-square significance		Chi-square significance corrected for ties	
84	7.8127	.1669	7.9751	.1576

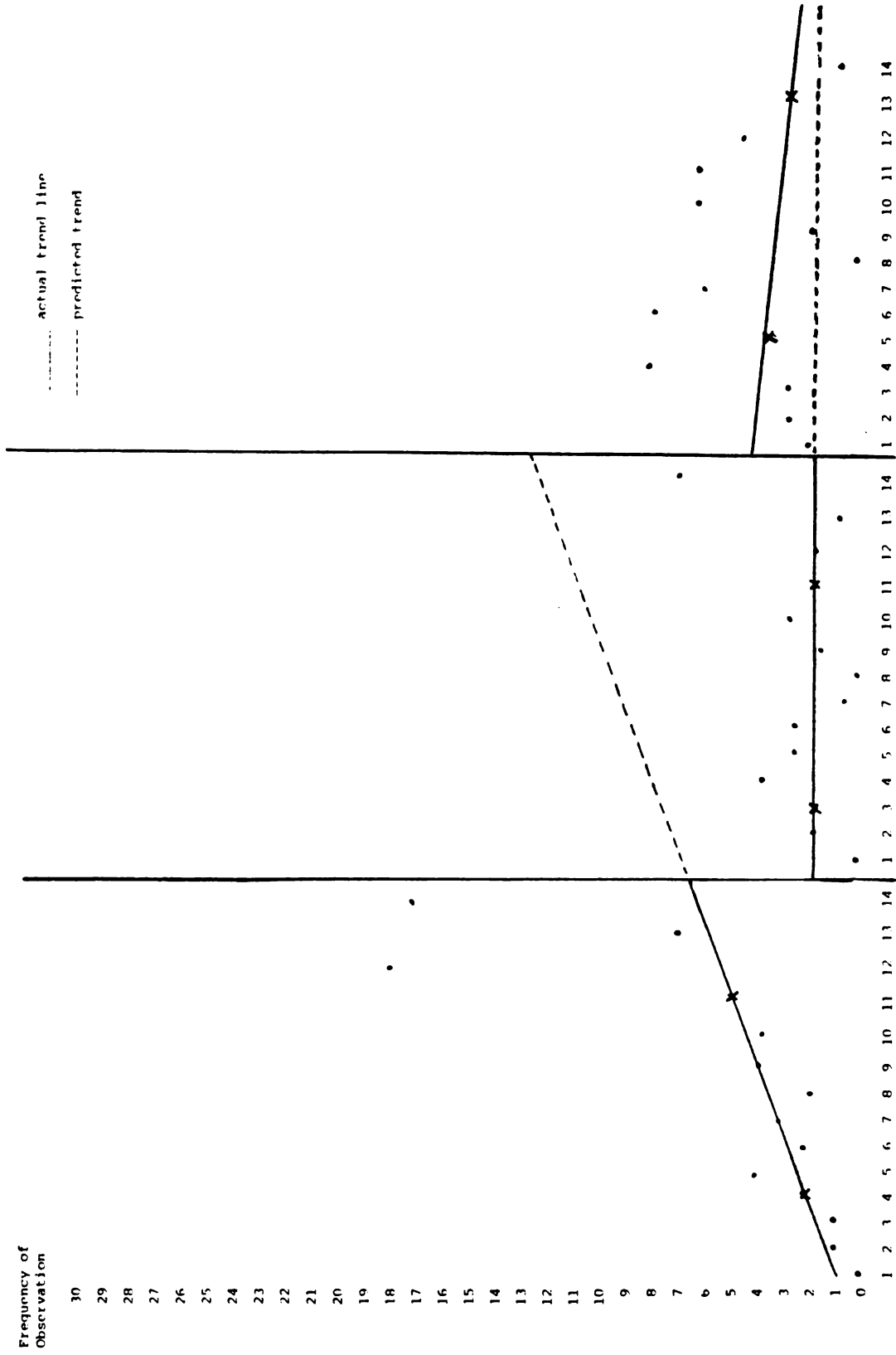


Figure 17. V_5 Median Slopes: Total Conflict Over Setting and Time.

Child-Resolved Conflict in the Typical and
Hearing-Impaired Settings Over
the Three Phases

H6: There will be no difference in the amount of conflict resolved by children in the two settings over the three phases.

Significant differences in the amount of child-resolved conflict in the two settings over the three phases were detected by the Kruskal-Wallis One-Way Anova (Table 12). To locate those differences, the following hypotheses were also analyzed:

- H6₁: There will be a significantly higher amount of conflict resolved by children in the hearing-impaired setting as compared to the typical setting in Phase I.
- H6₂: There will be significantly more conflicts resolved by children in the typical setting in Phase III as compared to Phase I.
- H6₃: There will be significantly more conflicts resolved by children in the typical setting in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope.
- H6₄: There will be significantly less conflicts resolved by children in the typical setting in Phase III as compared to Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope.

A comparison of the two settings in Phase I revealed no significant differences in child-resolved conflict. Therefore, H6₁ was rejected. Post hoc examination of this variable in the typical setting between Phases I and III also revealed no significant differences. Thus, H6₂ was also rejected. Results are shown in Table 13.

Table 12.--Results of Kruskal-Wallis One-Way Analysis of Variance by Ranks: Child-Resolved Conflict.

V_6^{CRC}						
Situation	1	2	3	4	5	6
Number (Data Points)	14	14	14	14	14	14
Mean Rank	51.9	32.5	53.1	23.3	54.9	39.3
Cases	Chi-square significance		Chi-square significance			
84	19.6330	.0015	corrected for ties		20.7600	.0009

Table 13.--Results of Marascuilo and McSweeney Post Hoc Paired Comparisons Analysis: Child-Resolved Conflict.

Sub-hypothesis	Point Difference ($\hat{\psi}$)	Lower Limit ($\hat{\psi}$ -range)	Upper Limit ($\hat{\psi}$ +range)	Decision
$H6_1$	19.4	-11.3	50.1	Reject
$H6_2$	6.8	-23.9	37.5	Reject

The expectation that more conflict would be resolved by children in the typical setting ($H6_3$) in Phase II was not met. Rather, the slope decelerated, indicating no significance. $H6_3$ was rejected.

$H6_4$, a comparison of the conflict resolved by children in the typical setting between Phases I and III was also rejected. There was not a significant decrease in the amount of child-resolved conflict between the two settings. Changes in median slopes for the variable are illustrated in Figure 18.

Adult-Resolved Conflict in the Typical
and Hearing-Impaired Settings Over the
Three Phases

H7: There will be no difference in the amount of conflict resolved by adults in the two settings over the three phases.

The null hypothesis was retained. Kruskal-Wallis Analysis of differences in the amount of adult-resolved conflict in the two settings over the three periods indicated they were not significant (see Table 14). Therefore, the following alternative hypotheses were rejected as having no significant differences:

- $H7_1$: There will be a significantly higher amount of conflict resolved by adults in the typical setting as compared to the hearing-impaired setting in Phase I.
- $H7_2$: There will be significantly fewer conflicts resolved by adults in the typical setting in Phase III as compared to Phase I.
- $H7_3$: There will be significantly fewer conflicts resolved by adults in the typical setting in

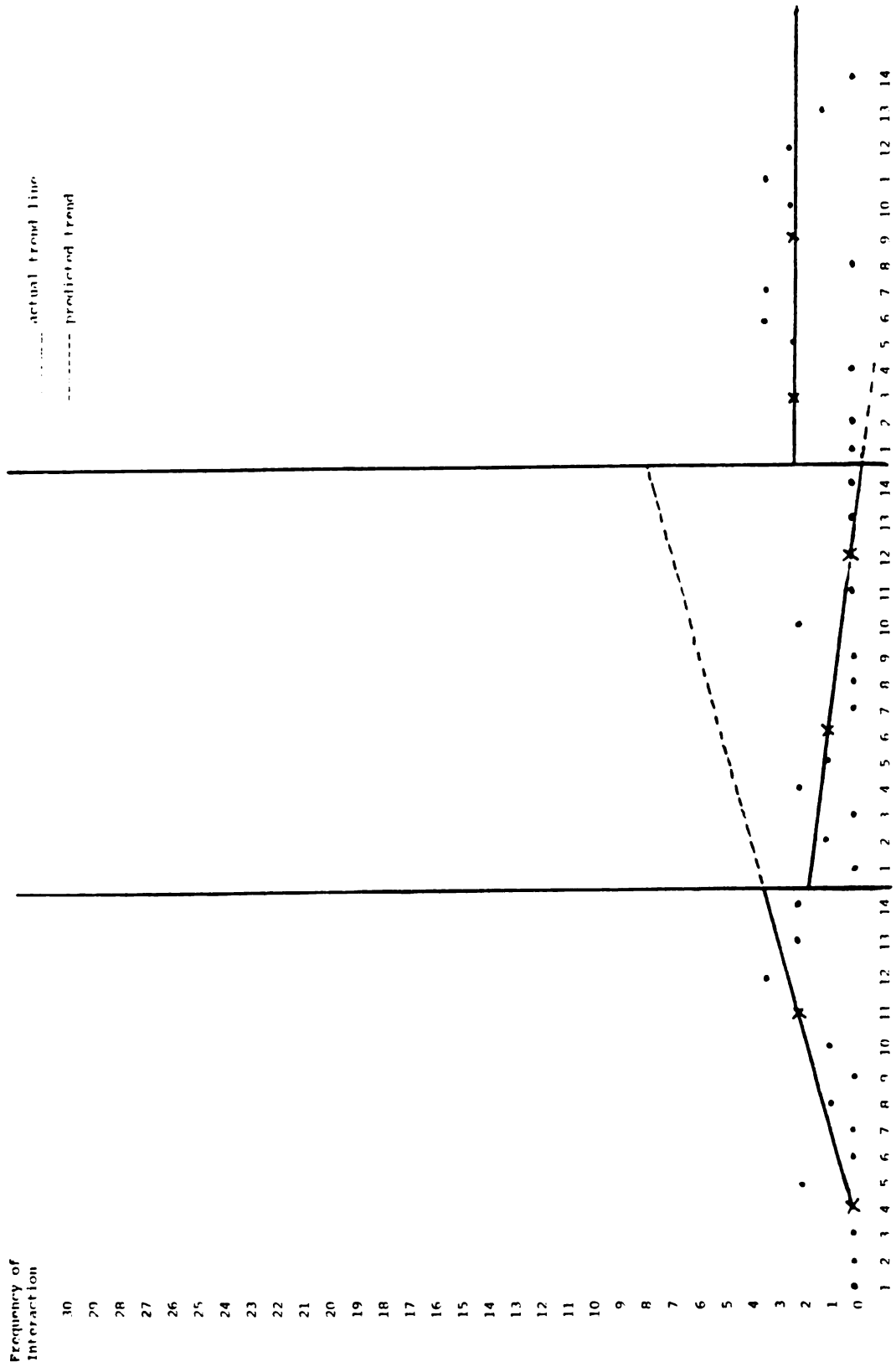


Figure 18. V_6 Median Slopes: Child-Resolved Conflict Over Settings and Time.

Table 14.--Results of Kruskal-Wallis One-Way Analysis of Variance by Ranks: Adult-Resolved Conflict.

V ₇ ARC						
Situation	1	2	3	4	5	6
Number (Data Points)	14	14	14	14	14	14
Mean Rank	45.2	58.1	38.9	33.4	34.8	44.6

Cases	Chi-square significance		Chi-square significance corrected for ties	
84	9.6256	.0866	10.5030	.0622

Phase II as compared to Phase I. This will be indicated by a decelerating slope or step-wise decrease in the median slope.

H₇₄: There will be significantly more conflicts resolved by adults in the typical setting in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope.

Median slopes for the typical setting are illustrated in Figure 19.

Summary of Hypotheses Tested and Decision Rules

In this section, the hypotheses tested are restated and decision rules are given.

<u>Hypothesis Tested</u>	<u>Decision Rule</u>
H ₁ : There is no difference in subject-initiated peer interaction in the two settings over the three phases of the study	Null rejected*

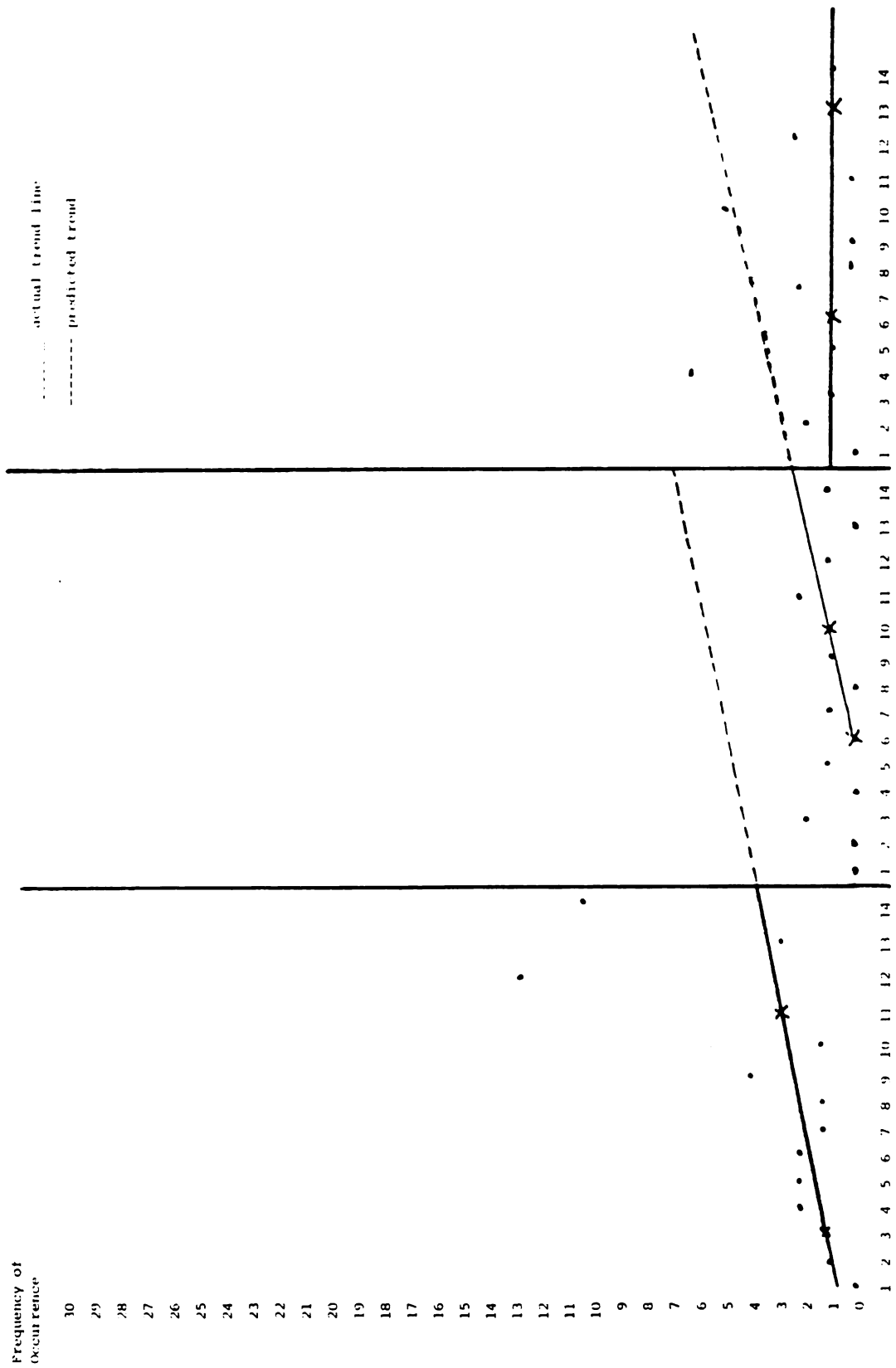


Figure 19. V_7 Median Slopes: Adult-Resolved Conflict over Settings and Time.

- H1₁: Peer interaction initiated by the subject will be significantly greater in the hearing-impaired setting than in the typical setting in Phase I. Alternative Retained*
- H1₂: Peer interaction initiated by the subject in the typical setting will be significantly higher in Phase III as compared to Phase I. Alternative Rejected
- H1₃: Peer interaction initiated by the subject in the typical setting will be significantly higher in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope. Alternative Retained*
- H1₄: Peer interaction initiated by the subject in the typical setting will be significantly lower in Phase III than in Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope. Alternative Retained*
- H2: There is no difference in the peer-initiated subject-peer interaction in the two settings over the three phases of the study. Null Rejected*
- H2₁: Peer interaction initiated by the subject's peers will be significantly greater in the hearing-impaired setting than in the typical setting in Phase I. Alternative Retained*
- H2₂: Peer interaction initiated by the subject's peers in the typical setting will be significantly higher in Phase III as compared to Phase I. Alternative Rejected

- H2₃: Peer interaction initiated by the subject's peers in the typical setting will be significantly higher in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope. Alternative Retained*
- H2₄: Peer interaction initiated by the subject's peers in the typical setting will be significantly lower in Phase III than in Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope. Alternative Retained*
- H3: There is no difference in adult-initiated subject-adult interaction in the two settings over the three phases of the study. Null Rejected*
- H3₁: Initiation of interaction with the subject by adults in Phase I will be significantly higher in the typical setting as compared to the hearing-impaired setting. Alternative Retained*
- H3₂: Initiation of interaction with the subject by adults in the typical setting will be significantly lower in Phase III as compared to Phase I. Alternative Rejected
- H3₃: Initiation of interaction with the subject by adults will be significantly lower in Phase II as compared to Phase I in the typical setting. This will be indicated by a decelerating slope or step-wise decrease in the median slope. Alternative Retained*
- H3₄: Initiation of interaction with the subject by adults in the typical setting will be significantly higher in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope. Alternative Retained*

- H4: There is no difference in the subject-initiated subject-adult interaction in the two settings over the three phases of the study. Null Rejected*
- H4₁: Initiation of interaction with adults by the subject in Phase I will be significantly higher in the typical setting as compared to the hearing-impaired setting. Alternative Rejected
- H4₂: Initiation of interaction with adults by the subject in the typical setting will be significantly lower in Phase III as compared to Phase I. Alternative Rejected
- H4₃: Initiation of interaction with adults by the subject will be significantly lower in Phase II as compared to Phase I in the typical setting. This will be indicated by a decelerating slope or step-wise decrease in the median slope. Alternative Rejected
- H4₄: Initiation of interaction with adults by the subject in the typical setting will be significantly higher in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope. Alternative Rejected
- H5: There will be no difference in total conflict in the two settings over the three phases. Null Retained
- H5₁: There will be significantly more conflict in the typical setting as compared with the hearing-impaired setting in Phase I. Alternative Rejected
- H5₂: There will be no difference in the amount of conflict in the typical setting as compared to the hearing-impaired setting in Phase II. Alternative Rejected

- H5₃: The amount of conflict in the typical setting will be significantly higher than that in the hearing-impaired setting in Phase III. Alternative Rejected
- H5₄: There will be significantly less conflict in the typical setting in Phase II as compared to Phase I. This will be indicated by a decelerating slope or step-wise decrease in the median slope. Alternative Rejected
- H6: There will be no difference in the amount of conflict resolved by children in the two settings over the three phases. Null Rejected
- H6₁: There will be a significantly higher amount of conflict resolved by children in the hearing-impaired setting as compared to the typical setting in Phase I. Alternative Rejected
- H6₂: There will be significantly more conflicts resolved by children in the typical setting in Phase III as compared to Phase I. Alternative Rejected
- H6₃: There will be significantly more conflicts resolved by children in the typical setting in Phase II as compared to Phase I. This will be indicated by an accelerating slope or step-wise increase in the median slope. Alternative Rejected
- H6₄: There will be significantly less conflicts resolved by children in the typical setting in Phase III as compared to Phase II. This will be indicated by a decelerating slope or step-wise decrease in the median slope. Alternative Rejected
- H7: There will be no difference in the amount of conflict resolved by adults in the two settings over the three phases. Null Retained

- H7₁: There will be a significantly higher amount of conflict resolved by adults in the typical setting as compared to the hearing-impaired setting in Phase I. Alternative Rejected
- H7₂: There will be significantly fewer conflicts resolved by adults in the typical setting in Phase III as compared to Phase I. Alternative Rejected
- H7₃: There will be significantly fewer conflicts resolved by adults in the typical setting in Phase II as compared to Phase I. This will be indicated by a decelerating slope or step-wise decrease in the median slope. Alternative Rejected
- H7₄: There will be significantly more conflicts resolved by adults in the typical setting in Phase III as compared to Phase II. This will be indicated by an accelerating slope or step-wise increase in the median slope. Alternative Rejected

* Significant at .05

CHAPTER VI

SUMMARY, DISCUSSION, LIMITATIONS, AND IMPLICATIONS

Summary and Discussion of the Findings

The purpose of this study was to identify characteristics in both the typical and hearing-impaired pre-primary settings that promote or hinder positive peer interaction, to look specifically at the roles played by adults and children in that interaction, and to determine whether implementation of staff inservice between settings was effective in increasing positive interaction. The data for the study were collected in two settings over three time periods on one subject, a four-year-old hearing-impaired male.

Data were obtained by systematic observation, using an event-sampling technique to measure frequency of initiated interaction and conflict. Seven major hypotheses related to subject-peer interaction, subject-adult interaction, and conflict were analyzed using the Kruskal-Wallis One-Way Analysis of Variance by Ranks. Differences were found between settings and phases in subject-peer and subject-adult interaction. While differences in total conflict and adult-resolved conflict were not significant,

overall differences in child-resolved conflict between settings and phases were indicated. More specific differences related to the variables were identified between settings and phases when compared using post hoc procedures and White's Median Statistical Procedure.

Subject-Peer Interaction

In looking at subject-initiated peer interaction in Phase I, frequency of interaction was significantly greater in the hearing-impaired setting. Though it was hypothesized that the subject's interaction with his peers in the typical setting would naturally be greater in Phase III than in Phase I, it did not prove to be so. His initiation of interaction with peers in that setting, however, did increase significantly between Phases I and II. This change followed intervention that consisted of interagency observation by staff, discussion of the investigator's findings in Phase I, and formulation of specific strategies for improving subject-peer interaction in the typical setting. A time lapse of two months between Phases II and III occurred, during which there was no further intervention planned by the investigator. Rather, a "normal course of events" was allowed, or a return to baseline conditions. It was felt by the investigator that failure to maintain active communication between agencies would result in decline of subject-peer interaction. Analysis between phases II and III in the typical setting proved this to be true.

Peer-initiated subject-peer interaction followed a similar pattern. The subject's peers interacted with him significantly more often in the hearing-impaired setting in Phase I. Following the inservice period, there was a significant increase in peer-initiated interaction in the typical setting between Phases I and II. This increase was not maintained between Phases II and III. Moreover, peer-initiated interaction did not increase significantly in the typical setting over the entire four-month period of the study, as indicated by analysis between Phases I and III. Findings reinforce Guralnick's (1978) position that it may be necessary to systematically design interactions that involve peer reinforcement.

Subject-Adult Interaction

Adults initiated interaction with the subject in Phase I significantly more often in the typical setting. It was hypothesized that this frequency would decrease by the end of the study. Though there was a decrease, it was not significant. Adult-initiated interaction was identified in the inservice session as a target behavior for reduction in order to heighten subject-peer interaction. This awareness on the part of adults in the typical setting resulted in significantly decreased interaction with the subject in Phase II. In the period that lapsed between Phases II and III, this trend was reversed, and the rate of subject-adult interaction increased significantly.

Analysis of subject-initiated interaction with adults disclosed that it was far more frequent in the typical setting in Phase I than in the hearing-impaired setting. It was thought that purposely decreasing adult-initiated subject-adult interaction would subsequently result in decreased subject-initiated interaction with adults. This was not substantiated by analysis. It did, in fact, increase. Subject-initiated interaction with adults decreased in the typical setting between Phases II and III, though it was hypothesized that it would increase. It could be seen, however, that there was a direct relationship between decreased subject-adult interaction and an increase in subject-peer interaction. This would support research by Brauchlin (1970) and Stensaasen (1964) that too much adult interference and organization can hamper play activity. The results of this study indicated that manipulating a decrease in adult-subject interaction can result in increased peer activity.

Conflict

Because significant conflict both within and between settings had been noted in the pilot study, it was hypothesized that differences would also be found between settings and phases in the study. Analysis did not bear this out. There were no significant differences. Thus, the null was retained and alternative hypotheses rejected. Though overall differences in the amount of conflict

resolved by children proved to be significant, the tests used to examine the alternatives did not prove to be sensitive enough to identify those differences. Median slopes (see Figure 18) for V_6 indicated a decelerating slope between Phases I and II in the typical setting. All four alternative hypotheses were, however, subsequently rejected as having no significance.

Summary of Findings

The following were outcomes of the study:

1. Subject-peer interaction was not as frequent between the subject and his peers in the typical or mainstreamed setting as between the child and his peers in the hearing-impaired setting.
2. Subject-peer interaction in the typical setting was increased by purposely manipulating a decrease in adult-initiated interaction with the subject.
3. Failure to maintain active communication between agencies and awareness of mainstreaming goals resulted in reversal of progress in the typical setting. Subject-peer interaction declined as subject-adult interaction increased between the settings over time.
4. There did not appear to be significant differences in conflict between the settings over time, with the exception of child-resolved conflict.

Descriptive Conclusions

Use of the intensive design yielded qualitative as well as quantitative differences within and between the two settings over time. Viewing the child in his family setting as well as in the educational settings added additional clarity to the overall picture of this mainstreaming effort.

The approach to free play was quite different in the two settings. Children in the hearing-impaired setting were literally "set free" between structured concept lessons to initiate their own play. They chose materials from a large cardboard box and were free to use them in any way they chose as long as safety rules were being observed. The children were also able to use the materials in any part of the room and often included classroom furniture in their play. Hiding under tables or behind dividers for various kinds of dramatic play was a favorite and frequent activity. Play was usually sustained for long periods, and adults did not usually participate unless approached by the children. Children very often practiced "playing school," or being mother or baby, fireman, monsters, and doctors. A great deal of their play allowed exaggerated and expressive facial and body movement. Though there were wide variations in hearing loss ranging from profound to moderate, the children had no trouble communicating with one another. The most verbal children were more dominant

in play, however, assuming leader roles rather than subordinate play roles. Since play materials were somewhat sparse, children often shared with one another. The jumbled condition of the toybox required hunting for specific play things and the children often assisted one another in this task. Too, because play materials were limited, they were required to invent materials they needed in their play. A tray placed over another child's lap became a "high chair." An old purse served as a doctor's kit. Paper tissues were used in diverse ways, the children pretending they were bandages, wash cloths, napkins, and a variety of other created uses.

Confrontations between children were watched carefully by adults but children were encouraged to settle their own difficulties. This appeared to result in less resentment on the part of the "loser" than when adults stepped in to arbitrate. Several examples in both the hearing-impaired and typical setting illustrated this point:

3-13-78. Hearing-Impaired Setting Notes:

"The teacher ignores a great deal of conflict between children, waiting to see if they will resolve the difficulty themselves. Today, John was purposely banging into S. and Amy as they rode ahead of him on another truck. The passageway was narrow. S. and Amy looked at the teacher but didn't say anything. She seemed to ignore

the situation but was covertly watching the children. They allowed John to pass them. When he went by, he smiled and waved to them. They waved back. Because the teacher does not often interfere, the children demonstrate that they can compromise and alternate "being in power." They rely on themselves to solve conflicts and there appears to be little resentment resulting. They are quick to forget small hurts (and injustices), are quite willing to share with one another in this setting (and are often reinforced for doing so), and quite supportive and protective of one another. Even though they lose a current 'battle,' they do not lose 'face' when allowed to work out their own difficulty."

5-16-78. Typical setting notes: "S. and Cam are in the corner where the S. is working with flannelboard pieces. Cam is watching. The student teacher (S.T.) is inhibiting conversation between the children in that she is monopolizing it herself, instructing S. where he might put the pieces and asking him what they represent. She is holding Cam on her lap. S. picks up a nearby book and pretends he is reading a story to them as he moves the flannel pieces about. Cam moves to work with the flannel pieces but the S.T. tells him to finish

'listening' to S.'s story. Cam is visibly disgusted and makes several gestures to get S. to end his 'story-telling.' The S.T. also asks S. to hurry but, when he continues, she stops Cam from playing with the flannel pieces. The tone of the setting grows hostile and Cam, after watching and showing his disgust, begins to grab at the flannel pieces. S. counters by grabbing them back and hiding them behind his back. . . ."

5-22-78. Hearing-Impaired Setting Notes:

"The teacher usually allows children to form their own rules pretty much. Today, however, she makes Cathy give S. a small fireman--makes her exchange and share. The children usually do a pretty good job of this without being forced. Afterwards, Cathy was pouty and not very cooperative with S. for a while. She finally worked out of it, but he was concerned and hurt when she brushed his hand away when he tried to initiate play. She exaggerated a pouting, disgusted look on her face and indicated that she did not want to play with him. He continued to play by himself but was obviously worried about the situation, glancing at her again and again to see if she was still angry."

The children were very nurturant with one another in the hearing-impaired setting and seemed reluctant to hurt one another's feelings. Though the setting reflected a behavioral orientation with a large part of the class time devoted to language development, children experienced about as much "free play" time as did children in the typical setting.

Children in the typical setting interacted more with adults and materials during free play than with one another. This appeared to be due to the program model and the numbers of stimulating materials and activities available to the children. Also, adults were present in every interest center available to the children and frequently initiated conversation with them about the materials available. Children, including the subject, moved freely from one area to another but usually did not stay long at any one activity. Though there were opportunities for "creative" play, they were primarily adult-initiated. Materials were changed frequently so that children could explore a wide variety. The children were expected to use these materials in certain interest areas, each of which was overseen by an adult.

Dewey (1915) reminded educators, "The greatest of all pedagogical fallacies is the notion that a person learns only the particular thing he is studying at the time." Though the head teacher was very sensitive to the spontaneous needs of the children, student teachers and mothers in the

typical setting were more inclined to "follow the rules" when children became innovative with materials. For example, in the spring of the study, children in the typical setting were filling funnels at an outdoor water table. The table had been placed near a large covered drain. The subject took a pitcher of water and began pouring it slowly down the drain, watching it disappear and listening intently to the gurgling sound it made. Another child copied him and soon the two were busy refilling their pitchers and pouring water slowly down the drain. They were asked by the student teacher to work with the water in the table only. They soon lost interest and left to play in another area. Carini (1977) sees this sort of behavior on the educator's part as a failure to recognize the inherent value of a child's motivation. She wrote:

Equipped as we now are by virtue of age with a capacity to link means to ends, and because we have an overview of events, to anticipate and plan, we are always seeing in the child's activity things that are not there and failing to see what, in fact, is compelling to the child. Thus, with the upsurge of interest in Piaget's work, wherever there is a water table with a child filling containers, adults are seeing the "conservation of capacity"--and, therefore, of course they are missing the child and his or her intrinsic interest in water as a clear, pure, living element (p. 118).

Though statistical analysis of subject-peer interaction in the typical setting did not disclose significant differences between Phases I and III, observation indicated a difference in the qualitative nature of the interaction. As can be seen in the sample of notes from Phase I in the typical setting (Appendix D), subject-peer interaction was

not only quantitatively less frequent, but also rather negative in tone. By the end of the study, though interaction had not increase quantitatively, the children's interactions were qualitatively more positive. Too, the subject was demonstrating leadership, with quieter members of the class following him. He was also able to assert himself with his more aggressive classmates. For example, early in the study, the subject would allow larger children to force him out of line in the typical setting, something he would not stand for in the hearing-impaired setting. Also, he did not challenge other children in the typical setting when they took materials from him without asking. Often, it was necessary for the teacher to step in. This sort of "protection" was not necessary in the hearing-impaired setting where the subject was quite assertive. Toward the end of the study, the subject was more apt to protect his own rights, and his confidence as a functioning, contributing member of the group was gaining strength. These findings would challenge Goldstein's (1965) empirically-based conclusions that handicapped children are less assertive in the regular classroom. More research is indicated that looks closely at children over periods of time.

The intensive design was extremely useful for picking up other qualitative pieces of information about the dynamic successes and failures of the subject's mainstreaming. Had a methodological approach other than intense

observation been utilized, the following critical, turn-around factor in the subject's interaction with his peers would have been lost:

On March 2, 1978, the subject spotted a purple cape hanging in the dramatic play area. He put it on and began pretending he was a vampire, moving about the room flapping his wings and "scaring" other children. He drew the attention of several other children who decided they, too, wanted capes to be vampires. "Vampire" play grew in popularity for several days afterwards. The H.T. allowed the children to wear the capes about the room instead of confining their play to the dramatic play corner. Following are notes related to this incident:

3-7-78. "Cam takes S. up to S.T., telling her, 'I have a whole team of vampires. He's (S.) on my team.' Cam then 'attacks' a mother standing nearby. S. copies him. Cam spreads his 'wings' over S., catching him and saying, 'Gotcha, little vampire.' He takes him to a locker and puts him inside roughly. S. tries to 'break out.' Cam indicates the other children to S. and says, 'Let's suck their blood.' They are joined by David. Cam catches S. again saying to David, 'I caught the little bat; I caught the little vampire.' He then lets S. go, saying to S. and David, 'C'mon, team. We're a whole team.' The subject is definitely a member of the team."

3-8-78. "S. has his 'bat cape' on again. It is precious to him and he searches for it as soon as he enters the room. It has been his key to getting into the group. When he attempts to climb on some larger equipment with it, the S.T. asked him to remove it because of safety. He declined to play on the equipment rather than give up the cape. The S.T. is not aware of its importance. If S. takes the cape back to the dramatic play corner while he climbs, someone may take it and he will have lost his key."

The intensive design also served as a useful tool in detecting the role strain forced on the subject because of mainstreaming. His tendency to fall asleep while being transported from agency to agency may illustrate how tiring it was for a four-year-old child to spend six or more hours of his day in two structured educational settings. Moreover, it was observed that he was frequently expected to make up missed work in the hearing-impaired setting, which interfered with or interrupted his play time. The problem was compounded when he moved each day from the second preprimary setting to a baby-sitter's home and then to his own home later in the evening. In addition, he was participating once a week in the speech and audiology program, which called on him once more to observe the expectations of another setting and personnel. Observed separately, the demands of

individual settings did not appear to be excessive. Viewed overall, however, they may have been.

The intensive and holistic approach used in this study also provided a clearer picture of the strengths and weaknesses operating within each preprimary setting, and at the interface between them. It allowed greater understanding of the energy expenditures, communication flows, and feedback operating within this particular family and between the family and other social systems in an attempt to deal with the handicapping condition of the subject. The need to strengthen that interface was evident in the varied perceptions of the child's strengths and weaknesses held by his family and individual agencies involved. From these varied perceptions grew equally different views of the promise each felt might be inherent in the mainstreaming venture.

The following factors greatly aided the investigator's understanding of the overall ecology of this child, or the degree of interrelatedness between the systems with whom he interacted in his dynamic development before and during the time of the study:

1. Communication with, interview, and observation of the child's family.
2. Intense observation in the two preprimary settings over time.
3. Numerous conversations with speech and audiology personnel involved.

4. Review of all written communication since the subject's birth between medical personnel and involved agencies (including the family and speech and audiology personnel).

This study indicates that educational planners must be concerned about the overall ecology of the young child when planning for mainstreaming success. When they fail to do so, they chance missing the factors that could insure or deny that success. With impaired children, it is easy to suppose that mainstreaming failures (and, thus, children's failures) are due to their handicapping conditions when, in fact, there is failure to adequately perceive the child's total scheme. Moreover, as observed in this study, there must be synthesis between mainstreaming goals and educational objectives in typical settings if mainstreaming is to be effective. Early childhood educators must begin to change their preprimary programs to better respond to individual needs, rather than changing special children to fit into ongoing programs.

Implications for further Research

Further study is indicated to answer the following questions generated by this study:

1. Are children more resourceful and creative in their play when:
 - a. Materials are limited?
 - b. Restrictions on the use of materials and play environment are few?
 - c. When adult interaction is minimal?
 - d. Play is child-initiated rather than structured a-priori by adults?

2. Is the play of hearing-impaired preprimary children qualitatively different than that of typical children?
 - a. Are roles taken more geared to crisis play?
 - b. Is the play of the hearing-impaired child different in content than the play of typical children?
 - c. Are hearing-impaired children more nurturant in their play with one another than with other children?
 - d. Are less-impaired children more apt to take leadership roles than their more severely-impaired peers?
 - e. Are "hierarchies of command" apparent in the play of both hearing-impaired and typical children?
 - f. Is there any correlation between the level of fantasy play and the development of a child's communication skills?
 - g. Is aggressive play a primary component in the sequence toward more mature social play in young children?
3. What kind of training do special education preprimary teachers have in normal childhood development? What kind of training and knowledge do teachers in typical preprimary classrooms have about handicapped children?
 - a. Are expectations of preprimary children in typical and non-typical settings developmentally appropriate?
 - b. Is there appropriate communication between agencies when mainstreaming of preprimary children takes place?
 - c. To what extent are teachers in one setting expected to observe and/or implement goals from other settings for the child being mainstreamed?
 - d. What kinds of energy/communication flows between systems are most effective in building the interface needed for successful mainstreaming?

4. What correlation is there between communication strength in young children and their academic and social success in both mainstreamed and impaired settings?
5. What longitudinal effect does preprimary mainstreaming have on the child, educationally and developmentally?
6. How does the strain of adapting to and meeting the needs of the handicapped child impact on the child's family, psychologically and economically?

Implications for Practical Use

1. Educators involved in mainstreaming of preprimary children must consider the child's entire contextual condition when prescribing programming for him so as to avoid excessive demand due to cumulative roles.
2. Observation and event-sampling are extremely useful tools for teachers to measure the dynamic progress of students mainstreamed into their classrooms.
3. There is a need for on-going communication between agency staff involved in the mainstreaming effort to insure that progress toward common goals for the subject is, in fact, occurring and that there is overall consensus in these goals.
4. Teachers in all early childhood educational settings need to be aware of a child's compelling interests and see that there are opportunities for spontaneous

innovation in play by children as well as teacher-initiated activity.

5. Too much adult interference tends to limit peer interaction in play situations as well as problem-solving by children.
6. Teachers may need to actively structure classroom situations in order to encourage positive peer interaction. There must be attention, in that structuring, however, to the cues given by children as they react to teacher-initiated structure so that outcomes are more positive than negative.
7. The history of the intervention sequence with the subject suggests that much valuable time was lost in his rehabilitation because of possible poor communication between diagnostic agencies in trying to describe his condition. The startling improvement in his hearing in the spring of the study due to aeration of the ear canals could possibly have taken place earlier in his development, eliminating some or all of his language delay. The importance of early, thorough, and coordinated evaluation of impaired infants requires a preventative, rather than remedial, attitude on the part of physicians and educators.

APPENDICES

APPENDIX A

INTRODUCTORY MATERIALS

APPENDIX A

INTRODUCTORY MATERIALS

Request Letter to Parents

January 1, 1978

Dear

In a current research investigation, I am interested in observing children who are attending _____ School as well as another preschool setting in the afternoon. I am hopeful that my observations will insure better coordination between the two settings and will lead to a clearer understanding of young children's educational needs. You and (child's name) have been suggested as people who might be willing to cooperate in this activity.

The child observed will not be identified by name in the study. Parents will be invited to share in inservice sessions being planned for staff members from both settings, and results of the observational study will be shared with all participants upon conclusion.

If you are willing to participate in this project, please sign the enclosed form and return in the enclosed, addressed envelope.

Thank you for your consideration of this project. If you have any further questions, please contact me at _____.

Sincerely,

Anne K. Soderman
Principal Investigator

Enclosure

Parent's Consent Form

We hereby agree to have _____ participate in the observational study described to us by Anne K. Soderman, College of Human Ecology, _____ University. We understand that the study will take place during the 1977-78 school year, that names of participants will not be used, and that we will receive oral and written communication as to the outcome of the study. We further understand that we will have opportunity to participate in inservice sessions being planned for staff members from _____ School and _____ Cooperative Nursery, that no beneficial results are guaranteed because of this inservice, and that subjects have the right to withdraw from participation at any time.

Parents' Signature

Date

APPENDIX B

TEACHERS' BEHAVIORAL GUIDELINE
ATTITUDE SURVEY

APPENDIX B
TEACHER'S BEHAVIORAL GUIDELINE
ATTITUDE SURVEY

Following is a list of guidelines or 'rules' for behavior that are often used in many preschool centers where children and adults are interacting with one another. Some are specific, while others are quite general. It is expected that there will be variation in a teacher's valuing of an item's importance in achieving her behavioral objectives with the children. Items are to be evaluated on the following continuum and the corresponding numerical value placed in the blank at the left.

THE CHILDREN IN MY CLASSROOM ARE

5	4	3	2	1
Always	Often	Sometimes	Seldom	Not
Expected/ Reinforced	Expected/ Reinforced	Expected/ Reinforced	Expected/ Reinforced	Expected/ Reinforced

- _____ 1. To hang up coat when entering building.
- _____ 2. To refrain from verbal or physical abuse of another person.
- _____ 3. To refrain from running inside.
- _____ 4. To observe limits set for other children.
- _____ 5. To return materials to the proper place.
- _____ 6. To respond to adult direction.

- _____ 7. To respect another child's rights and property.
- _____ 8. To wait one's turn in using materials, etc.
- _____ 9. To receive the same privileges and rights as other children.
- _____ 10. To flush toilet after using.
- _____ 11. To wash hands after toileting.
- _____ 12. To use materials only in designated areas.
- _____ 13. To solve own difficulties with other children (unless physical danger is involved).
- _____ 14. To refrain from interfering with another child's work or play.
- _____ 15. To participate in clean up after activity.
- _____ 16. To dispose of waste materials after eating.
- _____ 17. To listen while others are speaking.
- _____ 18. To refrain from climbing on furniture.
- _____ 19. To use quiet voices inside.
- _____ 20. To remain seated during group activity so others may see.

Comments: (Teachers may also include other expectations she sees as important to her and attach numerical value) _____

APPENDIX C

INSERVICE MATERIALS

APPENDIX C

INSERVICE MATERIALS

1. Educationally, what do you feel are (Subject's) present strengths?
2. Again, from a broad educational perspective, what do you feel may be his most pressing needs?
3. What are your goals for (Subject) this year?
4. What specific steps have you taken so far to see these are accomplished?
5. Assess his progress to date as related to those goals.
6. What adjustments do you feel are needed to more effectively achieve your goal for (Subject)?
7. What questions or concerns do you have about the "mainstreaming" of (Subject) into (preprimary typical laboratory setting)?
8. Any other comments, observations, or suggestions you feel may be helpful to share:

COMMUNICATION TO STAFF IN TYPICAL SETTINGS
FROM HEAD TEACHER 2/18/78

SOME NOTES ON ADULT PARTICIPATION---

Because we have such diversity within our group, I think that perhaps it is time to reflect upon the interactions which are taking place. Many of the children are very verbal and are well able to verbalize their ideas, needs and wishes. These children are also interacting a lot with other highly verbal children. However, several of the children are not very verbal and are not interacting much and I think that this could be altered with some increased awareness by the teaching adults. We have been, perhaps, too quick to respond, intervene and assist. While I am by no means suggesting that we ignore the needs of the children, I do think that perhaps we could meet those needs a little less rapidly upon occasion and encourage more verbal expression and more direct child-child interaction. The following suggestions are offered for your consideration:

1. Be a little less quick to step into situations-- watch and see if children can resolve their own differences. Of course, if safety is involved, do act!
2. When a child turns to you for help, encourage the child to verbalize the request. We're getting too good at responding to non-verbal cues and gestures. Also, be sure to only give as much help as a child really needs.
3. When a child's rights are being infringed upon by another child, encourage the child to speak out rather than doing it for him/her: " , you can tell that you're still using the truck." " , tell that you don't to be pushed." We've been more inclined to protect, interpret and speak for the child rather than encourage the child to express his/her own feelings.
4. When supervising activities, encourage child-child interactions rather than child-adult or adult-child. Frequently, we repeat the same thing to each child who comes to our area. It would be much more beneficial to ask the first child to

explain to new-comers. "You're still there to help! But try, ____, can you tell ____ what we're doing?" or "____, will you show ____ how this works?" or "____, that's a good idea. Tell ____ and then let's try it."

5. Encourage children to seek help from other children: "I'll bet ____ could help you do that. Ask him/her." or "____, it looks like ____ needs your help with ____."
6. Reinforce child-child interactions. Smile. "I like the way ____ and ____ are working together." "You and ____ really did that well together."

I think that if we all are more aware we'll find that the children will become more independent, more verbal, and will be interacting with each other more. Perhaps if we adults can view ourselves as "facilitators of learning" rather than as "teachers," we'll be more successful in achieving our goals.

APPENDIX D

OBSERVATION FORMS AND SAMPLE OF NOTES FROM TWO PREPRIMARY SETTINGS

APPENDIX D

OBSERVATION FORMS AND SAMPLE OF NOTES FROM TWO PREPRIMARY SETTINGS

DATA COVER SHEET

Name of Center Hearing-Impaired SettingDate February 6, 1978Phase No. INo. of Pages 6

Time	Subject-Peer	Peer-Subject	Adult-Subject	Subject-Adult	Total	Conflict		Aggression	
						Reinforced by Child	Resolved? Yes	Object	Person
9:20 9:35	4	8	3	3	1	1	1	0	0
9:35 9:50	14	9	1	1	2	1	2	1	0
9:50-10 10:20-10:25	6	3	1	1	2	0	2	1	0
10:25 10:40	5	2	1	0	0	0	0	0	0
Totals	29	22	6	5	5	2	5	3	0

Comments:

Much of the play that goes on at (hearing-impaired center) is play that would never be allowed in typical setting. Children "hide" from each other under furniture. They move furniture around to suit play. They use all of the room freely for their play and carry equipment wherever they wish. They are very good about cleaning up.

They love dramatic play. Much of this play centers around fire, monsters, being sick or dead.

The toys are stuffed in an old cardboard box. Nothing is set out in interest centers. The children generate all of their own ideas about their play.

The room is extremely orderly. Children notice any new addition immediately because there is a minimum of stimulating materials around.

The children seem to have established a "hierarchy of command." This is obvious when they have to line up or take some form of leadership. The most verbal children are most in command.

OBSERVATION FORM

Name of Observer _____ Child Observed _____ Name of Center Hearing-Impaired _____ Date February 6, 1978

CONFLICT: Note whether resolved by child or adult. Is aggression involved?

H.T. = Head Teacher
S.T. = Student Teacher or Aide
S. = Subject
P. = Peer

How interaction is initiated--
Provide brief description or running observation of events

Individuals Involved

The classroom is very structured. Mostly teacher's work on bulletin boards. Have children taken their work home? Toileting always done first. Health of children checked every day.

9:20

S. H.T.

P. S.

S. P.

S. P.

S. P.

Mr. W. S.

P. S.

H.T. S.

P. S.

P. S.

S.T. S.

P. S.

S. P.

P. S.

He notices Valentines on bulletin board when he enters. Indicates this to her. Teacher puts a chair down for him to stand on to see the Valentines better.

Toby indicates cards. He climbs on a car.

S. points out Batman on a card to Aimee. Indicates he is jumping like her. He notices a transparent Valentine. He goes over to cardboard toybox.

S. asks Missy to help him find a special hat. She does. It is the fireman's hat (naturally).

He pulls Missy down to the floor. They are pretending to hide under a drawer. Mr. W., Director of Special Services, enters the room.

He calls to S. S. pretends he doesn't hear him. Mr. W. says, "We'd better get your hearing aids checked . . . Are you hiding from me, S.?" Toby goes over to S., peeks under the drawer. He "finds" S., smiles broadly at him.

"He's gone (kidding him that Mr. W. is gone) . . . You can come out. Let me check your hearing aid." She does and replaces it.

Missy tells S. to look in her "take-home" box where she has something (a "little man").

Aimee asks S. to move so aide can pull her on an indoor sled.

"S., are you four?"

He says, "Four." Shakes his head yes.

Missy asks him to get her a puzzle.

He shows her a picture in a book he's looking at.

She verbalizes to him.

Teacher tells group that it is "potty time." She turns lights out. He gets in line. Gets in a second before Toby and just after Aimee.

(Important to him that he get in right after Aimee).

Toby complains (whines).

Missy tells Toby to be quiet and to get in line after her.

Toby and S. weave in and out of line all the way to the bathroom.

CONFLICT: CRC

Hearing-Impaired Setting, February 6, 1978, Page two

9:30

S. H.T.
S. H.T.

Asks her for help in getting his pants undone.
Asks for help in buttoning his pants. Tells her that Toby has his boots on. She tells him that Toby left his shoes at home but you brought yours to school. He asks her to tie his shoes. She makes him enunciate that very carefully: TIE-NY-SHOES-PLEASE. He thanks her and goes to wash his hands.
Aimee helps S. get a paper towel. They go back to cot and sit together.
Aimee tells S. to put Tina in the middle. He does.
S., did you wash your hands? Okay.

9:35

P. S.
P. S.
H.T. S.

He tells Tina he can hear her hearing aids squeaking.
Aimee asks S. to sit with her on the cot. He is sitting on a chair now.
S. moves over on his chair and asks Missy to sit on the other half.
Missy does and puts her arm around S.
"Mama decorated the Christmas tree."
Missy shows him her necklace. Then she shows it to the other children in the group.
S. indicates to Aimee that she, too, has her boots on (like Toby). They line up. He tries to get behind Aimee.
Teacher reminds him to get behind her.

9:40

H.T. S.
S. P.
S. P.
S. P.

S. asks Aimee if she will let him use the "little man" she is playing with. She does.
He asks her to help him find something in the cardboard box to put the little man in. (He wants to play doctor.)
Tina and Missy are fixing dinner. He goes to Tina and asks if he can have something to eat (signing and verbalizing). He pretends to scare the girls. He lies on the floor. Missy pretends to be excited. Missy and Aimee begin to dance in a line, wearing black hats Missy has just discovered in the cardboard box.
S. follows them. They get in a line. He asks the girls to hide behind a standing bulletin board.
Missy indicates to S. that a monster has captured Aimee. She is "dead" on the floor. Aimee "wakes up." She makes monster faces in the mirror.
Missy indicates to S. that they get under the table. He does with Tina.
Missy is distracted by a puzzle and sits at the table, putting it together.
S. taps her legs and tells her to get under the table with them.
Aimee grabs S.'s hand. He says loudly, "Stop it!"
She stops, looks surprised. He tells her she is too rough.
He walks over to where Missy is still working with the puzzle. He tells her where some pieces go and hands her the pieces. She places them. He sneezes.

CONFLICT: ARC

CONFLICT: CRC

S. ____ P. ____ S. sees Aimee with a book. He reminds her that it is his book, "Mine, mine. He points to himself. They all lie down and are "dead" on the floor again. Missy tells him to get under the table. All the children leave. Only P. ____ S. ____ S. remains under the table.

Tina goes back to get him. Reminds him to come with them.

Aimee comes back over. Gets S. to come out from under the table.

He pretends he's a monster now. He and Missy get under the table.

Aimee works over S. who has just "died" very dramatically.

He vocalizes to her. She picks him up.

He hides in a closet. Tells Aimee to be quiet so everyone else won't know.

He grows loudly . . . scares the whole group. Everyone laughs.

S. ____ P. ____ S. ____

P. ____ S. They all leave. He continues to make monster faces in the mirror.
Aimee tells him to hide behind the cupboard. They almost knock it down.
Missy comes over to investigate. She looks at the aide who is busy.
They straighten the cupboard themselves.
S. ____ P. S. tells Aimee, "Be careful."
S. ____ P. He tells Aimee there's been a fire. She gets him to go under a table on the opposite side of the room.
P. ____ S. Aimee makes a wild face at him. Tells him there is a "fire" in the house-keeping corner. She tells him, "C'mon." They continue to make monster faces and noises.
S. ____ P. S. wraps his arm around Tina's neck.
S. ____ P. S. asks Aimee to help him bring Tina to the housekeeping corner. There they get a hat for her--a football helmet. She puts it on, then decides she doesn't want to play. Aimee insists.
The head teacher finds the "little man" subject had been playing with earlier and picks it up. He takes it from her, pointing to himself and saying, "It's mine." He tells her there's been a fire. She says, "Better go get the fire hat to put it out." He tells her Tomcyko is sad. He goes to where his fire hat is and puts it on. Returns to housekeeping and "sprays" the entire area.
S. ____ H.T.

S. ____ P. ____
He looks at Tasha. He indicates a dish on the floor. He kicks it. It
rolls . . . they both laugh. They all go over to the table and begin putting
puzzles away.
S. begins kicking chairs with his feet.
The teacher reminds him not to do that. He stops. She also takes the sword
away that goes with the little man he has been playing with. There is much
looking into the mirror by all the children to check out their monster
expressions.
H.T. ____ S. ____

Snack
S. clears away his napkin and cup. He goes over to a table where the girls are sharing pretend food.
He asks Aimee for pretend food.

Hearing-Impaired Setting, February 6, 1978, Page four

P. ___ S.

Tina vocalizes (this surprises me because she rarely does so). She talks and signs to S. to come over to the housekeeping area where she will "feed him."

He takes Missy's dish. Missy tells the teacher. He hides the dish behind his back.

Teacher tells S. to give it back to her. He does.

CONFLICT: ARC

10:25

H.T. ___ S.

P. ___ S.

Tina indicates "food" she has for him. Feeds him with a spoon. He is obviously a "baby." As she feeds him the food, he "spits" it out.

S. ___ P.

He tells child to go behind the cupboard door. Tells her they have hot coffee.

S. ___ P.

He asks Missy and Tasha to come in for a cup of coffee. He wanders around the room with the "cup of coffee." Goes to the bulletin board where Sesame St. calendar is displayed. Shows excitement. This attracts Tina, who goes over to where S. is looking at the calendar.

H.T. ___ S.

Teacher asks him who each of the calendar figures are. He repeats each of the words.

S. ___ P.

He tells Tasha about a certain character. Points to it.

P. ___ S.

Aimee asks S. to sit in a chair to eat. He says he is tired. Sighs loudly. He goes over to the cupboard where the mirror is. Then back to the group of children. He sits in a chair that Tasha has been sitting in. Aimee has originally asked him to sit there. Tasha complains.

CONFLICT: CRC

S. ___ P.

Aimee moves Tasha to another chair and gives the chair to S.

He changes chairs. Talks to Missy about why he is changing.

P. ___ S.

The teacher asks the group to line up.

He runs to get in line behind Aimee.

S. is playing with the tape on a valentine near the door.

Missy vocalizes, indicates he should leave it alone. She grins at him and then "spans" him on his behind. He accepts it good-naturedly.

10:35

P. ___ S.

P. ___ S.

Nancy points out slide. He watches Toby go down.

S. ___ P.

Tasha shows him something in a cupboard.

Aimee is in a chair pouting. He notices her.

He goes over to Aimee. Removes some material from another chair and indicates that she can sit on it if she wants to.

10:40

Comments: Xylophone out--good activity for hearing-impaired but, combined with the other noise in the room, it is difficult to hear (Subject) or to have him hear anything else. He has a very weak, little voice, which I have not noticed at (Hearing-impaired Setting).

The teachers need to remind the children to verbalize instead of just pointing or gesturing for what they want.
(Subject) talks about his mother often.
Blinks when nervous.
Likes books a great deal. Often goes to them for comfort.

Play in this setting does not seem to be sustained for very long. Are there too many materials offered to the children? Are they overstimulated?
Does this discourage sharing, child-child interaction?

OBSERVATION FORM

Name of observer	Child observed	Name of Center	Typical Date	February 6, 1978
Individuals Involved	How initiated (provide brief description of interaction or running observation of events)	H.T. = Head Teacher S.T. = Student Teacher M. = Working Mother S. = Subject P. = Peer	CONFLICT: Note whether resolved by child or adult. Is aggression involved?	
Time				
1:10	S. hears H.T. hitting xylophones with Alex. S. approaches to watch. Want to sit in one of these chairs, ____? S. takes two tuning forks and crosses them. He is watching Alex. H.T. is asking Alex what will happen if she puts her hand on the vibrating fork. These are called tuning forks, _____. She strikes one and shows him what to do. Chad approaches. S. verbalizes to H.T. It is noisy in the room and I can't hear what he is saying. Asks him to get closer to watch so he can see it jump. He takes a fork and pounds it on a table several times. H.T. helps him put the tuning fork in the water so it will make the water jump. The H.T. speaks to Chad, telling him how sound waves work. S. takes hammer for xylophones. Moves it over the pipes. That sounds pretty nice, _____. He hammers over the pipes. H.T. walks with Chad.			
1:15	Hey, _____, that sounds pretty nice. Would it be easier if . . . (she moves it closer to him). Alex approaches. He hits a shaker. The head teacher reminds him, "That we don't hit." She strikes the tuning fork. Subject goes over to her. Feel that? Feel it shake in your hand? H.T. speaks to Alex. Talks about hitting the fork and vibration. S. is watching. He strikes the fork and places it in the water. (Does he understand the cause & effect?) Picks up a xylophone and looks through it. That doesn't make a sound when you blow through it, does it? She indicates a shaker. That shakes. Subject goes back to table and gets xylophones hammer. He pounds the pipes and then stops the vibration with his hand. That's a pretty nice sound, _____. (Laughs.) She sings to the rhythm he pounds. She puts her hand on the pipes so that he can hear the difference when the vibration is stopped. Alex is listening to the shaker. There is absolutely no interaction between the two children.			

Typical Setting, February 6, 1978, Page two.

1:20

H.T. ___ Subj.

CONFLICT: AR

S. takes xylophones hammer and leaves area. H.T. tells him to return it. He goes to a table where a boy is playing with a cash register. There are grocery items on the table. He loads up with groceries. "There ___, do you want to go shopping with me?" He hands her some materials. Do you wanna go shopping with Chad? Do you wanna bag it? He hands S. a bag. S. pretends to pay Chad money. Chad asks S.T., "What do you wanna buy?" S. gives her a box. She asks him for groceries. S., could I have some tomatoes? He brings her a box of bandages. Returns to grocery. What are those? Crackers?

1:25

S.T. ___ S.
P. ___ S.

CONFLICT: ARC

He pretends to eat something out of the box. Did you give Chad money? Yeah, give me money. S. leaves area with box. S.T. reminds him to come back.

S.T. ___ S.

CONFLICT: ARC

He leaves the area. Goes to where his name tag is. S.T. pins his tag on. He looks down at it. Goes back to the music table. He removes the shaker from the table and takes it to another area. He is told by S.T. to return it.

S.T. ___ S.

S.T. asks him if he wants some styrofoam chips. Chad says, "No! He has to get them from me." The S.T. reminds Chad that there are enough to go around. (Does this discourage Child-child interaction?) Talks to him about his name tag. Would he rather have it on his back so

S.T. ___ S.

it doesn't get in his way? He takes the tuning fork and begins to walk away. The teacher goes after him and reminds him to return it.

CONFLICT: ARC

He goes to where two children are "lions" in a "cage."

M. ___ S.

Do you want to pet the lions? He just looks at them. There are many children in the area. The subject climbs into a cage.

M. ___ S.

What are you? A tiger? Maybe you should make your cage bigger.

1:30

He is in a cage next to Ricardo. The H.T. reminds the other children to verbalize to S.

P. ___ S.

Tells him something. S. gets up. He watches Ricardo scratching Daniel's "fur." Everyone gets out of the cage but the subject. They are all reporting to the mother about their claws. Ricardo gets back into the cage.

S. ___ P.

S. growls at Daniel. This "scares" D. away. S.T. warns all the children about making loud noises inside. There is no interaction among the two children left. They are just two separate lions. They get out. They begin

Typical Setting, February 6, 1978, Page three.

wrecking the cage, butting the blocks with their heads. The mother warns them to be careful. (There are many noisy activities in the room.) S. begins rebuilding the cage by himself. There are no other children around. Everyone has gone to a different place where there are large plastic dinosaurs to play with. S. goes over to the group. Mother asks, "Did you see these (dinosaurs)? See how big they are?" Alex and Chad are in the group. They are monsters. S. watches them.

M. ___ S.

1:35

The two other boys are interacting. Play fades. Alex is quiet. S. looks at other boy. Ricardo takes Alex's dinosaur away. Alex complains. S. takes his dinosaur to the edge of the play area. He stands, watching. He is blinking. (Does he do this when nervous?) He is just watching the other children. (Are there too many materials? Do the children need fewer to make them stay at things longer? Are they overstimulated?) The subject continues to watch.

1:40

S. goes to another part of the room . . . sees sand in a box which is partially covered. He begins working in the small area that is open. He vocalizes to himself. There is just the s. at the box. He is digging out materials from the sand . . . looking for specific things. He finds a truck and runs it in the sand. Finds a spoon and digs a clean spot out in which to put the dinosaur. He runs a blue truck in the sand. He walks the dinosaur in the sand. . . . Takes a fluted cup and makes impressions in the sand with it. . . . finds a lobster which he runs back and forth in the sand. He talks to the working mother. She comments. He walks back to the sand and stands on the edge.

S. ___ M.

S. ___ M.

S. ___ P.

P. ___ S.

P. ___ S.

He goes back to the mother and says something to her. He walks over to where Christopher and Chad are playing and shows them something he found in the sand. There is no response from them. He vocalizes again. It is too noisy and they don't respond. Chad sees the lobster in S.'s hand. He asks S. if he can see it and grabs it out of S.'s hand. He looks it over.

CONFLICT: NRC

Chad flips the lobster back at S. S. flies the lobster near their plane, touching the edge of it. They do or say nothing.

1:45

Chad asks him if he can have one of the subject's dinosaurs. . . .

S. responds by putting his flying monster in Chad's plane.

Chad says, "No. Stop it."

CONFLICT: CRC

Subject leaves. Goes to where the head teacher is showing a record to two other children . . .

He leaves and walks to a table where children are fingerprinting.

Hi, S. Wanna fingerprint?

He shakes his head yes. The head teacher puts a record on. The children begin to dance to it.

S.T. ___ S.

Typical Setting, February 6, 1978, Page four.

S. ___ H.T.
P. ___ S.
S. ___ H.T.

1:50

S. goes back to where the H.T. is playing the record with Bill and Hammil. Verbalizes to her. Bill takes S.'s arm. They are "dancing." Two other boys are with the S. and the H.T., dancing. He shows her his flying monster.

The record stops. S. continues to dance. H.T. puts on another band. Hammil puts his hands over his ears (too loud). S. watches him. H. leaves. S. follows him. They both stop at the "truck area." Parallel play. They are not interacting. S. is pushing a block with a grader. He takes his truck over to table where Christopher and Chad are sitting. Chad has some paper in an envelope he is playing with. S. moves the grader up by Chad's elbow. Chad ignores him. Chad yells, "Don't." S. moves grader away. Chad speaks to Christopher. They are moving materials around on the table. Chad knocks everything on the floor but the grader the S. has been playing with. They leave the table.

S. ___ P.
P. ___ S.

CONFLICT: NR

1:55

S. is sitting at the table by himself. Chad returns to the table. Puts the grader by the plane.

P. ___ S.

Chad says to S., "Want this guy to drive it?" He takes the tractor. Puts a man on it. Pushes the plane. Chad calls to head teacher. He shows her his flying plane. S. copies. Puts his plane with Chad's.

S. ___ H.T.
P. ___ S.

Indicates he wants a hammer. She says no. Chad asks the H.T. to stay for a minute. S. puts his hand on the tractor to take it. Chad growls at S. Teacher reminds Chad that the subject had it. Chad asks the subject if he was using it. S. shakes his head yes. H.T. distracted by other children. Chad continues to use tractor. Then goes over to where H.T. is sitting. Moves his airplane on her head. . . comes down her nose. S. is watching.

CONFLICT: NR

H.T. ___ S.
P. ___ S.

What's Chad gonna do, S.? S. pretends he has a bird and swoops down on Chad's plane. Chad responds, "Stop it!" Then he hides behind chair and says to subject, "Try to find me, boy." Subject "dive bombs" him again. It's okay this time because Chad initiated the play.

CONFLICT: NR

P. ___ S.

Chad says, "I got 'cha!" His man "gets" the subject's bird. Chad asks S. if he wants to play with the man. S. shakes his head yes. C. doesn't give it to him. (Teasing?)

2:00

S. ___ H.T.
H.T. ___ S.

Puts his bird near hers. Vocalizes. Puts the bird in front of the tractor. That's a good place to have him ride, S. S. is having the bird drive the bulldozer.

H.T. ___ S.
S. ___ H.T.

S. ___ H.T.

2:05

P. ___ S.

S.T. ___ S.

S. ___ H.T.

M. ___ S.

2:10

Is that stuck?
Wants her to watch him flying birds. Another child comes over to show her his library book.
Indicates a pocket in the book with his name on it. H.T. says no, that's the other (child with same name as S.)

Chad throws S.'s animals at him. S. puts animals back. Chad throws them again.

Chad holds them high in the air, "Can you reach this high, S.?"
The S.T. reminds Chad to use the materials in the way they were intended to be used. She reminds S. that it will be clean-up time pretty soon.

S. leaves truck on table. Goes to book corner. He gets a book from the shelf and goes to the H.T.

He asks her if he can have a book. She tells him he can when he brings the other one back.

(He likes books . . . often uses them for comfort.)
Mother who is working at table asks, "How are you?" He examines more of the books on a table where three other boys and a mother are looking at them.

CONFLICT: ARC

APPENDIX E

COMPUTER LABORATORY-DATA CODING FORM

DATA DESCRIPTION AND ENTRIES

APPENDIX E

COMPUTER LABORATORY-DATA CODING FORM

DATA DESCRIPTION AND ENTRIES

Data Description (all cards)

Card Space

1	Blank
2-3	Number of Observation (1-14)
4	Blank
5	Time (Phase 1, 2, or 3)
6	Setting 1 = hearing-impaired setting 2 = typical setting
7-10	Blank
11-12	V ₁ Subject-Initiated Peer-Interaction
13	Blank
14-15	V ₂ Peer-Initiated Subject-Peer Interaction
16	Blank
17-18	V ₃ Adult-Initiated Subject-Adult Interaction
19	Blank
20-21	V ₄ Subject-Initiated Subject-Adult Interaction
22	Blank
23-24	V ₅ Total Conflict
25	Blank
26-27	V ₆ Child-Resolved Conflict
28	Blank
29-30	V ₇ Adult-Resolved Conflict

Data Entries:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Phase I	0	1	0	1	1	1	0	0	0	0	0	7	0	2	0	0	0	3	0	0	6	0	5	0	5	0	3	0	0	2
Hearing- Impaired Setting	0	2	0	1	1	1	0	0	0	0	0	4	1	8	1	8	0	3	0	0	1	0	5	0	5	0	4	0	0	1
	0	3	0	1	1	1	0	0	0	0	0	6	1	9	1	9	0	3	0	0	4	0	2	0	2	0	0	0	0	1
	0	4	0	1	1	1	0	0	0	0	0	9	0	4	0	4	0	3	0	0	3	0	4	0	4	0	2	0	0	2
	0	5	0	1	1	1	0	0	0	0	1	3	0	2	0	2	0	9	0	0	4	0	5	0	5	0	0	0	0	4
	0	6	0	1	1	1	0	0	0	0	2	0	0	0	0	0	6	0	0	3	0	5	0	5	0	2	0	0	0	1
	0	7	0	1	1	1	0	0	0	0	1	8	1	7	1	7	0	4	0	0	4	0	3	0	3	0	2	0	0	1
	0	8	0	1	1	1	0	0	0	0	1	1	0	5	0	5	0	2	0	0	1	0	2	0	2	0	0	0	0	2
	0	9	0	1	1	1	0	0	0	0	1	3	0	8	0	8	0	7	0	0	2	0	2	0	2	0	2	0	0	0
	1	0	0	1	1	1	0	0	0	0	2	0	1	2	1	2	0	3	0	0	2	0	5	0	5	0	3	0	0	2
	1	1	0	1	1	1	0	0	0	0	1	2	1	9	1	9	1	1	0	0	8	0	3	0	3	0	3	0	0	0
	1	2	0	1	1	1	0	0	0	0	2	4	1	7	1	7	0	1	0	0	4	0	5	0	5	0	5	0	0	0
	1	3	0	1	1	1	0	0	0	0	1	6	0	5	0	5	0	5	0	0	1	1	0	1	0	0	9	0	0	1
	1	4	0	1	1	1	0	0	0	0	0	9	1	6	1	6	0	8	1	1	7	0	3	0	3	0	2	0	0	1
Phase I	0	1	0	1	1	2	0	0	0	0	0	1	0	3	0	3	1	5	1	1	4	0	0	0	0	0	0	0	0	0
Typical Setting	0	2	0	1	2	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	1	0	1	0	0	0	0	1
	0	3	0	1	2	0	0	0	0	0	0	1	0	0	0	0	1	2	0	0	3	0	1	0	1	0	0	0	0	1
	0	4	0	1	2	0	0	0	0	0	0	6	0	2	0	2	1	0	1	1	1	0	2	0	2	0	0	0	0	2

Data Entries Continued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Phase I	^	0	5	^	1	2	^	^	^	^	1	6	^	0	6	^	0	7	^	1	6	^	0	4	^	0	2	^	0	2
Typical Setting Cont.	^	0	6	^	1	2	^	^	^	^	0	2	^	0	3	^	1	2	^	1	1	^	0	2	^	0	0	^	0	2
	^	0	7	^	1	2	^	^	^	^	0	2	^	0	0	^	1	8	^	1	0	^	0	3	^	0	0	^	0	1
	^	0	8	^	1	2	^	^	^	^	0	2	^	0	2	^	1	5	^	1	5	^	0	2	^	0	1	^	0	1
	^	0	9	^	1	2	^	^	^	^	0	1	^	0	3	^	2	0	^	0	4	^	0	4	^	0	0	^	0	4
	^	1	0	^	1	2	^	^	^	^	0	2	^	1	1	^	0	6	^	0	9	^	0	4	^	0	1	^	0	1
	^	1	1	^	1	2	^	^	^	^	0	5	^	0	3	^	2	0	^	1	1	^	0	5	^	0	2	^	0	3
	^	1	2	^	1	2	^	^	^	^	0	6	^	0	5	^	2	5	^	0	6	^	1	8	^	0	3	^	1	3
	^	1	3	^	1	2	^	^	^	^	0	3	^	0	4	^	1	6	^	0	3	^	0	7	^	0	2	^	0	3
	^	1	4	^	1	2	^	^	^	^	0	2	^	0	6	^	0	8	^	0	4	^	1	7	^	0	4	^	1	0
Phase II	^	0	1	^	2	1	^	^	^	^	2	0	^	0	8	^	0	6	^	0	4	^	0	2	^	0	0	^	0	2
Hearing-Impaired Setting	^	0	2	^	2	1	^	^	^	^	1	4	^	1	4	^	1	0	^	0	3	^	0	8	^	0	3	^	0	5
	^	0	3	^	2	1	^	^	^	^	1	9	^	1	0	^	0	3	^	0	8	^	0	1	^	0	1	^	0	0
	^	0	4	^	2	1	^	^	^	^	2	4	^	1	4	^	1	2	^	0	4	^	0	7	^	0	7	^	0	0
	^	0	5	^	2	1	^	^	^	^	1	6	^	1	4	^	0	8	^	0	8	^	0	2	^	0	2	^	0	0
	^	0	6	^	2	1	^	^	^	^	2	4	^	1	8	^	0	4	^	0	6	^	0	4	^	0	3	^	0	1
	^	0	7	^	2	1	^	^	^	^	1	6	^	1	2	^	1	2	^	0	8	^	0	3	^	0	1	^	0	1
	^	0	8	^	2	1	^	^	^	^	3	4	^	3	2	^	0	2	^	0	4	^	1	8	^	1	4	^	0	4
	^	0	9	^	2	1	^	^	^	^	2	8	^	1	0	^	1	2	^	1	5	^	0	2	^	0	2	^	0	0

Data Entries Continued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Phase II	1	0	2	1	2	1	2	1	2	1	2	0	2	1	0	2	0	2	2	0	7	2	0	4	0	1	0	0	0	0
Hearing- Impaired Setting Cont.	1	1	2	1	2	1	2	1	2	1	3	0	2	1	2	0	8	0	8	1	1	1	1	1	1	0	7	0	3	0
	1	2	2	1	2	1	2	1	2	1	2	1	2	1	0	8	0	8	0	5	0	5	0	5	0	2	0	2	0	2
	1	3	2	1	2	1	2	1	2	1	2	2	2	1	7	0	1	0	1	0	1	0	0	4	0	3	0	3	0	0
	1	4	2	1	2	1	2	1	2	1	2	2	2	1	0	0	6	0	6	0	2	0	0	1	0	1	0	1	0	0
Phase II	0	1	2	2	2	2	2	2	2	2	0	3	2	0	2	2	0	7	2	0	7	2	0	0	0	0	0	0	0	0
Typical Settings	0	2	2	2	2	2	2	2	2	2	0	2	2	0	0	2	1	9	2	0	5	2	0	2	0	1	0	0	0	0
	0	3	2	2	2	2	2	2	2	2	0	0	0	0	3	2	3	2	3	0	4	0	0	2	0	0	0	0	2	0
	0	4	2	2	2	2	2	2	2	2	0	3	2	0	8	0	5	0	5	0	1	0	0	4	0	2	0	0	0	0
	0	5	2	2	2	2	2	2	2	2	0	8	2	0	7	0	4	1	4	0	2	0	0	3	0	1	0	1	0	1
	0	6	2	2	2	2	2	2	2	2	0	4	2	0	6	0	5	0	5	0	1	0	0	3	0	1	0	0	0	0
	0	7	2	2	2	2	2	2	2	2	0	1	2	0	5	2	1	2	1	0	1	0	0	1	0	0	0	0	1	1
	0	8	2	2	2	2	2	2	2	2	0	7	2	1	8	0	7	0	7	1	2	0	0	0	0	0	0	0	0	0
	0	9	2	2	2	2	2	2	2	2	2	2	2	2	0	1	1	1	1	0	1	0	0	2	0	0	0	0	1	1
	1	0	2	2	2	2	2	2	2	2	1	6	2	6	2	6	0	5	0	5	1	1	0	3	0	2	0	0	1	1
	1	1	2	2	2	2	2	2	2	2	1	6	2	0	7	1	0	0	8	0	2	0	2	0	0	0	0	0	2	2
	1	2	2	2	2	2	2	2	2	2	1	3	0	6	0	6	0	8	0	9	0	9	0	2	0	0	0	0	1	1
	1	3	2	2	2	2	2	2	2	2	1	5	1	9	1	9	0	8	0	1	0	1	0	1	0	0	0	0	0	0
	1	4	2	2	2	2	2	2	2	2	1	3	1	5	1	5	1	1	1	0	8	0	0	7	0	0	0	0	1	1

Data Entries Continued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Phase III	0	1	0	1	0	3	1	0	0	0	2	3	0	1	3	0	0	9	0	0	4	0	4	0	4	0	3	0	1	0	1	
Hearing-Impaired	0	2	0	3	1	0	0	0	0	0	1	4	0	1	5	0	0	6	0	0	7	0	7	0	2	0	1	0	0	0	0	
	0	3	0	3	1	0	0	0	0	0	1	7	0	1	8	0	0	7	1	1	3	0	1	0	1	0	1	0	0	0	0	
	0	4	0	3	1	0	0	0	0	0	1	1	0	1	8	0	0	4	0	0	8	0	2	0	2	0	2	0	0	0	0	
	0	5	0	3	1	0	0	0	0	0	1	4	0	1	8	0	0	7	0	0	8	0	5	0	5	0	2	0	0	3	0	
	0	6	0	3	1	0	0	0	0	0	1	6	0	1	0	0	0	6	0	0	6	0	7	0	7	0	4	0	0	1	0	
	0	7	0	3	1	0	0	0	0	0	1	4	0	1	7	0	1	4	1	1	4	0	3	0	3	0	3	0	0	0	0	
	0	8	0	3	1	0	0	0	0	0	2	3	0	2	1	0	0	9	1	1	0	0	3	0	3	0	3	0	0	0	0	
	0	9	0	3	1	0	0	0	0	0	1	7	0	2	3	0	0	6	1	1	1	0	5	0	5	0	4	0	0	0	0	
	1	0	0	3	1	0	0	0	0	0	2	2	0	1	3	0	1	4	1	1	1	0	5	0	5	0	3	0	0	1	0	
	1	1	0	3	1	0	0	0	0	0	1	6	0	2	4	0	0	7	1	1	0	0	6	0	6	0	5	0	0	1	0	
	1	2	0	3	1	0	0	0	0	0	2	9	0	1	0	0	0	7	1	1	3	0	1	0	1	0	0	0	0	1	0	
	1	3	0	3	1	0	0	0	0	0	2	0	0	1	5	0	1	4	1	1	4	0	4	0	4	0	0	0	0	3	0	
	1	4	0	3	1	0	0	0	0	0	1	4	0	2	6	0	0	6	1	1	6	0	6	0	6	0	5	0	0	1	0	
Phase III	0	1	0	3	2	0	0	0	0	0	1	4	0	0	8	0	0	6	1	1	3	0	2	0	0	0	0	0	0	0	0	
Typical Setting	0	2	0	3	2	0	0	0	0	0	0	3	0	0	9	0	1	1	0	0	9	0	3	0	3	0	0	0	0	2	0	2
	0	3	0	3	2	0	0	0	0	0	0	2	0	0	8	0	1	0	0	0	5	0	3	0	3	0	2	0	0	1	0	1
	0	4	0	3	2	0	0	0	0	0	0	1	0	0	9	0	1	3	0	0	2	0	8	0	8	0	0	0	0	6	0	6
	0	5	0	3	2	0	0	0	0	0	0	5	0	0	5	0	0	6	0	0	4	0	4	0	4	0	2	0	0	1	0	1

Data Entries Continued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Phase III	^	0	6	^	3	2	^	^	^	^	1	1	^	1	3	^	0	4	^	0	3	^	0	8	^	0	3	^	0	1
Typical Setting Cont.	^	0	7	^	3	2	^	^	^	^	0	3	^	0	9	^	1	3	^	0	6	^	0	6	^	0	3	^	0	2
	^	0	8	^	3	2	^	^	^	^	0	8	^	1	0	^	0	6	^	0	4	^	0	0	^	0	0	^	0	0
	^	0	9	^	3	2	^	^	^	^	0	8	^	1	8	^	1	3	^	0	9	^	0	2	^	0	2	^	0	0
	^	1	0	^	3	2	^	^	^	^	0	6	^	1	0	^	1	9	^	0	3	^	0	7	^	0	2	^	0	5
	^	1	1	^	3	2	^	^	^	^	0	7	^	0	8	^	0	5	^	0	4	^	0	7	^	0	3	^	0	0
	^	1	2	^	3	2	^	^	^	^	1	3	^	1	1	^	0	4	^	0	2	^	0	5	^	0	2	^	0	2
	^	1	3	^	3	2	^	^	^	^	0	4	^	0	6	^	2	7	^	0	8	^	0	3	^	0	1	^	0	1
	^	1	4	^	3	2	^	^	^	^	0	3	^	0	0	^	1	1	^	1	4	^	0	1	^	0	0	^	0	1

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