

LANGUAGE BEHAVIORS OF CAREGIVERS TO TODDLERS IN NONINTEGRATED
AND INTEGRATED (HANDICAPPED AND NONHANDICAPPED) NURSERY SETTINGS

by

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Title of Thesis/Project/Extended Essay

Language Behaviors of Caregivers to Toddlers in Nonintegrated

and Integrated (Handicapped and Nonhandicapped) Nursery Settings

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ABSTRACT

Caretakers of handicapped children often provide a linguistic environment that is less complex and generally not as progressive as that provided for their nonhandicapped peers. It has been proposed that integrated programs for toddlers might allow nursery caretakers to develop positive evaluations of a handicapped child's present level of development as well as his/her potential for future development. In line with this proposal, this study explored the assumption that nonhandicapped children in an integrated setting would serve as models of normal development for caretakers and thus favourably modify caretakers' language to handicapped children. The purpose of the present investigation was to assess the impact of an integrated program on the children's vocabulary development and to explore the language environment provided for handicapped toddlers in a nonintegrated setting (NIC) and an integrated setting (IC). children's vocabulary development was assessed upon entering the program and after approximately seven months of participation in the program.

As well, videotaped observations of Child Life Therapists' (CLT) language were recorded for the two conditions. The videorecorded observations were coded according to a category system which measured CLT verbal behaviors that primarily served to facilitate language development, or served to set limits on children's behaviors. Two observers independently coded CLT verbal behaviors for 20% of the observational sessions.

Interobserver reliabilities, calculated using Kappa and Intraclass correlations, ranged from .59-.93 and .63-.97 respectively.

The first hypothesis was that the general effect of the integrated program would facilitate the language development of handicapped children. The data obtained were consistent with this hypothesis. The children's vocabulary development showed no detrimental and some beneficial effects from their time in the program.

Repeated measures analyses of variance revealed CLT individual differences and CLT by condition interactions in both the quantity and content of adult verbalizations as a function of condition (NIC versus IC) as well as children (handicapped versus nonhandicapped) in the IC. Thus, individual caregiver differences are of major importance and must be considered in future research with handicapped and nonhandicapped children.

The findings are discussed in terms of their relevance to future research and program design for integrated programs.

DEDICATION

To Allan

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A. Introduction

Following a variety of social-ethical, legislative-legal and psychological-educational pressures efforts have recently been made to integrate handicapped and nonhandicapped children at the preschool level (Bricker, 1978; Guralnick, 1978). The integration of handicapped and nonhandicapped children is usually thought of as a intervention process whereby a child with a disability has opportunities to learn, play, participate and interact with children developing at a normal rate. Most attention has been directed toward intervention programs that integrate mildly to moderately mentally retarded children of preschool and elementary school age. There are, however, strong theoretical positions which suggest that intervention during the infant and toddler stages of development may well be more beneficial for handicapped children than programs begun later in life.

According to Piaget's developmental theory, an infant's cognitive development occurs as a result of an infant's interaction with an increasingly more complex environment. This stimulating and demanding environment is equally important for the optimal development of handicapped infants and toddlers. Ensuring an environment that provides an optimal level of stimulation for a handicapped child with a sensory deficit or an inability to interact freely with the environment presents the

additional challenge of finding alternative sources of active involvement for the child. In addition, adults may not clearly recognize the developmental level of the handicapped child and may not provide stimulation in accordance with this level.

Empirical research on the efficacy of intervention programs for handicapped children provides some support for these theoretical perspectives indicating that programs begun in infancy are indeed more beneficial for handicapped children than programs begun in later years (Bronfenbrenner, 1975; Haskins, Finkelstein & Stedman, 1978; Horton, 1976). Bronfenbrenner (1969) has argued that maladaptive patterns of social adjustment characterize disadvantaged children and that these behaviors predispose children to both social and academic difficulties. The goal of intervention programs for children who have sensory, motor, or central nervous system damage focus on an attempt to maximize residual function. The services provided attempt to prevent intellectual and socioemotional problems ancillary to the biological damage. The actual practice of integration has preceded definitive research evidence, and until recently the literature contained relatively few descriptions of programs that have concentrated on infants and children under the age of three. Factors that might lead such intervention programs to be beneficial or detrimental to the children will now be considered.

Developmental theorists have stressed that the presence of peers in a child's early environment provides a form of

stimulation not available in an adult-child interaction, and is important for optimal social and cognitive development (Lewis and Rosenblum, 1975). Good peer relations are believed to be important for later social and emotional adjustment as well (Hartup, 1978). The beneficial effect of positive peer experience has been employed as a rationale for the integration of handicapped and nonhandicapped children. On the other hand, child advocates have expressed concern that integration may not provide positive peer interaction for handicapped children since handicapped children would suffer social isolation.

The age at which children are integrated may be a critical factor in ensuring that the handicapped child experiences positive interactions. Some researchers indicate that the acceptance of a handicapped person may be related to the age of the nonhandicapped peers (Jones and Sisk, 1967; Kennedy and Bruininks, 1974). Jones and Sisk (1967) report that before the age of four children do not seem to notice physical disabilities. Thus, the integration of infants and toddlers might provide more positive peer experiences for handicapped children than programs begun at a later age (Bricker and Bricker, 1978).

A further rationale for the integration of handicapped and nonhandicapped children into the same program has been the programmatic advantages offered (Bricker and Bricker, 1972; Apolloni and Cook, 1978; Guralnick, 1978). These advantages were based on assumptions that more developmentally advanced children

would serve as models and as reinforcing agents for handicapped children, and that nonhandicapped children would also serve as role models of normal cognitive and social development for teachers, thus favorably influencing teachers' expectations of handicapped children (Guralnick, 1976; Snyder, Allpoloni and Cook, 1977). Teachers of a mixed group of children would have a ready framework for gauging an individual child's behavior within a developmental context. As support for this assumption, Mosten(1978) reports that parents of handicapped children participating in an integrated preschool became more aware than they had been of their child's delays in various areas of development. Parents also recognised that some behaviors they had judged as inappropriate were indeed appropriate for their child's developmental level. An integrated program for infants and toddlers might allow nursery caregivers to develop realistic evaluations of the handicapped child's present level of development as well as his/her potential for development.

There has been some research in the area of the nonhandicapped child serving as a role model for handicapped peers (Strain, Shores, and Timms 1977; Devoney, Guralnick and Rubin, 1974). However, there appears to be little empirical research directed toward testing the assumption that the nonhandicapped child serves as a model of normal development for teachers, resulting in favourable modifications of teacher's behaviors toward handicapped children. The present study will explore the assumption that nonhandicapped children in an

integrated setting may serve as role models of normal development and thus modify adult caretakers' language directed toward handicapped children. In particular, categories of speech that serve to facilitate language development or that primarily serve a regulatory function by setting limits on children's behaviors were developed and explored.

The present focus on adult speech to children stems from research on mother-child interactions with normally developing children that indicates that mothers adjust the complexity of their interactions in accordance with their child's cognitive, linguistic and motor abilities (Snow, 1972; Crawley, 1978; Cross, 1977; Stern, 1974). An optimal learning environment may thus be provided. It appears that mothers experience difficulties monitoring the behaviors of their young handicapped children and often do not recognize their level of cognitive development (Kearsley, 1975).

Handicapped children may present physical, mental, sensory or emotional deficiencies with a range of severity that prevents normal development. However, the most noticed developmental deficiency across handicapping conditions appears to involve language delay (Fallen & McGovern, 1978). One focus of the present study is to explore the language environment of handicapped toddlers in a nonintegrated and integrated setting.

An active area of investigation has been concerned with children's acquisition of language and the type, quantity and quality of adult-child linguistic interactions. A less than

optimal language environment may be provided for handicapped toddlers if the child's disability impairs the quality of the reciprocal nature of verbal exchanges by making them less rewarding for either partner. On the child's part this may be due to the child's lack of verbal or social responsiveness or the inability to provide clear cues for the caregiver. The caregivers' beliefs and perceptions of the child can also shape verbal interactions. Bingham (1970) found that prelingual children elicited simplified speech that enhanced their language development from adults who believed that the children were cognitively advanced and could understand speech. However, adults who did not believe this tended to use language that was too complex. Thus, the way caregivers view the cognitive level of their child tends to influence language development. Hess and Shipman's (1965) study addressed this issue and concluded that children's language development was hindered by adults who failed to adapt their verbalizations to the level of complexity the child could process.

The following sections examine theoretical perspectives and empirical research concerned with the language environment provided for nonhandicapped and handicapped children with an emphasis on the differences in adult verbal behavior toward the two groups.

A biological approach to explaining children's acquisition of language is exemplified by Lenneberg's (1970) approach. According to this view, language acquisition proceeds in

response to genetically determined changes taking place in the maturing child, with only a limited role assigned to the environment, particularly to parents. Lenneberg suggests that parents may fulfill their function in a child's acquisition of language simply by talking, the more the better. In contrast, Cross (1978) suggests that a great amount of language directed to a child may not enhance language development.

In a study of mother's speech and its association with rate of linguistic development in children, Cross (1978) matched 19-33 month old children in pairs equated for sex, family size, and linguistic level. The age variation of the children in each pair was between five and ten months. The younger child was considered accelerated in comparison with the older child, having attained the same linguistic level at an earlier age. Cross found that mothers of accelerated children produced significantly fewer utterances per conversational turn than did other mothers. Cross suggested that the salience of any utterance to the child would be interfered with by the immediate sequential presentation of other utterances to process within a short time. The mothers of children in the normal group may interfere with the child's attentional and processing capacities. It may also be that the higher rate of utterances per conversational turn for the normal mothers indicates a less adequate monitoring of their child's input in the reciprocal nature of conversations.

Research concerned with the verbal environment provided for handicapped children also indicates that mere volubility on the mother's part does not lead to greater language acquisition, and the focus has turned to quality of the verbal interchange between parents and children.

The extensive studies of the caregivers' role in language development of nonhandicapped children can only suggest what might be expected to occur for handicapped children. There is a paucity of such research with handicapped children. Most of the research has been directed toward groups of children with a specific disability (i.e., retarded, deaf, Down's Syndrome). Overall, handicapped children are frequently less linguistically competent than their normally developing peers, tend to initiate language less frequently, and tend to be less responsive to adult verbalizations (Strain, Shores & Timms, 1977; Jones, 1980).

Mothers of handicapped children often provide a linguistic environment that is less complex and generally not as progressive as that of mothers of nonhandicapped children. (Burium, Rynders and Turnure, 1974; Kogan, Winberger and Bobbitt, 1969; Marshall, Hegrenes and Goldstein, 1973). The most consistent findings of these studies were that mothers of retarded children talked more frequently to their child and were more directive. These results are difficult to interpret since the control groups were chosen by chronological age rather than by level of language development, and mothers may have been responding to their child's level of language development. Davis

and Oliver (1980) addressed this issue in their study with children matched on language development. Their findings that mothers spoke more frequently to handicapped than nonhandicapped children provided support for earlier studies. Further support for this position was reported by Jones (1980) who compared mother-child communication for a group of Down's Syndrome children versus normal children matched on developmental age. While significantly more interactions occurred for Down's Syndrome children these interactions mainly involved the mothers supplying a response for the child. Although the Down's Syndrome children were not deprived of verbal interactions, at equivalent developmental ages the content and quality of the interactions differed from the interactions of the normal dyad.

Language acquisition is a process that requires not only a child with a developed neurological system in a state of readiness, but also a more competent speaker who engages in a reciprocal communication activity. The role of the caretaker is of paramount importance with the caretaker's sensitivity to the child's receptive abilities serving an important function in facilitating a child's language development. In line with this interactional approach Tizard, Cooperman, Joseph and Tizard (1972) conducted observational studies of two-to five-year old children in 13 residential nursery groups. The children's language development was related to the amount and content of adult talk directed to them. Significant correlations were found between children's language comprehension scores and staff

responsiveness to children's initiations. Tizard et al. found that in some nurseries a large proportion of the adult talk appeared to be concerned with giving instructions, mostly commands, to the child or with meaningless verbalizations. Both of these categories were unlikely to elicit a verbal response from the child, thus enrichment of their language development was relatively low.

Other researchers studying the content of language directed toward children have found that the number of commands, directives and imperatives is inversely related to children's age (Snow, 1977) and vocabulary development (Newport, 1977). For prelingual children, caretakers use compliance with behavior requests or directives, rather than questions as a means of probing for comprehension (Gelman and Shatz, 1977). Questions may become a more effective strategy as children become more verbally competent. Questions can help children learn new vocabulary, classification categories, and may stimulate verbalizations by requiring responses from the partner (Honig & Wittner, 1982). Snow (1977) concluded that mothers' speech was related in content to the children's activities, was directed toward eliciting responses from them, and that the high frequency of questions maintained a reciprocal verbal interaction with their infant. The frequency with which mothers ask questions of their infants has been found to be positively related to the child's receptive language at 20 months and to vocabulary at 30 months (Welson, 1973).

Since questions thus seem to be important in adult speech to young children, two types of questions will be considered. Direct questions require a response from the child and serve to maintain verbal interactions. On the other hand, rhetorical questions do not require a response from the child but may be used by adults to maintain an interaction with a verbally unskilled child. Jones (1980) found that for less advanced children mothers often responded for the child in order to maintain an interaction. Caretakers often ask a question and either supply the answer themselves or do not allow time for the child to respond. Such rhetorical questions should be more evident when the listener is verbally unskilled. As linguistic competence increases, more direct questions and fewer rhetorical questions should be evident. In the present study it was hypothesized that more direct and fewer rhetorical questions would be evident in an integrated (handicapped and nonhandicapped children) than in a nonintegrated (handicapped children only) setting.

Imitations and elaborations are other components of adult speech to children that tend to facilitate language development (Snow, 1977). In a longitudinal study, Lord (1975) found that mothers' imitations decreased and expansions began to increase as their child developed speech. Elaborations occur when an adult provides a more complete version in response to the child's shortened and perhaps distorted attempt to communicate (e.g., "That is a red truck" in response to the child's

"Truck"). Some mothers vary the level of elaborations closely in tune with small increments in children's linguistic maturity (Cross, 1977; Newport, 1976). Elaborations slightly in advance of the child's syntactic abilities might influence language development to the extent that they could allow rehearsal and provide the child with feedback on pronunciation. Imitation as well as elaborations are also used to check or confirm the child's communication intention, to provide mothers with feedback on children's comprehension (Lord, 1975), and may serve as a turn-taking device (Gleason, 1977). Regardless of their function, Newport (1977) found that exact imitations are correlated positively with the child's vocabulary, and elaborations are correlated positively with vocabulary size and the mean length of child's utterances. In the present study it was hypothesized that Child Life Therapists' (CLT) would direct more imitations and elaborations to handicapped children in the integrated condition than in the nonintegrated condition.

Social reinforcement is a significant factor in maintaining a verbal interaction. Reinforcement of children's verbalizations in the form of adult attention and praise has worked well with children with severe learning and behavioral problems (Gurlanick and Kravick, 1973) leading to increases in language development. Reinforcement and approval directed toward the social behaviors of a child resulted in collateral increase in children's verbalizations (Whitman, Macurio and Caponigri, 1970). In the present study it was hypothesized that CLTs would express more

approval of handicapped children in the integrated versus the nonintegrated setting.

In summary, children's acquisition of language depends upon a reciprocal communication activity in which caregivers recognize the changing developmental level of infants and toddlers and adapt their verbal behavior in accordance with these developmental changes. Mothers facilitate children's language development through the use of directives (imperatives, commands), questions, imitations and elaborations. For less verbally competent children mothers tend to use more directives, to probe for comprehension, and to use rhetorical rather than direct questions to maintain interactions. As children advance in language development fewer imitations and more elaborations are evident. Since handicapped children are often less verbally competent than their chronological age mates it is expected that caregivers interacting with them would initiate language less often and be less responsive when interacting with nonhandicapped children. In addition, caretakers are expected to use more directives and rhetorical questions and fewer imitations, elaborations and direct questions than would be evident with nonhandicapped children. Caretakers of handicapped children provide a linguistic environment that is less complex and generally not as progressive as that provided for their nonhandicapped peers. Generally, caretakers treat handicapped children at a lower developmental level (i.e., more directives) than may actually be true for the child. Caretakers may initiate

verbal interactions and respond less frequently when interacting with handicapped children than when interacting with nonhandicapped children. Handicapped children may be talked to more frequently, but the reciprocal nature of the interaction may be impaired either because the child is not responsive or through the caregivers tendency to respond for the child. It may be that caregivers tend to provide fewer social reinforcements for their handicapped child and thus do not encourage verbal interaction.

In addition to exploring categories of verbal behavior that tend to facilitate language development, the second domain explored in this study involves language that primarily serves to set limits on children's undesirable behaviors. As Bricker and Bricker (1978) have pointed out, mothers of handicapped children often accept inappropriate social behavior, or behavior at a lower than normal level of development on the part of their child. They suggest that this may be attributed to the child's handicapping condition or to the fact that society helps to define the behavioral expectations and standards for normal children but not for handicapped children (Kogan, 1980). Honig and Lally (1973) outlined three categories of verbal behavior that help set standards of social behavior for young children: Disapprovals, Cautions and Cultural Rules. Parents of normally developing children might set limits on their child's less desirable social behaviors by disapprovals that explicitly forbid the behavior, e.g., "No No don't throw toys". Limits of

acceptable behavior may also be set through the use of less emphatic cautions that warn of undesirable outcomes, e.g., "Don't throw the truck, you may hurt Mary". Further limitations may be set through cultural rules or statements of social conventions, e.g., "We don't take toys someone else is playing with". If nonhandicapped children are acting as role models of normal development for caregivers an increase in the frequency of these verbal behaviors toward handicapped children in an integrated versus a nonintegrated setting would be expected.

The Present Study.

The establishment of a nursery program at Sunny Hill Hospital for Children (SHHC) provided an opportunity to explore the assumption that the integration of normally developing and handicapped children into a nursery program would provide caregivers with a model of normal child development and thus modify their verbal behaviors toward the handicapped children.

The SHHC is a provincially operated medical facility that provides extended care and rehabilitation services for handicapped children. Prior to the establishment of an integrated nursery program at SHHC the hospital's Board of Directors applied to the Community Care Facilities Licensing Board for a provincial license to operate an infant and a toddler daycare facility. The hospital's existing premises were modified to meet the criteria of the licensing board. Each of

these facilities was licensed for 16 children with 4 Child Life Therapists (CLT) to be in attendance. It was felt that since handicapped children often require more space for special equipment, enrollment of children should be limited to 12 children with 3 Child Life Therapists in attendance. The integration of children in this facility differed from previous programs in that the children were much younger, and the nonhandicapped children were introduced into a setting for handicapped children who had a variety of disabilities ranging from mild to severe.

The present study was designed to explore possible differences in Child Life Therapist language to a group of handicapped toddlers in contrast to CLT language after nonhandicapped toddlers were introduced into the program, as well as to monitor the possible effects of the program on the language development of the children. The present study was exploratory in its aims and scope.

One specific aim of this exploratory study was to develop a verbal behavioral category system which would be sensitive to changes in caregivers' speech when interacting with children in a nonintegrated versus an integrated setting. The coding system focussed on two areas: language that primarily serves to facilitate language development and language that sets limits on behavior. The behavioral categories employed were adapted from Weir's (1978) Caregiver Language Instrument and Honig and Lally's (1973) Observation Checklist Assessing the Behaviors of

Caregivers. The categories developed coded the frequency of language directed toward the children, whether the language was initiated by the CLT or was a response to a child's behavior, as well as the content of CLT speech categorized as directives, imitations, elaborations, questions and social reinforcement/approval.

It was hypothesized that if the nonhandicapped children serve as role models of normal development for the CLT a decrease in the frequency of CLT total language, directives and rhetorical questions directed to handicapped children would be evident in the integrated condition as opposed to the nonintegrated condition. In contrast, an increase in initiations, responses, imitation, elaboration, direct questions, and approvals should be noted. In addition, if the nonhandicapped children serve as role models of normal development for adults it would be expected that in the integrated setting there would be no differences in CLT verbal behaviors to handicapped and nonhandicapped children.

Positive changes in CLT verbalizations should facilitate children's language development. These changes should be reflected by increases in the children's Peabody Pictures Vocabulary (PPVT) scores (Dunn, 1959). Whereas the absence of a control group limits conclusions concerning causal factors responsible for any change noted, normative comparisons are provided by using an assessment instrument like the PPVT which has been standardized over a very large representative sample of

children.

B. Method

Subjects

Child Life Therapists

Child Life Therapists (CLT) in the nursery program at Sunny Hill Hospital for Children were informed that their cooperation was required for a research project planned for the integrated nursery program. CLTs employed signed consent forms allowing both the videotaping of themselves with the children and the use of the videotapes for educational and research purposes. The CLTs were informed that data collected for the research project would not be used for evaluation of job performance.

Three female Child Life Therapists were hired for the program. Each held an Early Childhood Education Certificate and met the qualification requirements of the Community Care Licensing Board. The CLTs all had previous experience in daycare settings, with a range of 7 to 13 years of experience (mean = 9 years). Two of the CLTs had previously been employed in the preschool center at the hospital. One of these two had extensive previous experience with handicapped children in a hospital setting, while the other had experience with both handicapped

and nonhandicapped children. The third CLT had experience with nonhandicapped children only, and had worked in an English as a Second Language Stimulation Program for children. The ages of the CLTs ranged from 30 to 37 years (mean =33 years).

Handicapped children

Handicapped children entering the nursery program were either inpatients or medically referred day patients. There was no experimenter control of the severity of the handicapping condition of the participants or the number of handicapped children present at each observational session.

When the project began, eight handicapped children were enrolled in the toddler project. Three children were inpatients, four were full-time day patients and one was a part-time day patient. CLTs and handicapped children participated in two of observational conditions. In the first observational condition the handicapped children's chronological age ranged from 20 to 68 months (mean 38.6). These children displayed a wide range of handicaps and developmental levels. The developmental age of four of the handicapped children was at or above their chronological age, while the developmental age of four other handicapped children was below their chronological age. A variety of assessment instruments was used to determine the children's developmental age. The assessment of the children's developmental age, depending on handicap and age, was based on the Bayley Scale of Children's Abilities (Bayley, 1969), The

Peabody Picture Vocabulary Test (PPVT) (Dunn, 1959) or neurological assessments. The experimenter conducted assessments using the Bayley and the PPVT. Another graduate student trained in assessment also conducted assessments using the Bayley. Neurological assessments of severely handicapped children were conducted by the staff of the Vancouver Neurological Center.

CLTs, handicapped children and nonhandicapped children participated in the second observational condition. In this condition seven handicapped children remaining in the program had a mean age of 35.4 months (range= 21-46 months). Three of the handicapped children had no siblings, while 5 children had siblings at home (mean=2, range=1-4). All of these children, except one, had both parents present in the home. In this group the mothers' ages ranged from 20 to 36 years (mean=26.6 years), and their education levels ranged from 7 to 12 years of school (mean=10.6). Three of the mothers were employed outside of the home, while 5 were at home. The fathers' ages ranged from 24 to 35 years (mean=27.5), and their education levels ranged from 6 to 16 years of schooling (mean=11.5). Table 1 specifies participating children's chronological age, mental age, medical diagnosis and number of videorecording sessions attended for the two conditions assessed in this study: nonintegrated (NIC) and integrated (IC).

Table 1

Children's Developmental Age (D.A.), Chronological Age (C.A.),
 Medical Diagnosis and Sessions Attended in the nonintegrated and
 integrated conditions

<u>D.A.</u>	<u>C.A.</u> At first condition	<u>Medical</u> <u>Diagnosis</u>	<u>NIC</u>	<u>IC</u>
42	38	Menigeomylecle	6	10
41	36	Pheripheral nerve damage leg brace	10	2
36	32	Osteogenesis Imperfecta	10	8
31	45	Paraplegic, neurogenic	8	4
28	35	Delayed Development	10	10
21	21	Osteogenesis Imperfecta	6	4
17	35	Delayed Development	9	9
6	68	Brain damage	10	0
17	18	Normal	0	10
46	30	Normal	0	10
42	30	Normal	0	0

Nonhandicapped children

Two nonhandicapped children, aged 18 and 30 months, were enrolled in the program two weeks prior to data collection for the second condition. Neither of the nonhandicapped children had siblings and both parents were present in the family. Both mothers and one father were employed, and the other father attended university. The mothers were 29 and 32 years of age. One mother had completed grade 12 and had additional professional training, the other had completed a university degree. The fathers were 27 and 30 years of age, and each had a university degree.

Nursery Program

The integrated program was available to medically referred children without cost, while parents of nonhandicapped children were charged a fee that was commensurate with charges of other daycare facilities in the community. With the exception of inpatients, parents were required to provide transportation, lunch and disposable diapers for their child. All parents were informed about the integrated program and the research aspects of the project. They signed consent forms allowing their child to be developmentally assessed and videotaped for educational and research purposes.

The major responsibility for the nursery activity was maintained by the Child Life Therapists with each CLT acting as primary caregiver for three children. While the primary CLT was

responsible for maintaining contact with the child's parents and for the child's individual attention and toileting, each child was free to interact with any CLT. Contact with the child's parents was maintained through daily written records of the child's activities and behavior that were sent home with the child each day. The parents were encouraged to return a record of the child's home activities and behaviors (i.e., state of health, eating, sleeping, special activities involving the child).

The nursery program was conducted from 8:15 to 11 A.M. and from 2 P.M. to 5:15 P.M. The schedule of activities followed in the program is shown in Table 2. During the program the children were encouraged, but not required, to participate in the activities the CLTs set out for them. Children were encouraged to suggest activities they would enjoy, and were often offered several suggestions for different activities by the CLTs.

Setting and Apparatus

The 6.65 by 9.1 m toddler room was light, airy and cheerful, with adjacent facilities for changing and toileting the children. The room contained a large number of commercially available toys for both gross motor and fine motor development. Specially constructed chairs and equipment were available for the use of the handicapped children. Space was designated into activity or interest areas, for example, art, reading, and gross

Table 2

Nursery Program

<u>Time</u>	<u>Activity</u>
8:15	Arrival of day children Free play activity
9:00	Arrival of inpatients Free play activities.
9:30	Cleanup time
9:45	Toileting, snack
10:00	Art time (free play if desired)
10:45	Cleanup time, toileting
10:50	Circle time (singing, reading, group activities)
11:00	Inpatients to lunch in dining room Outpatients to lunch in preschool
12:00	Toileting, naptime
1:30	Children up, diaper, dress
2:00	Free play
2:30	Toileting, snack Individual time for children
3.00	Free play, some day- patients go home
3:45	Music time
4:00	Inpatients to dining room large muscle activities (gym)
5:15	Last child leaves

motor areas.

Observations were recorded using a Sanyo videocamera (model VCM 2000), equipped with a Sony .75mm to 12.5mm zoom lens which, along with a Panasonic cassette videorecorder (model NV-8200), was positioned unobtrusively in the room. The camera was positioned to allow the videorecording of as many children as possible, with an attempt to include the focal CLT. A Sony EMC-16 microphone, attached to her clothing, allowed the focal

CLT to move about the room freely.

Observational Procedures.

This report is concerned with data from the toddler group only. However, observational videorecording of an infant group at the same setting placed constraints on the times observations could be collected in the toddler room. Times available for observations were further limited by hospital routine and the children's arrival and departure time.

The study was initiated in the fall of 1981. During the two week period between the beginning of the program and the collection of data for the first observational session, thirty minutes of videorecordings were made each day for four days to allow testing of equipment and to reduce any anxiety the CLTs may have experienced. Subsequently four one-hour sessions, under conditions to be used in the study, were recorded. These sessions were used to accustom the subjects to the experimental procedures, and to refine the behavioral category system.

Two observational conditions form the basis of this study. In the nonintegrated condition (NIC) 11 one-hour sessions were videorecorded over a two week period with only handicapped children and CLTs present. In the nonintegrated condition a mean of 6.4 (range= 5-7) children were present for each observational session. In the following integrated condition (IC) 10 one-hour sessions were videorecorded over a two week period with CLTs, handicapped, and nonhandicapped children present. In the

integrated condition a mean of 6.8 (range=6-8) children were present for each observational session. After the first observational condition, one of the inpatients was transferred to part-time outpatient status while another dropped out of the program. In order to familiarize the nonhandicapped children with the nursery routine, a two week interval separated the videorecordings of the two conditions. Subsequently, ten one hour observational sessions for the second condition were videorecorded with CLTs, handicapped and nonhandicapped children present.

Videorecording was counterbalanced for morning and afternoon sessions. In order to minimize interruption of the program, a 15 minute continuous event sampling of behavior was conducted for each CLT engaged in her normal routine. A Lavalier microphone permitted a clear recording of her language behaviors as well as the vocal responses of others nearby. At the end of each 15 minute session the experimenter indicated to whom the CLT should give the microphone based on a previously determined random order. In addition, one-minute focal individual samples of children's behaviors were recorded for future analysis and study, but do not comprise data for this study.

Continuous event sampling for the NIC yielded 210 minutes of observations for each of the CLTs. Since equipment failure prevented clear recordings on portions of two videotaped sessions, they were combined into a composite session resulting in 150 minutes of observations for each CLT. In addition,

continuous event sampling for the integrated condition yielded a further 150 minutes of observations for each of the three CLTs.

Scoring Procedures and Behavioral Categories.

Categories for coding the verbal behavior of the CLT are presented in Table 3. Behavioral categories coded in the present study required the coder first to determine whether CLT vocalizations were directed towards a child or children. Vocalizations directed towards adults were not scored. Vocalization to a child was then coded according to whether it was initiated by the CLT in the absence of a child's previous attempts at verbal or nonverbal communication, or occurred in response to a child's behavior. In addition the categorical content of the CLT language was coded. Six categories (direct questions, rhetorical questions, imitations, elaborations, approvals and directives) were considered to indicate whether the vocalizations primarily served to facilitate children's language development. Three other categories (disapprovals, cautions and cultural rules) were considered primarily to serve a regulating function by setting limits on the child's behavior.

Videotaped records of CLT verbal behaviors were scored directly onto prepared coding sheets divided into 10 second

Table 3

Categories of Verbal Behavior

1. Total Language - Includes all CLT vocalizations to a child or children. Vocalizations to adults are not scored.
2. Initiations - Initiated language on the part of the CLT occurs in the absence of the child's previous attempts at verbal or nonverbal communication. An initiation denotes a CLT attempt to engage in social interaction with a child or children.
3. Responses - CLT language that occurs in response to a child's behavior and the child's previous behavior indicates awareness or expectation of a response from the CLT as indicated by direction of attention towards the CLT and pausing to allow the CLT to respond.

Categories that primarily serve to facilitate language development:

4. Direct questions - a verbal or nonverbal response is expected from the child. (e.g., "May I lift you up now?" while waiting for the child to position him/herself for lifting).
5. Rhetorical questions - no response is expected from the child. A rhetorical question might provide information about what is going to happen, (e.g., "Shall we go outside now?" "Isn't it a nice day out?"). The CLT does not leave a pause for the child to reply. The CLT may ask this question and immediately answer it herself.
6. Imitations - CLT repetitions of a vocalization or utterance that the child has just made.

7. Elaborations - words the child has just uttered are expanded by the CLT into phrases or sentences, (e.g., "Juice" is expanded into "It's apple juice.").
8. Approvals - CLT vocalizations that indicate acceptance of, or positive reinforcement for, the child's behavior. (e.g., "That's a good boy."; "Thank you for doing a good job." ; Laughter in response to a child's behavior).
9. Directives - explicit directions for the child's behavior. (E.g., "Put it on the shelf."; "Give it to Mary."; "Get your shoes.").

Categories of language that set limits for children's behavior.

10. Disapprovals - verbal restrictions of the child's behavior that are negative in tone and intent. (e.g., "No, no."; "Don't ride your toy there.").
11. Cautions - imposition of constraints on the child's behavior, but not as emphatic as disapprovals. (e.g., "Be careful around Mary." ; "Please don't run over the mat.").
12. Cultural rules - Tells the child how to behave, or what behavior is expected of him/her. (e.g., "We say thank you." ; "We don't talk with our mouth full."; "We don't take toys that someone else is using.").

intervals. Within each 10 second interval the observer coded language, initiations, responses, content category, and whether the verbal behavior was directed to a handicapped or nonhandicapped child. If no verbalization occurred the interval was left blank. If a language behavior was observed during the

interval a one (1) was scored for verbal behavior directed to a handicapped child and a zero (0) scored for verbal behavior directed toward a nonhandicapped child. If language was directed to both handicapped and nonhandicapped children in the same interval a 0 and 1 was coded. An example of CLT initiated verbalizations occurs when a child places a doll in the stroller and the CLT approaches and says, "Are you taking your baby for a walk?". The reciprocal responses in a chain of interactions are not further scored in either the initiates or response categories although they do appear in the coding of total language. Responsive language on the part of the CLT occurs when the child's behavior elicits a response from the CLT and is judged to indicate awareness or expectation of a response from the CLT. For example, the child offers the CLT a puzzle and stands looking at her, the CLT says 'Let's put it together.' Or, a child asks, "What is this?", and waits for a response. The child's awareness or expectation of a response is indicated by his/her direction of attention towards the CLT and the pause the child provides to allow the CLT to respond. Initiated or responsive language comprise mutually exclusive categories which were scored only for the beginning of an interaction. Content coded within language facilitation categories and within behavioral limitations categories were also mutually exclusive.

Developmental Assessments

In order to explore the efficacy of the language environment provided for the children in this ongoing program, assessments of their language development were conducted. These assessments of handicapped children were conducted during the first three weeks of the first observational condition using the Peabody Picture Vocabulary Test (Dunn, 1959). Assessments of the nonhandicapped children were conducted during the third week of their entry into the program also using the Peabody Picture Vocabulary Test. Approximately seven months after the program began all children were reassessed, using the same instruments. One nonhandicapped child who entered the program after the observational sessions were completed was included in the developmental assessments.

C. Results

Interobserver reliabilities

Interobserver reliabilities for scoring of the videotaped observational sessions were calculated across all ten second coding intervals for twenty percent of the videorecorded sessions using Kappa (K), a chance-corrected percent agreement measure. The average K ranged from .59 to .93, as reported in Table 4. Also presented in this table are interobserver reliabilities based on Intraclass Correlation Coefficients (ICC) which assess the variance within and between sets of measures. These reliabilities are sufficiently high to warrant confidence in the measures used. Typically observational studies report only one method of calculating interobserver reliability. In this study both K and ICC were used. Kappa provides information on interobserver reliabilities interval by interval within an observational session, while ICC uses the marginal totals of all observational sessions coded by two observers.

Table 4

Interobserver reliabilities

<u>Category</u>	<u>Kappa</u>		<u>ICC</u>
	Mean	Range	
1. Total Language	.87	0.61-1.00	.97
2. Initiations	.82	0.69-0.98	.88
3. Response	.77	0.60-0.92	.86
4. Direct Questions	.81	0.59-0.87	.97
5. Rhetorical Questions	.59	0.28-0.84	.70
6. Imitations	.74	0.36-1.00	.77
7. Elaborations	.60	0.00-1.00	.84
8. Approvals	.72	0.60-1.00	.84
9. Directives	.77	0.59-0.87	.92
10. Disapprovals	.93	0.49-1.00	.70
11. Cautions	.71	-.11-1.00	.63
12. Cultural Rules	.82	0.49-1.00	.89

Percentage of CLT verbal behaviors directed towards all children in the nonintegrated and integrated conditions

In order to examine Child Life Therapists' (CLT) speech to children in this study the frequency of behaviors coded in each category was transformed into percentages based on the total number of ten second intervals for each CLT in which each category received a score out of the total 900 ten-second intervals coded.

Table 5 shows the mean percentage of CLT verbal behaviors recorded for each category in the nonintegrated (NIC) and integrated (IC) conditions. The CLTs verbalized to children in 90% and 87% of the observational intervals in the NIC and IC respectively. This indicates that CLTs talked to the children the major portion of the intervals. CLTs initiated interactions in 50% or more of the intervals in both conditions. They also initiated interactions more often than they responded to children's initiations in both conditions. It must be pointed out that in this coding system we are only concerned with CLT verbal behaviors and all CLT initiations, whether successful (i.e., responded to by child) or unsuccessful, were coded. In contrast, CLT responses reflect only successful child initiations.

In looking at content categories that facilitate language development (items 4-9) direct questions (32%, 38%) and directives (32%, 31%) were the most frequently scored categories. These categories occurred with approximately equal frequency. Imitations and elaborations occurred less frequently than the other categories, and a somewhat higher percentage of imitations (7%, 8%) than elaborations (4%, 5%) was evident in both conditions. Approvals were scored equally in each condition (20%, 19%).

Examination of the categories that set limits on children's behavior (items 10-12) revealed that they were seldom used. Cautions and cultural rules occurred in 3-4% of the intervals in

Table 5

Percentage of Child Life Therapists' Verbal Behavior in Each Category in the Nonintegrated and Integrated Conditions

<u>Category</u>	<u>Nonintegrated</u>	<u>Integrated</u>
1.Total		
Language	90	87
2.Initiations	50	54
3.Responses	22	28
4.Direct	32	38
Questions		
5.Rhetorical	14	13
Questions		
6.Imitations	7	8
7.Elaborations	4	5
8.Approvals	20	19
9.Directives	32	31
10.Disapprovals	0.1	0.5
11.Cautions	3	4
12.Cultural Rules	4	4

each condition. Disapprovals occurred even less frequently.

The frequency of adult verbalizations to a group of children may depend upon the number of children in the group. Since there were a varied number of handicapped children present for each observational session in this study (ranging from 5-8 in the NIC and 3-6 in the IC) the mean frequency of verbal behaviors is used in the following data descriptions and analyses. Means are based on each category's frequency within an observational session divided by the number of children present

for that session. For example, in the NIC means are based on each category's frequency within an observational session divided by the number of handicapped children present in that session. In the IC CLT verbal behaviors were coded as being directed towards either handicapped or nonhandicapped children. In this condition, means were computed on the basis of each category's frequency directed towards each group divided by the number of children present in that group for that session. Since the three behavioral limits categories (disapprovals, cautions and cultural rules) were coded so infrequently they were combined into one social limits category for the following data descriptions and analyses.

Language environment of handicapped children in the nonintegrated and integrated condition

Table 6 provides the range and mean frequency for each of the 10 categories directed towards handicapped children in the IC and the NIC.

The data presented in Table 6 are further partitioned in Table 7 which shows the mean frequency of language categories directed towards handicapped children by each CLT in the NIC and IC.

In order to explore the language environment provided by CLTs for handicapped children in the NIC and IC a condition by CLT repeated measures analysis of variance was conducted for each of the 10 dependent variables, with condition (NIC and IC)

Table 6

Mean Frequency for Each Category Directed Towards Handicapped Children in the Nonintegrated and Integrated Conditions.

<u>Category</u>	<u>Nonintegrated</u>		<u>Integrated</u>	
	Mean	Range	Mean	Range
1. Total				
Language	15.0	9.3-20.2	12.2	4.0-18.7
2. Initiations	8.2	4.0-14.0	7.6	3.0-12.7
3. Response	3.5	0.9- 6.7	3.6	0.5- 7.8
4. Direct	5.4	2.6- 9.0	5.2	0.7- 9.5
Questions				
5. Rhetorical	2.3	0.3- 6.2	2.2	0.0- 6.3
Questions				
6. Imitations	1.2	0.1- 6.2	1.1	0.0- 6.0
7. Elaborations	0.7	0.0- 1.7	0.6	0.0- 3.7
8. Approvals	3.3	1.2- 5.8	2.8	0.0- 6.5
9. Directives	5.4	1.4-10.2	4.3	0.5- 9.7
10. Social	1.2	0.1- 2.0	1.2	0.0- 5.0
Limits				

treated as a grouping factor and CLT as a within factor. CLTs and the ten observational sessions in each condition were treated as random factors, with Condition as a fixed factor. Since the data were in the form of frequency counts, square root transformations were used for all categories.

Analyses of categories that measured CLT facilitation of handicapped children's language development revealed no significant main effect for conditions. There was a significant CLT effect for Total Language ($F=3.32$, $df=2, 36$, $p\leq.05$).

Table 7

Mean Frequency of Language in Each Category Directed Toward Handicapped Children By CLTs in the Nonintegrated and Integrated Conditions.

	CLT1		CLT2		CLT3	
	NIC	IC	NIC	IC	NIC	IC
1. Total Language	15.7	13.5	15.5	9.7	13.9	14.1
2. Initiations	8.6	8.5	8.7	5.9	7.5	8.9
3. Responses	3.9	3.8	2.9	2.2	3.8	4.8
4. Direct Questions	5.8	5.3	5.7	3.7	5.4	6.6
5. Rhetorical Questions	3.0	2.7	2.4	1.6	1.5	2.3
6. Imitations	1.0	0.9	0.9	0.6	1.6	1.7
7. Elaborations	0.8	0.6	0.6	0.5	0.7	0.7
8. Approvals	3.8	2.9	3.3	2.1	2.8	3.6
9. Directives	5.6	5.0	5.8	3.0	4.7	4.7
10. Social Limits	1.6	2.2	0.9	0.6	1.2	1.2

This CLT effect was involved in a significant CLT by Condition interaction ($F=6.28$, $df=2, 36$, $p \leq .005$). As can be seen in Table 7, CLT 1 and 2 talked to handicapped children less frequently in the IC as compared to the NIC, while CLT 3 talked to handicapped children less frequently in the NIC than the IC.

The decrease in Total language to handicapped children for CLT 1 and 2 in the integrated condition suggests that the presence of nonhandicapped children may have led these CLTs to modify their language to handicapped children. This result was

not due simply to more talking to the nonhandicapped children.

Significant CLT by Condition interactions were also found for Initiations ($F=3.51$, $df=2$, 36 , $p\leq.05$). Again looking at Table 7 it can be seen that CLT1 initiated equally to handicapped children in the NIC and IC, CLT2 initiated more often to handicapped children in the NIC than in the IC, and CLT3 initiated more often to handicapped children in the IC than in the NIC. Significant CLT main effects were found for Responses ($F=7.56$, $df=2$, 36 , $p\leq.001$). CLT2 was least responsive and CLT3 was most responsive to the handicapped children. A significant CLT by condition interaction was found for Direct Questions ($F=6.66$, $df=2$, 36 , $p\leq.003$). CLT1 and CLT2 asked handicapped children more Direct Questions in the NIC than in the IC, while CLT3 asked more Direct Questions in the IC. Direct questions tend to elicit verbalizations from children, thus it would seem that CLT3 attempted to elicit more verbalizations from handicapped children in the IC than in the NIC. In contrast, CLTs 1 and 2 attempted to elicit more verbalizations from handicapped children in the NIC than in the IC. There was a significant CLT effect for Imitations ($F=13.33$, $df=2$, 36 , $p\leq.0001$). CLT2 was least imitative of handicapped children's verbalizations, while CLT3 imitated almost twice as frequently as CLT2. This would indicate that, for this category, CLT3 facilitated handicapped children's language development more often than CLT2. There were no significant effects for the Social Limits category.

CLT verbal behavior directed toward nonhandicapped and handicapped children in the integrated condition

Table 8 presents the mean frequency of verbal behavior for each CLT directed towards nonhandicapped and handicapped children in the integrated setting.

In order to explore possible differences in CLT language to handicapped and nonhandicapped children in the integrated condition, a CLT by group repeated measures ANOVA was performed for each of the 10 dependent variables. Group (nonhandicapped and handicapped) was a grouping factor and CLT was a within factor. As before, CLT and the ten observational sessions were treated as random factors with group as a fixed factor. Square root transformations were used for all dependent variables.

Analysis of categories that measured CLT facilitation of language development revealed no significant main effects for group. There were however, significant CLT main effects for Total Language ($F=6.45$, $df=2$, 36 , $p \leq .005$); Initiations ($F=7.44$, $df=2$, 36 , $p \leq .002$); Directives ($F=3.41$, $df=2$, 36 , $p \leq .05$); Direct Questions ($F=3.42$, $df=2$, 36 , $p \leq .05$) and Imitations ($F=3.34$, $df=2$, 36 , $p \leq .05$), but all were involved in CLT by group interactions.

Significant CLT by group interaction effects were found for all categories: Total Language ($F=15.62$, $df=2$, 36 , $p \leq .0001$), Initiations ($F=15.98$, $df=2$, 36 , $p \leq .0001$), Responses ($F=10.85$, $df=2$, 36 , $p \leq .0002$), Direct Questions ($F=15.14$, $df=2$, 36 , $p \leq .0001$), Rhetorical Questions ($F=6.30$, $df=2$, 36 , $p \leq .005$),

Table 8

Mean Frequency of Language Categories for Each CLT Directed Toward Nonhandicapped (NHC) and Handicapped Children (HC) in the Integrated Condition.

	CLT1		CLT2		CLT3	
	NHC	HC	NHC	HC	NHC	HC
1. Total Language	12.7	13.5	24.6	9.7	4.9	14.1
2. Initiations	8.5	8.5	14.3	5.9	2.3	8.9
3. Responses	4.0	3.8	7.6	2.2	1.8	4.8
4. Direct Questions	4.9	5.3	10.0	3.7	2.2	6.6
5. Rhetorical Questions	1.4	2.7	4.1	1.6	0.8	2.3
6. Imitations	0.4	0.9	2.7	0.6	0.8	1.7
7. Elaborations	0.5	0.6	1.4	0.5	0.2	0.7
8. Approvals	2.7	2.9	4.5	2.1	1.7	3.6
9. Directives	3.5	5.0	7.1	3.0	1.4	4.7
10. Social Limits	1.5	2.2	5.5	0.6	0.2	1.2

Imitations ($F=10.19$, $df=2$, 36, $p \leq .0003$) and Elaborations ($F=4.64$, $df=2$, 36, $p \leq .01$), Approvals ($F=6.81$, $df=2$, 36, $p \leq .003$), Directives ($F=8.24$, $df=2$, 36, $p \leq .001$), and Social Limits category ($F=6.01$, $df=2$, 36, $p \leq .005$). CLT1 and 3 set limits more often for handicapped than nonhandicapped children, and CLT2 set limits more often for nonhandicapped than handicapped children.

For convenience in discussing results pertaining to CLT individual differences, the data presented in Tables 7 and 8 have been reorganized and are presented in Table 9. Data organized according to CLT are presented across both conditions

and groups of children.

In the IC, a pattern of interaction effects was noted, with CLT 2 directing more verbal behaviors toward nonhandicapped than handicapped children, and CLT 3 directing more behaviors towards handicapped than nonhandicapped children in all categories reported. CLT 1 verbalized equally to each group in terms of some categories: Initiations, Responses, Direct Questions, Elaborations and Approvals. However, CLT 1 used more Rhetorical Questions, Imitations and Directives when talking to handicapped than when talking to nonhandicapped children. Based on these findings, the individual differences among CLTs seems an important factor to consider when explaining the language environment provided by this integrated program.

In looking at individual CLTs it is interesting to note that while CLT1 talked less to handicapped children in the IC than in the NIC the frequency of the content categories that would facilitate language development was fairly stable across the two groups of children in the IC. This would indicate that although the quantity of this CLT'S language to handicapped children decreased, the quality of the language, as measured by initiations, responses, direct questions, elaborations and approvals remained stable and similar to language directed to nonhandicapped children. In general, CLT2 directed more verbal behaviors towards nonhandicapped than handicapped children and when nonhandicapped children were not present this CLT directed more verbal behaviors to handicapped children. On the other

Table 9

Mean Frequency of Language Categories for Each CLT Directed Toward Handicapped Children in the Nonintegrated Condition and handicapped (HC) and nonhandicapped Children (NHC) in the Integrated Condition.

CLT1

	NIC HC	IC HC	IC NHC
1. Total Language	15.7	13.5	12.7
2. Initiations	8.6	8.5	8.5
3. Responses	3.9	3.8	4.0
4. Direct Questions	5.8	5.3	4.9
5. Rhetorical Questions	3.0	2.7	1.4
6. Imitations	1.0	0.9	0.4
7. Elaborations	0.8	0.6	0.5
8. Approvals	3.8	2.9	2.7
9. Directives	5.8	5.0	3.5
10. Social Limits	1.6	2.2	1.5

CLT2

	NIC HC	IC HC	IC NHC
1. Total Language	15.5	9.7	24.6
2. Initiations	8.7	5.9	14.3
3. Responses	2.9	2.2	7.6
4. Direct Questions	5.7	3.7	10.0
5. Rhetorical Questions	2.4	1.6	4.1
6. Imitations	0.9	0.6	2.7
7. Elaborations	0.6	0.5	1.4
8. Approvals	3.3	2.1	4.5
9. Directives	5.5	3.0	7.1
10. Social Limits	0.9	0.6	5.5

CLT3

NIC HC	IC HC	IC NHC
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1.Total			
Language	13.9	14.1	4.9
2.Initiations	7.5	8.9	2.3
3.Responses	3.8	4.8	1.8
4.Direct	5.4	6.6	2.2
Questions			
5.Rhetorical	1.5	2.3	0.8
Questions			
6.Imitations	1.6	1.7	0.8
7.Elaborations	0.7	0.7	0.2
8.Approvals	2.8	3.6	1.7
9.Directives	4.7	4.7	1.4
10.Social	1.2	1.2	0.2
Limits			

hand, in general, CLT3 directed more verbal behavior to handicapped than nonhandicapped children and more verbal behaviors to handicapped children when nonhandicapped children were present.

In summary, there were no significant differences in total language directed towards handicapped versus nonhandicapped children in the IC. There were significant CLT effects and significant interaction for total language and for content categories in both the nonintegrated and integrated settings, indicating that CLT individual differences were very important.

Assessment of children's language abilities.

Table 10 presents children's scores on the Peabody Picture Vocabulary Test (PPVT) administered twice. Subjects included two nonhandicapped children (A,B) and seven handicapped children (C, D, E, F, G, H, I) who had remained in the program. The interval between testing was seven months for all children, except Child

B, tested at a five-and-one-half months interval.

As shown in Table 10 no children showed decreases in their PPVT scores during their participation in the integrated program, while increases greater than would be expected by maturation alone were evident for six of the nine children (A,B,C,E,F,H). At the time of the first assessment, both of the nonhandicapped children (A,B) scored above the level expected for their chronological age. The increase in their PPVT scores at Time 2 would suggest that no detrimental effects in vocabulary development occurred as a result of their experiences in the integrated program. At Time 1, except for two children with developmental delay (G,I), and one child (F) with severe handicaps, the handicapped children showed receptive vocabulary abilities at or above their chronological age. All except Child I displayed receptive language, and a few answered verbally. At Time 1 only Child I was unable to perform the task and showed extreme language delay, with no evidence of receptive language ability. At Time 2 all of the children responded verbally with the exception of child I who had, however, attained receptive language. In general then, children maintained or improved their PPVT scores, suggesting some beneficial and certainly no detrimental effects of the program on such language measures.

Table 10

**Peabody Picture Vocabulary Test
(Mental Age Equivalent in months)**

Child	Time 1		Time 2 M.A.	Change
	C.A.*	M.A.		
A	30	46	69	+23
B**	30	43	53	+10
C	38	42	78	+36
D	36	41	43	+2
E	32	36	49	+13
F	45	31	45	+14
G	35	28	33	+5
H	21	21	34	+13
I	35	•	25	

- Unable to perform task.
- **5.5 months between tests.
- *Age at beginning program.
- Standard error of measurement = 7.

D. Discussion

Caretakers of handicapped children often provide a linguistic environment that is less complex and generally not as progressive as that provided for their nonhandicapped peers. As well, a caretaker's beliefs and perceptions of a handicapped child's present status and future potential may influence the kind of linguistic environment provided. It has been proposed that integrated programs for toddlers might allow nursery caretakers to develop positive evaluations of a handicapped

child's present level of development as well as his/her potential for future development. In line with this proposal, this study explored the assumption that nonhandicapped children in an integrated setting would serve as models of normal development for caretakers and thus favourably modify their language to handicapped children. The purpose of the present investigation was to assess the impact of an integrated program on the children's vocabulary development and to explore the language environment provided for handicapped toddlers in a nonintegrated setting (NIC) and an integrated setting (IC). Categories of Child Life Therapists' (CLT) verbal behavior that should facilitate toddlers' language development and categories that set limits on children's behavior were developed and coded.

The first hypothesis, suggested by theoretical studies, was that an integrated program would facilitate the language development of handicapped children. The data obtained were consistent with this hypothesis. For example, the finding that all handicapped children showed increases in vocabulary development, as measured by the Peabody Picture Vocabulary Test, would indicate that the children showed some beneficial effects, and suffered no detrimental effects, from their participation in the integrated program. Indeed some of the children showed remarkable strides in this aspect of language development.

Increases in vocabulary development for two language delayed handicapped children were particularly pronounced. One of these children showed no evidence of receptive language at

the beginning of the program, yet noteworthy improvements were evident in receptive language abilities. At the second testing on the PPVT this child attained a receptive vocabulary score equivalent to a mental age of 25 months. The other language delayed child had receptive and no productive language at the beginning of the program. At the second testing, although this child's mental age equivalent was still below her chronological age, productive language was evident and the child spoke in sentences. The mental age equivalent of another handicapped child was 14 months below her chronological at the beginning of the program. At the time of the second testing this child's mental age was only seven months below her chronological age. The other four handicapped children participating in the program were not language delayed and their mental ages were at or above their chronological ages when they entered the program. One of these children showed remarkable progress in language development and, in part, this may have been related to an increase in mobility provided by a self-propelled cart. Such mobility might have allowed this child to participate more actively in social interactions. Another of these children demonstrated little progress at the second testing, but still scored above his chronological age. This lack of progress may have been due to unsettled home conditions and to surgical procedures experienced shortly before the second testing.

Both of the nonhandicapped children in the program were very bright children. Both scored well above their chronological

age levels when entering the program, and continued to show accelerated progress in vocabulary development during their time in the program. Thus, no detrimental effects were observed as well for these nonhandicapped children who participated in a program for handicapped children.

It is interesting to compare some results of this study to previous research findings with nonhandicapped children. In the present study, CLTs directed language to the children in 90% and 87% of the observational intervals in the NIC and IC respectively. In contrast, in a study of 85 nonhandicapped children aged two-to-five years in thirteen residential nursery programs Tizard et al., (1972) reported that the observed staff spoke to a child in only 51% (range=36.8%-61.5%) of the observational periods. It appears that in the present study adults spoke to children far more frequently than might have been expected in a program for nonhandicapped children. However, the differences noted between these two studies may have been due to different program structures and the ages of the children. The 13 nursery groups comprising Tizard's study varied in the degree of autonomy experienced by each group. Some nurseries were run very much like hospitals and in these settings adults spoke less frequently to the children than in those nurseries where the role of the adult was approximately that of a foster mother. In the present study the role of the CLT was approximately that of a foster mother.

Another possible factor influencing the frequency of adult talk to children may be the number of children present in a group. According to Tizard's study, however, no significant differences were found in the percentage of adult talk to children when one to two, three to six, and seven or more children were present in a group.

A comparison of present findings can be made to previous studies with children in a similar age range that examined directives and direct questions addressed to nonhandicapped children. CLTs used more directives (32% and 31% of the intervals in the NIC and IC respectively) than was found in previous studies. For example, Newport et al., (1977) reported 18%; Broen, (1972) reported 24.3% and Cross (1977) reported 7.4% of utterances as directives. The presence of nonhandicapped children in the integrated setting did not lead CLTs to employ fewer Directives than in the nonintegrated setting. This would suggest that even in the integrated setting the CLTs were more directive than adults interacting solely with nonhandicapped children. Directives are more evident for less linguistically sophisticated children and do not tend to elicit language from children, so that one would not expect high frequencies of directives to facilitate language development. Present findings, however, show that they had no detrimental effect on receptive language, as measured by the PPVT.

In contrast to directives, the frequency of CLT direct questions (32%, 38%) in this study is comparable to data on

mother's speech to nonhandicapped children reported by Newport (1977) 44%; Broen (1972) 36.9% and Cross (1977) 33.4%. Direct questions occurred frequently and had high interobserver reliability. There were significant CLT by condition effects for direct questions when comparing handicapped children in the NIC and IC as well as handicapped and nonhandicapped children in the IC. Therefore it appears that in considering the Questions category changes in the scoring procedure and expansion of the category may prove useful in future research. The following sections present the rationale for such changes.

The present language categories showed individual differences among adults. However, individual differences in children's language development were also present in this study. One group of children (handicapped and nonhandicapped) had not developed productive language, while another group were relatively fluent for their age level. Therefore, it may prove useful in the future to code not only whether the child addressed was handicapped or nonhandicapped but also whether the child was verbal or nonverbal. Thus, future consideration should be given to such changes in the scoring procedure as well as to the expansion of behavior categories.

Some of the categories used in this study were age-related (imitations, elaborations, directives) or could be expanded to reflect age-related differences. For example, direct questions could be expanded to include yes/no questions, wh-questions and open-ended questions. Further research on questions as content

categories would be particularly useful, given the reported importance of this form of adult speech to children's normal language development (Longhurst and Stepanich, 1975; Sigel & Saunders, 1979). Further expansion of the present study could also include measures of children's speech behaviors. Naturalistic observations of child language would provide a more extensive assessment of developmental progress in this area than was provided by the PPVT.

CLT individual differences and CLT by condition interactions were perhaps the most noteworthy findings in this study and should be explored further. These findings have implications for future program design. Desired program outcomes should be examined in terms of specific areas of CLT experiences, attitudes and styles of interactions with children, since these factors may interact in positive or negative ways with program goals. A significant CLT by condition interaction for total language indicated that CLT1 and CLT2 decreased, while CLT3 increased the frequency of language to handicapped children in the IC as compared to the NIC. This finding for two CLTs cannot be attributed to them simply talking more to nonhandicapped children in the integrated condition, and further illustrates CLT individual differences.

For example, in the IC, CLT2 talked more to nonhandicapped children than to handicapped children; however, CLT1 talked equally to both groups. The decrease noted in the frequency of total language for these two CLTs may only have been due to a

time effect or to an increase in interactions among the children themselves, leading to less need for the CLT to talk to the children. In addition, in the integrated condition an increase in child verbalization and turn taking when conversing with the CLT could result in fewer CLT verbalizations. In contrast to the other CLTs, CLT3 talked infrequently and initiated interactions very infrequently with nonhandicapped children in the IC. Concomitant with her increase in total language to handicapped children, increases in several content categories were also noted for this CLT. One can not exclude the possibility that the presence of nonhandicapped children led this CLT to increase speech directed to handicapped children that tended to facilitate language development.

Individual differences noted for caretakers in the present study are reminiscent of differences found in previous mother-child language research. In Lieven's (1978) longitudinal study of two mother-child dyads marked individual differences were noted for mothers as well as children. In particular, differences were noted in mothers' turn-taking, responsiveness to the child and in type of response. Results from the present study suggest that such individual variation need not be detrimental to children's language acquisition, particularly as assessed by vocabulary comprehension. However, such differences require research and explanation in their own right. Clearly, CLT individual differences have an impact in an integrated setting that future research should not ignore. Several

individual difference variables are suggested by the present study.

In this study one CLT had experience only with handicapped children, one CLT had worked only with nonhandicapped children and the other CLT had worked with both handicapped and nonhandicapped children. Although the present study does not address the issue of CLT prior experience this may be a factor in explaining CLT individual differences. For example, Kearsley (1979) has pointed out that a caretaker's perception of a child's present abilities and future potential can have an impact on how the child is treated. Experience with nonhandicapped children may provide a caretaker with knowledge of normal child development. An adult with no experience with handicapped children may have developed few negative conceptions regarding handicapped children and the introduction of nonhandicapped children into a program may quickly lead her to see that the handicapped children are not that different from normally developing children and have the potential to develop. The two groups would then be more likely to be treated equally. On the other hand, an adult who has only worked with severely handicapped children may have formed negative conceptions of handicapped children's abilities and potential. The introduction of handicapped children may not be a sufficient factor to change these conceptions.

Previous experience may affect interactions in other ways as well. For example, a child's handicap can limit the types of

activities in which caretaker and the child can engage. The wider variety of interactions possible in interactions with a nonhandicapped child may prove to be more rewarding to the caretaker. If a CLT has only worked with handicapped children, she may direct more attention to nonhandicapped children in the integrated condition due to the novelty of beginning to work with nonhandicapped children. The two week interval between the collection of observations for the two conditions may not have been long enough to allow for a novelty effect to decrease. Thus, prior experience with normally developing children may affect the way caretakers interact with children in an integrated setting. A knowledge of normal child development and experience with normally developing children may be an essential prerequisite for adults in an integrated setting. Further research in this area may be useful.

Other factors, in addition to adults' prior experience, may have affected the present findings. It has been acknowledged that adults talk to children differently depending on the activity in which they are engaged. The individual differences noted in this study may have been the result of different styles of play in which the CLTs and children engaged. Physical handicaps may limit children's participation in certain play activities, such as those requiring motor skills. In addition, forms of instructional play may set limits on the number of children with whom a CLT interacts. Pretend play, for example, provides an activity in which children of various levels of

ability can engage. Therefore the CLT could interact equally with nonhandicapped and handicapped children when engaged in pretend play. An example from the present research illustrates this. In an episode of pretend play with hand puppets several children used the puppets to play a game of alligators attacking the CLT. Those children with mobility entered the game actively. The CLT was able to encourage a quadriplegic child's participation in the game by hugging him and saying 'Save me, save me'. In contrast, one CLT initiated play with two handicapped children by arranging a table between them, saying they were going to play a game. She then put a set of nesting cups on the table and asked one child to give all but two cups to the other child. The CLT then asked the child with the most cups to identify which of the cups in front of her were the same as a series of cups the CLT held up. While this game was played with one child the other was left to amuse herself with her cups. A nonhandicapped child who approached and asked to join the game was told he could have a turn when the other children finished. Clearly, this type of play restricts the number of participants, and thus limits social interactions among children.

Unfortunately there are no previous research investigations with which to compare the individual differences found in the present study. Those studies that looked at maternal speech to children in the 1970s were for the most part correlational studies that failed to take into account adult individual

differences. The extensive individual differences for adults found in the present study suggests that the findings of studies that performed statistical analyses of mother's speech using group means should be interpreted with caution (e.g., Cross, 1978).

Although not a focus of the present investigation, one of the potential benefits for handicapped children in an integrated program is the opportunity provided for social interaction with nonhandicapped peers. Research on integrated programs has indicated that providing such programs does not necessarily result in increased social interaction between the two groups of children. If handicapped children are to benefit optimally from integrated programs, play activities to foster integration must be initiated and structured by an adult (Guralnick 1980; Snyder, Appolloni and Cook, 1977).

The present study offers suggestions for future research regarding the role of CLTs in fostering peer interactions. The finding that one CLT interacted verbally more often with nonhandicapped children, while another interacted more often with handicapped children in the integrated setting, suggests that an optimal environment for integration may not have been provided by all CLTs. Further investigation is needed in this area regarding program structure and the effect of individual CLT differences in carrying out particular features of future programs.

To summarize, the finding of individual CLT differences in this study, whatever their causes, indicates a need for further research. Just as there has been growing consensus about the existence of substantial individual differences among children in language development (Bloom, 1978), the results of the present study suggest the same path must be followed in looking at individual differences in adult language to children. The need to include other categories of interaction, such as play activities, was also discussed.

It is well acknowledged that research conducted in applied settings is fraught with methodological inadequacies. Unfortunately one is always faced with this tradeoff between internal and external validity. Given the exploratory nature of this study, the goal was to describe adult behaviors as they exist in a real-life setting. In the present study there was no control over subject selection. In addition, the severity and kind of handicapping condition varied, with children exhibiting a wide range of developmental levels. CLTs had attended similar training programs leading to a certificate in Early Childhood Education, but varied in previous experience with children. In addition to statistical analyses, inspection of particular sample interactions suggested that these CLTs varied in their styles of interacting with children. The kinds of activities (e.g., pretend versus instructional play) in which CLTs and children engaged may be an important variable to explore.

In conclusion, this study has demonstrated that the verbal behavioral categories developed may be used to explore the language environment provided by adults for children in an integrated setting. However, it must be stressed that this study was of an exploratory nature only, and that the findings are best viewed as sources of hypotheses for further research, particularly concerning individual differences in CLT interactions.

The integration of handicapped and nonhandicapped children is the current zeitgeist in education. However, little research has been done to assess the effects of integration with very young children. This study has provided some exploration of issues that might be addressed. The present focus on adults involved in an integrated setting has received no research attention. In particular, issues regarding the effect of adults' prior experience with handicapped and nonhandicapped children need to be addressed. One of the reasons adults frequently use to avoid the integration of handicapped children into a nonhandicapped setting is their lack of experience with handicapped children. This study has suggested that experience with nonhandicapped children may be more important than experience with handicapped children in facilitating language development.

Further research focussed on children's, as well as adults' behavior, is necessary to provide information on the effects of adults on peer interactions. Thus, both child- and adult- based

data are necessary in order to investigate interactional effects on aspects of handicapped children's language development. Research on children's acquisition of language has pointed to individual differences in children's acquisition of language (Bloom, 1970; Brown, 1973). The present study suggests that just as there have been substantial individual differences among children in language development, there are individual differences among adults, and that these differences may be particularly important to address when designing and assessing enrichment programs for handicapped children.

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