

MAINSTREAMING THE YOUNG HEARING-IMPAIRED CHILD: AN INTENSIVE STUDY

Anne K. Soderhan, Ph.D.
and
Alice P. Whiren, Ph.D.
Michigan State University
Lansing, Michigan

It is estimated that there are more than three million, or five percent, of all school-age children in the United States with some degree of hearing loss (Siebens, 1976). Currently, more than one percent of the total number of children enrolled in public schools receive specialized instruction because of their hearing losses (Digest of Educational Statistics, 1983). Northcott (1978), in examining the historical perspective attached to education of these children, maintains that controversy revolves around two questions: (1) the best method for teaching language and speech to the hearing-impaired and (2) whether mainstreaming of the hearing-impaired child is appropriate. Sixty percent of the hard-of-hearing have 10 hours or less of special education; 19 percent have more than 10 hours of special instruction, and 21 percent of 6,008 are in full time special education. For the profoundly deaf, 14 percent are mostly integrated, with 31 percent partially integrated, and 55 percent or 9,854 in segregated programs (Statistical Abstracts of the United States 1982-1983, 103rd Edition, Table No. 243, p. 151).

Integration or mainstreaming of the handicapped into typical or normal classroom settings, mandated in 1972 through PL 94-142, has not been without dissension. While there is widespread acceptance that the goals of early education should be directed toward stigma reduction/removal (social integration) and competence enhancement (Guralnick, 1978; Takamishi and Fishbach, 1982), Sapon-Shevin (1978) expressed concern that children somehow have to qualify with a certain readiness before they can be admitted to the mainstream, putting the burden of change on those being introduced into the new environment. Thus, "mainstreaming must be conceived of not as changing the special child so he will fit into the unchanged regular classroom, but rather so that it is more accommodating to all children" (pp. 119-120).

The current practice of integrating hearing-impaired children into typical classroom 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 to the degree permitted by their abilities and capacities" (Bitter and Mears, 1978, p. 142).

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 observation of early childhood integration have been more positive (Klein, 1975; Carlson, 1976, 1977), indicating that, among the advantages of "mainstreaming", integrated preschool programs give children a chance to "play 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). Moreover, though the mainstreaming of exceptional preschool children does require additional teacher time, the percentage is often less than anticipated by the teachers.

In an investigation by Clark (1976), results indicated that teachers in mainstreamed settings did most of the talking, and the handicapped

children were being talked to least by their peers. There appeared to be a relationship between the severity of the handicap and social acceptance. Intervention on the part of the teacher was indicated in order to develop interaction between handicapped and normal children. Guralnick (1979) warned that interaction between handicapped and nonhandicapped children by itself does not provide the sort of social context that facilitates either social or cognitive learning, and that teachers who "expect" handicapped and nonhandicapped children to interact with one another are likely to be disappointed. Federline (1980) noted that while more play was observed in the mainstreamed setting, in contrast to the segregated setting, the hearing impaired were mostly involved in onlooker play behavior.

Supporting the fact that individual differences and experiences cannot simply be ignored in the "blending" of human beings in social situations, but may require active intervention, Laing (1957) 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). More recently, using the case study approach of a child's life from 18 months to 13 years, Thompson and Thompson (1981) noted that the least restrictive environment for a given child should not necessarily imply mainstreaming; rather that decisions on the child's placement should be made based upon the needs of the child and availability of specialized support after placement.

Despite a "relaxation" of interest lately with regard to mainstreaming, national legislation altering current guidelines for education of the handicapped will probably revitalize the issue. Although many problems must be resolved, mainstreaming is accelerating rapidly. The frantic pace is accompanied by confusion on the parts of concerned parents, educators whose primary responsibility is the education of typical children, and others whose main educational concern is the handicapped. Soderman (1977) indicated that services among educational agencies may be duplicative rather than coordinated, the managing adults varying widely in discipline, training, concept, and approach. Lack of effective communication among agencies may introduce additional, conflicting values into a child's processing arena. The study also indicated the presence of negative peer interaction

in the integrated setting, as well as a high ratio of adult-child interaction, limiting child-child interaction. Further research seemed indicated.

Sapon-Shevin (1978) recommended research that looks closely and realistically at the "mainstream" itself to assess its practical strengths and weaknesses and to determine whether positive peer socialization is, in fact, occurring. Takanishi and Fishbach (1982) add that

... policy-relevant research on this most important developmental issue – the integration of preschool children – should examine carefully the conditions under which mainstreaming for this group appears to be more or less successful, with specific attention to those conditions that can be administratively controlled, including type of handicapping condition, ratio of handicapped to nonhandicapped children in the classroom, staff training, and other organizational variables (p. 6).

Therefore, this study was designed to identify characteristics in both the typical and hearing impaired preprimary settings, which may promote or hinder positive peer interaction, and to determine whether implementation of staff inservice between settings is effective in increasing positive interaction.

The efficacy of the intensive design utilized in this study must be underscored. 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 was utilized in this study. The method is distinctive from group design in its conception of individual variability. Two criticisms consistently leveled at the intensive design have been its deficiency in meeting several of the accepted standards of experimental research (primarily lack of control over individual variation) and its lack of generalizability. Thoreson (1972), an advocate of the design, argued that in intensive design, "individual variability is not looked upon as intrinsic or accidental, but 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 and also note that introducing the element of time series controls for all the major internal variability that might confound experimental results during the investigation. Salvia and Ysseldyke (1974) maintain that observation

as a data-gathering device can provide highly accurate, detailed, verifiable information not only about the person being assessed but also about the contexts in which observations are made, a consideration that must be attended to when evaluating mainstreaming efforts. Gottman, McFall, and Barnett (1969) concluded that the intensive design is a powerful approach to such research areas as psychotherapy, education, psychophysiology, and operant research and that it is responsive to ecological considerations while permitting satisfactory experimental control. Finally, commenting on other problems connected with using pure experimental research designs in the social sciences, Bronfenbrenner (1977) wrote: "It can be said that much of contemporary psychology is the strange behavior of children in strange situations with strange adults for the briefest period of time" (p. 513). If we are to understand the gestalt of socially integrating handicapped children with their non-handicapped peers, our investigation will require increased sensitivity to how that particular experience interfaces with the total experience of the children involved.

METHOD

Subject. The subject selected for intensive study was a four-year-old male who has been diagnosed as having a genetically-induced (Treacher-Collings Syndrome) moderate-to-severe hearing loss. He would be attending half-day preprimary classes four mornings per week at a local elementary school with a program for the hearing impaired. He would also be integrated into half-day classes four afternoons per week at a nearby early childhood center.

Procedure. Employing an intensive, time-series design, event sampling during 84 half-hour observations within the two preprimary settings was carried out over three phases of time. Treatment effects were contrasted over the two independent variables of time and setting and the following dependent variables: (1) subject's initiation of interaction with peers; (2) peer's interaction with subject; (3) subject's initiation of interaction with adults; (4) adult's initiation of interaction with subject; (5) total conflict resulting from interaction of subject with peers, adults and/or materials; (6) amount of conflict resolved by adults in setting; (7) amount of conflict resolved by children in setting.

Preprimary teachers in both settings

completed a Teacher's Behavioral Guidelines Survey developed by the investigator so that any differences in classroom expectations related to the subject's behavior could be determined before baseline data were collected.

During **Phase I**, or a baseline period of seven days, two half-hour observations were conducted per day in each setting for a total of 14 half-hour observations. These were made during free play periods when activity was relatively unstructured so that interactions were the result of free choice or spontaneous activity. Continuous recording was made on an observation form for all interactions between the subject and others in his environment. Continued interactions between participants were counted as one event. If a period of three seconds of silence (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; these factors were not isolated for subsequent analysis as they were not specifically related to the hypothesis 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. A service questionnaire was sent to the subject's parents, to each of the primary teachers, and to the clinician working with him at the local 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 these goals are accomplished;
 - e. His progress related to those goals;
 - f. Adjustments they felt necessary for effective achievement of their goals;
 - g. Concern they had about the mainstreaming process; and
 - 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 at least an entire class period.
3. The clinician was asked to observe the subject in both settings.
4. Following the baseline observations, invitations to attend an inservice session for discussion were sent to:
 - a. The subject's parents;
 - b. The preprimary staff from both centers, including the student teacher from the typical setting and the teacher aid from the hearing impaired settings; and
 - 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 noted by the observer that there appeared to be a direct relationship between the high adult-child interaction and minimal peer interaction in the typical setting. This was subsequently identified as the target behavior for intervention. A written communication 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.

Phase II. At the end of the two-week period following staff inservice 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 preprimary settings or planned intervention by the investigator, data were again collected in Phase III of the study. Procedures followed were the same as those in Phase I and II.

RESULTS

Hypotheses limited to comparison between subsequent phases in the typical setting only were analyzed for significant trend, using White's (1972) Median Statistics, an outcome analysis technique specifically suited to the kind of dynamic information gathered in the intensive design. The binomial test (Siegel, 1956) was then used to determine significance of slope. Mean ranks of dependent variables by setting and time are reported in Table 1. A data summary of analysis by median slope and binomial test appears in Table II.

Significant differences were found between settings and phases in subject-peer and subject-adult interactions. The high adult-subject interaction and the low subject-peer interaction observed in Phase I in the typical setting were able to be reversed following intervention between Phases I and II (see Figures 1 and 2). The closed lines are the actual trend lines that were observed. The dotted lines indicate the predicted trends that could be expected if no intervention had taken place. The closed line in Phase III indicated the actual trend that occurred following a time lag after Phase II and no further intervention on the part of the experimenter. This trend may be contrasted with the slope of the actual and predicted trends in Phases I and II to see the effects of intervention. As can be seen during Phase III, as adult-subject interaction again increased in the typical setting, or returned to Phase I frequency, subject-peer interaction significantly decreased. It was thus concluded that purposefully encouraging and monitoring a decrease in adult-subject interaction in a preprimary setting may result in increased peer activity and, as can also be concluded from results in Phase III, that active intervention strategies must be maintained in order to maintain positive results. Similar results were also noted in peer-initiated subject-peer interaction and subject-initiated adult-subject interaction. Differences in the resolution and amount of conflict between settings were not found to be significant.

MAINSTREAMING THE YOUNG HEARING-IMPAIRED CHILD: AN INTENSIVE STUDY

TABLE 1
Mean Ranks of Dependent Variables by Setting and Time

	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

TABLE 2
Data Summary: Analysis by Median Slope and Binomial Test

Alternative Hypothesis Tested	Predicted Direction of Slope (Dotted Line)	Actual Trend (Solid Line)	Data Points Above Predicted Line	Data Points Below Predicted Line	Results of Binomial Test	Decision Rule - Alternative Hypothesis Is:
H1 ₃	Flat	Accel.	12	2	.0056	Retained*
H1 ₄	Accelerating	Decel.	0	12	.00001	Retained*
H2 ₃	Accelerating	Sharp Accel.	9	5	.0036	Retained*
H2 ₄	Sharp Acceleration	Accel.	12	2	.0056	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	0	14	***	Rejected
H6 ₃	Accelerating	Decel.	0	14	**	Rejected
H6 ₄	Decelerating Step	Flat; Accel.	14	0	**	Rejected
H7 ₃	Accelerating		0	14	***	Rejected
H7 ₄	Accelerating	Flat Dec.	2	12	***	Rejected

Significant at $\alpha = .05$.

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

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

FIGURE 1

V₁ Median Slopes: Subject-Initiated Peer Interaction Over Setting and Time

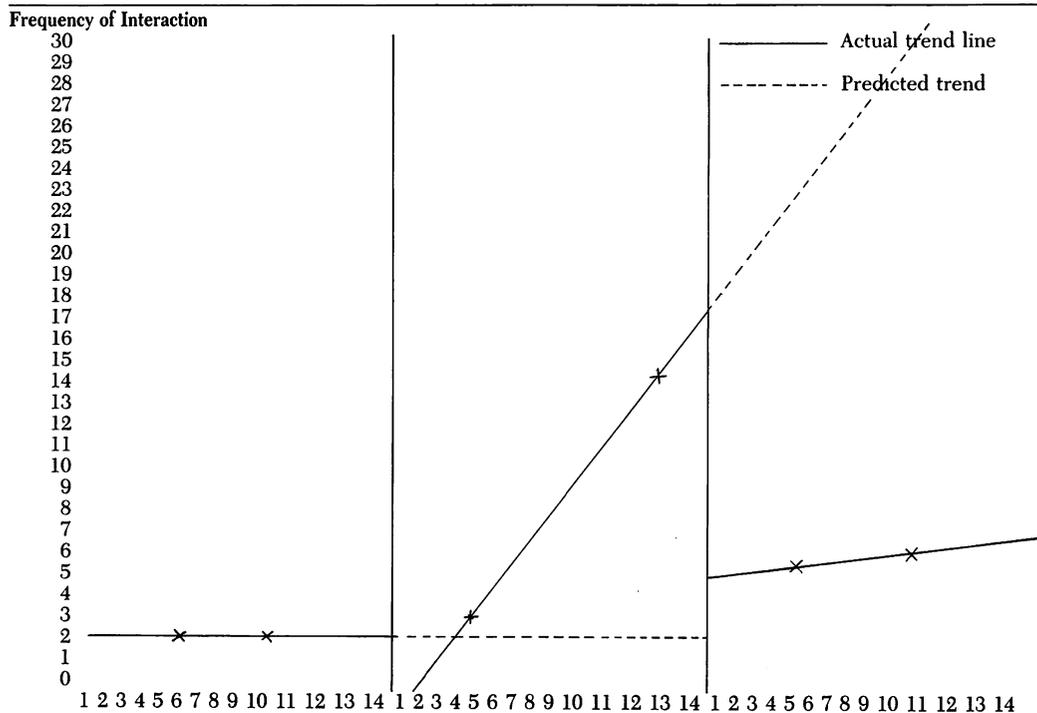
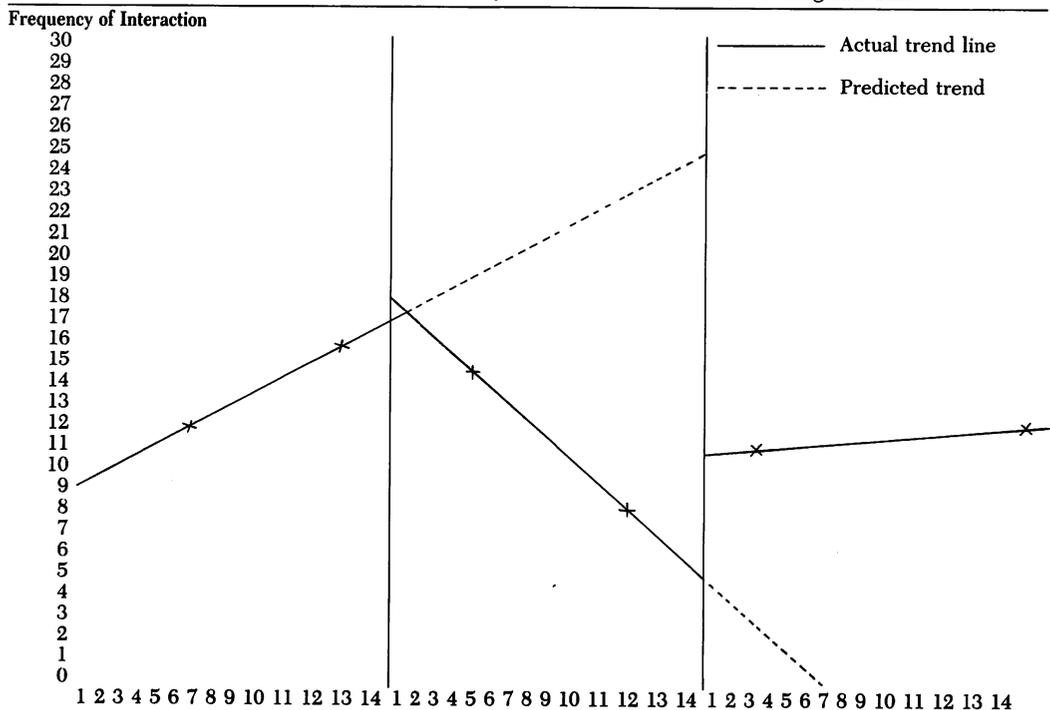


FIGURE 2

V₃ Median Slopes: Adult-Initiated Subject-Adult Interaction Over Setting and Time



DISCUSSION

An important outcome of this study was increased awareness by adult caregivers that a goal of positive social interaction between handicapped and non-handicapped peers during mainstreaming cannot be reached "naturally" just because young children are thrown together in a social setting. These findings support suppositions by Martin (1974), Meisels (1977), Tjossem (1976), Thompson & Thompson (1981), and Sapon-Shevin (1978). However, peer socialization may be actively increased by purposefully constructing the environment to encourage peer interaction and by decreasing too-intensive adult-child interaction when it interferes with children depending on one another for appropriate needs, including companionship. The intensive design served as a useful tool in detecting the role strain forced on a four-year-old child, aside from his handicapping condition. He was spending his mornings in a very structured, intensive special education setting where, because of his relatively greater amount of residual hearing, he was considered by his peers to be a leader. Following lunch, and a van ride to the typical setting, he was thrust into a situation where he was considered "different" by his peers, despite reports in the literature that preprimary children are more apt to be merely curious rather than hostile toward integrating handicapped children (Carlson, 1977). In short, he was "at the top of the heap" in the morning and very much at the bottom in the afternoon. His tendency to fall asleep while being transported from setting to setting illustrated how tiring it was for this child to spend six or more hours of

his day in two different educational settings. Moreover, it was observed that he was frequently expected to make up missed work in the special education setting, which interrupted his valued play time. He was sometimes observed to be disappointed upon hearing his morning peers and teacher discussing a field trip or resource person he had not experienced because he had been to "his other school". 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 after 11:00 p.m. every evening because his mother was working two jobs.

The personal growth objectives held for this child by his parents and teachers differed greatly, both between and among these significant others in his life. Perhaps the major finding in the study was the great unawareness of the child's *total* functioning that existed between all of these caretakers who were genuinely interested in helping him reach his potential. Each saw a piece of him – their piece; none were totally cognizant about the way he spent his days and evenings. 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. As has been noted before, with impaired children, it is easy to suppose 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.

REFERENCES

- Bronfenbrenner, U. (1974). The experimental ecology of human development. In T. W. Hertz (ed.) *Proceedings of the Symposium on Ecological Approaches to Research on Child Development*, p. Washington, D.C.: Social Research Group, George Washington University.
- Bryan, T. (1977). An observational analysis of classroom behaviors of children with learning disabilities. *Journal of Learning Disabilities* 7, 26-34.
- Campbell, D. T. and J. C. Stanley. (1963). *Experimental and quasi-experimental design for research*. Chicago: Rand-McNally.
- Carlson, N. C. (ed.). (1977). *The Contexts of Life: A Socio-Ecological Model of Adaptive Behavior and Functioning*. Final Report, Department of Health, Education and Welfare, Office of Education, Bureau of Education for the Handicapped.
- Clark, E. A. (1976). Teacher attitudes toward integration of children with handicaps. *Education and Training of the Mentally Retarded* 4, 333-335.
- Digest of educational statistics*. (1982). Superintendent of Documents, Washington, D.C.
- Dunlop, K. (1977). Mainstreaming: valuing diversity in children. *Young Children* 33, 26-32.
- Federlein, A.C. (1980). A year long study of the frequency of play interactions of handicapped preschoolers in mainstreamed and segregated settings. International Convention for the Council of Exceptional Children. Philadelphia.
- Goldstein, H., J. W. Moss, and L. J. Jardon. (1965). *The Efficacy of special class training on the development of mentally retarded*

REFERENCES, Cont.

- retarded children*. Urbana, Illinois: Institute for Research on Exceptional Children, University of Illinois.
- Gottman, J. M., R. M. McFall, and J. T. Barnett. (1969). Design and analysis of research using time series. *Psychological Bulletin* 72, 229-306.
- Guralnick, N. J. (1976). The value of integrating handicapped and non-handicapped preschool children. *American Journal of Orthopsychiatry* 46, 236-245.
- Guralnick, M. J. (ed.). (1978). *Early intervention and the integration of handicapped and nonhandicapped children*. Baltimore: University Park Press.
- Iano, R. P., D. Ayers, H. B. Miller, J. M. McGittigan, and U. S. Walker (1974). Sociometric status of retarded children in an integrative program. *Exceptional Children* 40, 267-271.
- Johnson, G. O. (1950). A study of social position of mentally retarded children in the regular grades. *American Journal of Mental Deficiency* 55, pp. 60-89.
- Jones, S. N. *Case studies and observations of four mainstreamed preschool children*. 1980, Ann Arbor: University Microfilm.
- Klein, J. W. (1975). Mainstreaming the preschooler. *Young Children*, 317-327.
- Laing, R. D. (1967). *The Politics of Experience*. New York: Ballantine Books.
- Marascuilo, L. A. and M. McSweeney. (1967). Nonparametric post hoc comparisons for trend. *Psychological Bulletin* 67, 401-412.
- Martin, E. W. (1974). Some thoughts on mainstreaming. *Exceptional Children* 41, 150-153.
- Meisels, S. J. (1977). First steps in mainstreaming. *Young Children*, 4-15.
- Northcott, W. H. (1978). Integrating the preprimary hearing-impaired child: an examination of the process, product, and rationale. In M. H. Guralnick (ed.) *Early Intervention and the Integration of Handicapped and Non-handicapped Children*. Baltimore: University Park Press.
- Sapon-Shevin, M. (1978). Another look at mainstreaming: exceptionality, normality, and the nature of difference. *Phi Delta Kappan* 60, 119-120.
- Siebens, B. D. (1976). *I can't hear you*. Michigan Association Education Deaf, September.
- Siegel, S. (1956). *Non-parametric statistics for the behavioral sciences*. New York: McGraw-Hill.
- Soderman, A. K. (1977). "Rule conflict and the integrated pre-schooler: an assessment of one facet of mainstreaming." Unpublished pilot study, Michigan State University.
- Takamishi, R. and Fishback, N. D. (1982). Early childhood special education programs, evaluation, and social policies. *Topics in Early Childhood Special Education*. Vol. 1 (4) pp. 1-9.
- Thompson, M. and Thompson G. (1981). Mainstreaming a closer look. *American Annals of the Deaf*, 126 (4) 395-401.
- Thoreson, C. E. (1972). "The intensive design: an intimate approach to counseling research." Paper presented at AERA Annual Meeting, Chicago, IL.
- Tjossem, T. D. (1976). Early intervention: issues and approaches. *Intervention strategies for high risk infants and children*. In T. J. Tjossem (ed.) Baltimore, MD: University Park Press.
- Vacc, N. A. (1971). A study of emotionally disturbed children in regular and special classrooms. In N. J. Long, W. C. Morse, and L. G. Newman (eds.) *Conflict in the classroom: The education of children with problems*. Belmont, CA: Wadsworth Publishing Co.
- White, O. R. (1972). Working paper No. 15. The prediction of human performance in the single case: an examination of four techniques. Eugene, Oregon: College of Education, Department of Special Education, University of Oregon.