The Effects of an Integrated Environment on Specific Target Behaviors in Severely Impaired Young Children

Rosemarie R. Smith

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THE EFFECTS OF AN INTEGRATED ENVIRONMENT ON SPECIFIC TARGET BEHAVIORS IN SEVERELY IMPAIRED YOUNG CHILDREN

by

Rosemarie R. Smith

A Project Report
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the requirements for the Degree of Specialist in Education
Department of Psychology

Western Michigan University
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THE EFFECTS OF AN INTEGRATED ENVIRONMENT ON SPECIFIC TARGET BEHAVIORS IN SEVERELY IMPAIRED YOUNG CHILDREN

Rosemarie R. Smith, Ed.S.
Western Michigan University, 1992

Four severely impaired children, ages four to seven, were integrated in a non-handicapped preschool setting during a free play period. A multiple baseline design was used to study the environment's effect on specific target behaviors. No intervention, other than the classroom setting, was implemented to effect levels of these behaviors. The results were mixed with one student showing a marked increased in the desired behavior from .136 occurrences per minute to 1.73 occurrences per minute. However, a second subject's desired behavior decreased from 2.0 occurrences per minute to .194 occurrences per minute. The target behaviors of the remaining two subjects remained unchanged.

Recommendations include the individual application of data based goals for inclusive education and more extensive preparation in prerequisite skills for handicapped students.
ACKNOWLEDGMENTS

The completion of this project culminates an achievement that has long been my career goal. The following contributed most markedly to the completion of this project. First, I could not have completed this project without the love and patience of my family. My husband, Michael Smith, my children, Keith and Jessica, always had faith in my ability to achieve, even when I did not.

Second, I thank the members of my committee; Dr. Galen Alessi and Dr. Howard Farris for their continued guidance and encouragement, and, especially, Dr. Steve Ragotzy for sharing his time and knowledge in supporting this research.

Finally, I have been fortunate to have two mentors in the field of school psychology who represent the best that the field has to offer. I am grateful to Susan Safranski and Dr. Michael W. Bahr.

Rosemarie R. Smith
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INTRODUCTION

There has been a re-evaluation of the effectiveness of special education services since the passage of P.L. 94-142 (The Education for All Handicapped Children Act, 1972). Many critics have found these services wanting and have proposed systematic changes to improve the quality and effectiveness of education for handicapped children. One specific aspect being examined is the concept of Least Restrictive Environment (LRE).

The doctrine of LRE was first defined in The Education for All Handicapped Children Act (1972) and has its roots in civil rights legislation. This legislation established the right of an individual child to be educated with his peers (Gent & Mulhauser, 1988). LRE states that to the maximum extent possible, handicapped children are to be educated with non-handicapped children and separate schooling should only be considered when supplementary aids and services cannot be achieved in an integrated environment.

The re-examination of the concept of LRE has led to a movement called Inclusive Education. According to the State of Michigan Department of Education, Inclusive Education is defined as the provision of educational...
services for students with disabilities in schools where non-handicapped peers attend, in age appropriate classes, under the full-time supervision of general education teachers with assistance from special education teachers and support services. This term specifically refers to severely impaired students who have traditionally attended segregated schools.

Many proponents of inclusive education have made themselves heard in the recent literature. Advocates are calling for education in the student's home school (Brown et al., 1989) and an elimination of the dual education system (Stainback & Stainback, 1987). Some have even gone so far as to propose eliminating the concept of LRE altogether (Taylor, 1988). Much of the rationale for this movement is based on the idea that given more appropriate role models, the behavior and skills of severely disabled youngsters would improve (Snyder, Apolloni, & Cooke, 1977).

Opinions concerning the effectiveness of Inclusive Education have little empirical basis. Research that does exist generally takes the form of attitude surveys or anecdotal case studies. Few studies actually address the gains made by students in an integrated environment. In fact, according to Ferguson and Asch (1989), "Integra-
tion is not an experiment to be tested but a value to be followed" (p. 137).

At the same time, a number of authors have expressed concern over the lack of research supporting such a drastic change in the special education system. In their review of the literature, Gent and Mulhauser (1988) pointed out that no data specifically address profoundly and multiply handicapped students, the use of qualitative and descriptive research seems to dominate the literature, and a discrepancy exists between research which claims success for students with severe disabilities in integrated settings and research concerned with the failure of mildly handicapped students in similar settings.

In 1988, Fuchs and Fuchs conducted a comprehensive review of empirical evidence supporting the Adaptive Learning Environments Model (ALEM). ALEM is an ongoing program to integrate handicapped students into general education. After finding a lack of data-based support for the success of ALEM, they stated "Before endorsing a merger between special and general education, we hope parents, teachers, researchers and policymakers insist on additional studies...and persuasive evidence that such programs indeed work as their creators claim they do" (Fuchs & Fuchs, 1988, p. 126).
Equally important in the pursuit of evidence that supports inclusive education is the lack of research in general involving severely impaired students. Sailor et al. (1988) conducted a survey of all research concerned with students with the most severe disabilities. This study considered most severe students to be those with combinations of a wide range of multiple impairments, the seriousness of which, combined with severe intellectual impairment, caused a profound loss of functioning. Sailor et al. (1988) found a disproportionate amount of research and development effort directed toward more capable students with severe disabilities when compared with the much smaller literature base focused on those with the most severe disabilities. This study called for an acceleration of the inclusion movement specifically to create opportunities for research.

Given the lack of data-based research regarding inclusive education and especially the lack of research addressing severely handicapped students, the purpose of this study is to examine the effects of an integrated environment on the behavior of severely impaired students.
METHOD

Subjects

Four subjects were selected from a segregated school for the severely impaired in Kalamazoo County, Michigan. The subjects, two boys and two girls, ranged in age from four years and two months to seven years and four months old. With one exception all of the subjects had, in their most recent evaluation, met educational eligibility criteria as severely mentally impaired. According to the State of Michigan Department of Education, this diagnosis involves cognitive development of $4\frac{1}{2}$ or more standard deviations below the mean with concurrent deficits in adaptive behavior. Although the fourth subject displayed a higher level of cognitive development, the segregated classroom environment was deemed appropriate due to her severe physical disabilities.

In addition to cognitive deficits, all subjects had physical or sensory disabilities. Two subjects were legally blind and two were non-ambulatory.

Subjects with more severe maladaptive behaviors were excluded, as were subjects with previous exposure to the integrated environment. Written informed consent was obtained from a parent or guardian.
Setting

The setting included two classroom environments. The first was the subjects' assigned segregated classroom. All of the students in these classrooms were of a similar age and had impairments similar to the subject. The staff to student ratio was approximately 1:2. The second setting was an onsite preschool that serves non-handicapped students between the ages of two-and-a-half and five with a staff to student ratio of 1:7. This preschool had previously participated in informal attempts at integration so that the non-handicapped students had some exposure to handicapped peers. For the purpose of this study, their only formal preparation was an introduction by their teacher such as "This is Jimmy. He is going to be our new friend and come play with us from time to time. Jimmy uses a walker so he can't run as fast as you."

Procedure

After a period of classroom observations and discussions with classroom teachers, a target behavior individual to each subject was chosen. Each target behavior was not under the control of a formal intervention plan but was considered inappropriate or maladaptive. Observa-
tions and scoring procedures were dependent upon the topography and frequency of the target behavior.

A multiple baseline design was used with the segregated classroom representing the baseline condition and the integrated preschool representing the treatment condition. Subjects were observed 3 times per week during a 15 minute free play period. Free play was chosen in both environments in order to eliminate any specific type of instruction as a possible threat to internal validity.

During observations of the treatment condition, each subject was the only handicapped student present in the integrated environment. Staff intervention was minimized in order to allow students to respond to the environment and their peers while still maintaining a safe environment for all children.

Target behaviors and scoring procedures were as follows:

Subject A. Subject A was a seven-year-old blind boy. When given time for free play he demonstrated stereotypic play behavior. He would usually take the first toy he was given and shake it, take it apart, and put it back together repeatedly or simply hold it and rock. This would go on for the entire free play period
without any attempt on the part of the subject to seek out new or different activities.

The target behavior for Subject A was a spontaneous change in activity which represented exploring behavior. This behavior was defined as spontaneously choosing a new toy or object. Self-stimulatory behavior with the same toy was not considered a change; however, he was given credit for unsuccessful attempts to seek out a new activity. For instance, if the subject felt along a shelf for a toy but found none and returned to his first toy, a change in activity was recorded.

Because the target behavior occurred infrequently and was isolated, a simple frequency measure was used.

Subject B. Subject B was a five-year-old non-ambulatory female who was demonstrating emerging oral language skills. Her receptive language was more highly developed than her expressive language. She had a minimal vocabulary of five to ten words which she used inconsistently; however, for the most part, her language consisted of babbling or approximations of words.

For these reasons, the target behavior chosen was frequency of spontaneous verbalizations. Incidences of verbal behavior were recorded rather than individual words or syllables. For instance, a phrase like "want juice" or repetitious babbling like "ba-ba-ba" were
recorded as one incidence. Verbalization was considered spontaneous even if it occurred as part of an interaction initiated by an adult or a peer so long as it was not specifically prompted such as "say hi."

Because verbalizations were isolated and relatively infrequent a simple frequency measure was taken.

**Subject C.** Subject C was a seven-year-old girl with moderate to severe cerebral palsy. She was ambulatory but non-verbal. Given free time, she would not seek out any activity or person. Typically, she would pace back and forth, stare out the window, or sit on the floor and rock.

The target behavior was termed engaged time. It was defined as seeking out any interaction with an object or a person. This interaction could be as brief as reaching out to touch an object or as simple as joining an ongoing group activity by sitting next to a peer.

A time sampling method was used to record the target behavior. Every 15 seconds an auditory signal instructed the observer to record the subject's behavior in that moment. A "+" was recorded if she was engaged in any activity other than pacing, staring, or rocking for which a "0" was recorded.

**Subject D.** Subject D was a four-year-old boy with Lowe Syndrome. He is non-ambulatory and legally blind
due to cortical cataracts although he does have limited eyesight and wears glasses. He had no verbal or sign language skills and limited receptive language.

The subject engaged in a self-stimulatory behavior that his teacher referred to as head wagging. He would tip his head from side to side sometimes making clicking or humming noises at the same time. This behavior occurred almost constantly during a variety of activities.

The target behavior for Subject D was intervals free of head wagging. Whole interval recording was used. An auditory tape signaled the beginning and the end of a ten second observation interval. If he did not engage in head wagging through the entire interval a "+" was recorded. If head wagging occurred for even a part of the interval a "0" was recorded. A five second recording interval was signaled for the recording of data before the next observation interval began.

The specific methods used for calculating interobserver reliability were dependent upon the method of data collection. For Subjects A and B a simple frequency ratio was used. Reliability during the baseline stage for these subjects was 90 and 100% while during the treatment condition, ratios of 100 and 91% were recorded. For Subjects C and D, reliability was considered for both occurrence and non-occurrence data, as well as for
overall agreement. Reliability was calculated by dividing the number of agreements by agreements plus disagreements and multiplying by 100. For Subject C, reliability for occurrence data was 88%, reliability for non-occurrence data was 78%, and overall reliability was 96%. For Subject D, reliability for occurrence data was 97%, for non-occurrence data 98%, and overall reliability was 99%.
RESULTS

The results of this study were mixed and, in some cases, unexpected. First, individual subjects will be addressed followed by the effect across subjects. The first four figures picture each subject individually. Subject A demonstrated a dramatic increase in the frequency of spontaneous changes in activity per minute in the integrated setting. On average, in the baseline setting, he changed activity .136 times per minute while after integration this average rose to 1.73 times per minute (see Figure 1).

The change for Subject B was just as dramatic but in an unexpected direction. Her incidence of verbalizations dropped from a mean of 2.0 verbalizations per minute in baseline to .194 in the integrated setting (see Figure 2). This was unexpected given the role that non-handicapped peers were expected to play in the development of language skills. Additionally, a probe conducted in the segregated classroom after several weeks of integration demonstrated that she was still maintaining and even increasing her level of verbalization in that setting. The probe yielded 4.9 verbalizations per minute.
Figure 1. Spontaneous Change in Activity for Subject A.
Figure 2. Incidence of Verbalizations for Subject B.
Differences from baseline to integration for Subject C were more difficult to determine given that the target behavior presented itself in an inconsistent manner. However, it was hoped that the integrated setting would enable her to more consistently seek out activities on an independent basis. This was not demonstrated in the data. As illustrated in Figure 3, the baseline mean showed her engaged in activity in 57.09% of samples taken while integration represented only a minor difference of 52.72%. However, these data should be regarded with some reservation as Subject C displayed unexpected behavior problems in the integrated setting which required much more staff intervention than was called for in the original design. She was very fearful of the integrated classroom and students and, at first, refused to even enter the room. She would sit on the floor in the hallway and scream. Once she did comply with requests to come in the room, it took several sessions before she stopped actively avoiding the non-handicapped peers. By the time the study was complete, Subject C was comfortable in the setting and trying to interact with other children. While she still required significant staff involvement, given a longer time frame, a greater effect on her target behavior might have been demonstrated.
Figure 3. Samples of Engaged Time for Subject C.
Data collection was sparse for Subject D due to health problems which interfered with his school attendance during the study. However, the data are included in Figure 4, as they demonstrated a trend toward improvement which may have been strengthened with improved attendance. In baseline, Subject D was free of head wagging in 44.42% of intervals recorded and in the integrated setting he improved somewhat with a mean of 52.8%.

The final graph, Figure 5, displays differences in baseline and experimental means across subjects. This graph indicates an experimental effect in three of the four subjects although the direction of the change was not always consistent.
Figure 4. Intervals Free of head-wagging for Subject D.
Figure 5. Mean Differences Across Subjects.
DISCUSSION

As previously stated, the results of the study were mixed. The conflicting results point to a variety of problematic issues facing inclusive education.

While Subject A showed a marked improvement in exploratory behavior, his mean level of spontaneous change increased from .136 per minute in baseline to 1.73 per minute in treatment, it is difficult to separate the differences in physical structure of the two classrooms from any effect of non-handicapped peers. The environment in the segregated classroom is more structured physically, access to certain areas or materials is limited or highly structured. Whereas, the environment in the preschool is very open and children move freely from one play area to the next. The most obvious difference is immediately noticeable by even the most casual observer. In the segregated room, the toys are in cupboards with doors; in the preschool they are on open shelves.

At the same time, throughout baseline, none of the handicapped peers ever intruded upon the subjects play. In the preschool, however, non-handicapped students often tried to engage the subject in play and did not hesitate to take toys that they wanted when it became apparent
that sharing was not a skill in this students' repertoire. This often forced the subject to seek out new activities.

The unexpected negative results for Subject B are also a cause for concern; her level of spontaneous verbalizations decreased from 2.0 per minute in the segregated environment to .194 per minute in the preschool. This subject had the highest cognitive level of all the subjects. She always looked forward to her time in the preschool and was well liked by her non-handicapped peers. As such, the data on this subject are even more perplexing.

It is possible that the much higher level of verbal skills in the preschool created an atmosphere wherein she could not compete. It was often apparent that the subject would rely on her much more highly developed non-verbal skills, such as gestures, smiles, and pointing, in the face of this competition. If, however, verbalization is viewed as one part of complex social interactions, rather than a function of cognitive development, then the results for Subject B are similar to those obtained by Jenkins et al. (1985). Findings in this study of the effects of integration on social interaction in preschool children suggested that anticipated acceleration of
delayed development would require more than simple proximity.

The most important point supported by these particular results is the need for ongoing data based evaluations of inclusive education. It is obvious that anecdotal observations will not always yield an accurate picture.

In the case of Subject C, however, anecdotal observations take on greater importance. As stated before, the data on this subject should be viewed with caution due to the excessive amount of staff intervention required. Early observations and baseline data did not indicate that this subject would have difficulties with new people. In fact, the segregated school building is designed to represent an open classroom environment so that staff routinely have to walk through one classroom area to get to another. This subject had not demonstrated any behavior problems associated with new people in these situations. However, from the very first day of integration, she was extremely resistant to the preschool environment. Initially, she refused to enter the room by sitting on the floor in the hallway and screaming. When she did comply with requests to enter the room, she would actively ignore the non-handicapped peers. In one situation, it appeared as if she was going to join some stu-
dents listening to a story but she took a chair from the group, turned it, and sat down so that her back was to the group. Another day, she went to a table where children were playing with puzzles and took a puzzle from the table into a corner to play on the floor by herself. When she was not ignoring the preschoolers, she would often act out in an attempt to get staff to intervene. She would tear books, throw puzzles and toys, or attempt to bother students in a nap area that was off limits. This behavior clearly demonstrates that this student needed much more preparation before she could benefit from an inclusive environment. It is possible that she lacked some minimal prerequisite social skills or that her integration would need to be more highly structured and assisted. Clearly, her results point to the need to individually evaluate the way in which any particular student will be integrated.

Proponents of Inclusive Education, Stainback and Stainback (1988) state:

the decision to integrate our schools is based on societal values. Our societal values should not be subject to quantitative (or qualitative) investigations or reviews of scientific research to determine their efficacy or popularity, but rather they should be evaluated according to what is right, just and desirable. (p. 5)

The results of this study clearly contradict this statement. The need for further research in the area of
inclusive education is obvious. Such research would enable decisions to be based on the needs of individual students. According to Lieberman (1990), full integrationists reject an examination of individuals and individual decision making by their very advocacy of full integration. However, this study also demonstrates the importance of individual needs.

Possible areas of further research should involve not only how best to prepare students for inclusion in regular education classrooms, but also how best to make data based evaluations of their progress once they are integrated. It is also important to separate the effects of non-handicapped peers as role models from the effects of classroom structure or the varied types of instruction in the separate environments. Additionally, there is a need to more closely replicate an inclusive situation by increasing the proportion of the school day spent in the integrated environment. This was not possible in this study due to the schools' legal responsibilities to maintain ongoing IEP objectives in the segregated classroom.
Appendix A

Approval Letter From the Human Subjects
Institutional Review Board
Date: January 21, 1991
To: Rosemarie R. Smith
From: Mary Anne Bunda, Chair
Re: HSIRB Project Number 90-10-05

This letter will serve as confirmation that your research protocol, "The Effect of an Integrated Environment on Targeted Behaviors in Severely Impaired Young Children" (as revised), has been approved after expedited review by the HSIRB.

We realize that the photo release form is a form designed by Kalamazoo Valley Intermediate School District and Goyet Avenue School. You might inform them that the six uses of photos actually represent five uses and one media type. However, the use of the videotape is clear enough in your consent form to override the lack of clarity in the photo release form.

The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the approval application. You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

cc: Howard E. Ferris, Psychology

Approval Termination: January 21, 1992
BIBLIOGRAPHY


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