THE EFFECT OF TEACHER PROMPTING AND CONTINGENT ATTENTION ON THE SOCIAL INTERACTIONS OF KINDERGARTEN CHILDREN

An abstract of a Thesis by
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The problem. Desegregation of public school systems has usually been accomplished by changing the ratio of minority to majority students in each building to an acceptable level. This reliance on numerical criteria as a definition of desegregation gives no assurance that interactions between minority and majority students will occur. When the interactions of the students are taken into account, a functional definition of integration becomes possible. The present study is an attempt to directly modify the frequency and topography of the interactions participated in by three kindergarten children, thereby changing the level of functional integration within the classroom.

Procedure. Baseline data were collected on the three experimental subjects. The teacher was then sequentially instructed to differentially reinforce and prompt, when necessary, all interactions, within-race interactions, between-race interactions, and finally, all interactions. Only baseline data were collected on the normative subject.

Findings. Subjects FB and FW increased their within-race interactions when all interactions or within-race interactions were prompted and reinforced. Their between-race interactions increased when they were the focus of the contingencies. MW responded similarly during the all interactions and within-race phases. However, during the between-race phase, MW's levels of within- and between-race interactions decreased or remained low and his mixed-group interactions increased.

Conclusions. The interactions participated in by the experimental subjects changed to comply with the contingencies in effect during each phase. In addition, increases in interactions were seen for each subject across phases.

Recommendations. Educators interested in increasing the level of functional integration in their classroom or school should: (1) focus on the interactions occurring between students and (2) utilize operant techniques such as prompting and reinforcement to increase interracial interactions among their students.
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CHAPTER I

INTRODUCTION

School districts faced with reorganization due to court ordered or agency mandated desegregation usually adopt plans based on changing the ratio of minority to majority students in each school to an acceptable level. The steps taken to implement this type of plan have included wide-range busing of children, voluntary transfer programs, alteration of attendance boundaries, and the pairing or grouping of schools. This type of plan is based on a definition of desegregation which does not take into account the behavior of the individuals involved, only their demographic characteristics (Cohen, 1975).

However, a numerically desegregated school is not necessarily a functionally integrated school. In order to measure the functional integration of a school or classroom, one must take into account the interracial contacts which occur (Cohen, 1975). That is, the focus must be placed upon the behavior of the children. It is possible that a school which meets the numerical criteria as a desegregated school, would not be considered functionally integrated when the social interactions of the students were analyzed.

Much of the past research on desegregation in school settings has measured correlate behaviors of desegregation such as statements of attitudes. Useem (1976)
measured the attitudes of white tenth graders towards a busing program that their school had chosen to become involved in. Low and middle income black students were bused from an urban community to the suburban high schools involved. In general, Useem found that 89% of the white students supported the busing program. In addition, the higher a student's socioeconomic background (as measured by scaling the father's occupation and the mother and father's educational attainments), the more positive their reported attitudes toward the busing program (Useem, 1976).

Studies of this sort suggest that busing can be implemented in a way that the individuals involved accept. The variables correlated with reports of positive attitudes towards a busing program for desegregation are demographic characteristics such as sex, academic status, and socioeconomic level. These variables however, are either unchangeable or at least not readily susceptible to experimental manipulation. Studies dealing with these correlated variables provide no prognostic information about the manipulable variables crucial in increasing actual interracial contacts.

Another subset of the research done on desegregation defines and measures some integrative behavior, but makes no attempt to change its rate of occurrence. Williams and Willis (1978), in one of a series of studies designed to measure interpersonal touch across various age levels,
observed: (1) the frequency of touching others for each preschool aged subject (measured as the rate of touch per one minute interval), (2) the identity of the individual the subject touched, and (3) the body area used to touch and be touched. In their analysis of the data, it was found that, in an outside setting, black children initiated touch more often than white children. Also, it was found that touch rates for black same-sex pairs was higher than for white same-sex pairs.

In another study measuring integrative behaviors, Singleton and Asher (1977) quantified social interactions among third grade students utilizing a revolving, six second, partial interval time sampling procedure. They also differentiated between positive and negative interactions in their data. It was determined that females had more same-race interactions than expected by chance while males' same-race interactions did not significantly deviate from chance. For white children, same-race and cross-race interactions were predominantly positive (96.96% and 98.51% respectively). The interactions of black females were also predominantly positive (96.43% - same-race; 94.23% - cross-race). However, black males had significantly fewer positive interactions with other black children (80.31% - same-race). Overall, they found that the level of cross-race interactions was higher for these third grade children than their level of cross-sex interactions.
The following studies attempted to increase integrative behaviors. DeVries and Edwards (1974), although utilizing standard sociometric items to measure interracial interactions, attempted to increase the reported frequency of these interactions above those found in a traditional classroom through the introduction of student teams and/or learning games into the curriculum. They found that using games increased reported cross-race helping interactions and using games within a team structure increased these reported interactions to an even higher level. In addition, the combination of games and teams also increased reported interracial friendship interactions.

Hauserman, Walen, and Behling conducted a study in 1973 which represents an attempt at increasing interracial interactions and measuring the generalization of this effect. They instituted a token reinforcement system in which each student received tokens for sitting with a "new friend" at lunch. Data were collected on five minority students in the classroom. Each day it was noted whether or not each minority student ate at a racially mixed lunch table. Tokens were given to these students contingent upon sitting at a racially mixed table and were later exchangeable for snacks. Generalization data were collected during a free play period immediately following lunch and were measured as the number of two minute intervals in which interracial play occurred for at least a portion of the interval.
Although a slight over-lap in the data exists, token reinforcement did increase the number of minority students reportedly eating in racially mixed groups. Of greater importance is the fact that the generalization data did show much higher levels of interracial play during the token reinforcement phase than during either baseline or a short prompting only phase.

Interracial interactions, as measured by Hauserman et al. (1973), would seem to be a complex set of behaviors sensitive to their consequences, i.e., operants. As such, it is possible that other reinforcers readily available in a classroom setting, such as teacher attention, can be used to increase their occurrence. Teacher attention has been shown to be an effective consequence of behavior in many instances (e.g., decreasing number reversals - Hasazi & Hasazi, 1972; increasing study behaviors - Hall, Lund, & Jackson, 1968; increasing desired social and academic behaviors concomitant with a decrease in inappropriate social and aggressive behaviors - Wasik, Senn, Welch, & Cooper, 1969). In addition to single case studies, teacher attention has been effectively utilized to increase social interactions in children who exhibit isolate behaviors. Pinkston, Reese, LeBlanc, and Baer (1973) utilized contingent teacher attention to decrease aggressive behaviors and increase positive peer interactions in a preschool aged child. They found that these desired changes in behavior could be
accomplished by simply strengthening the contingency (by making it less intermittent) between positive peer interactions and teacher attention without significantly increasing the total attention given to the student. That is, instead of receiving the teacher's attention for a variety of appropriate and inappropriate social behaviors, approximately the same total teacher attention was given for desired interactions only.

Minority and majority students in a numerically desegregated school can be viewed as isolate groups to the extent that the frequency of interracial interactions is low. For example, a longitudinal study conducted in the Des Moines Independent School District showed that even though the schools in the district meet the numerical requirements as desegregated schools, the students in those schools were making racially segregated friendships choices as measured by sociograms (Ziomek, Note 1). Therefore, it seems viable to extend the literature on increasing the social interactions of isolate individuals to these isolate groups.
CHAPTER II

METHODS

Participants

Four kindergarten children were selected from a pool of subjects that the teacher had subjectively identified as exhibiting low rates of social interactions. The students chosen included one black male (MB), one black female (FB), one white male (MW), and one white female (FW). Informed consent was received from three of the four subjects' parents. MB's parents could not be reached so only baseline data was collected on this subject.

Response Definitions

The following response definitions were used in the collection of the data:

Positive interaction - talking to, playing or working with another child (Individual) or group of children (Group). Two or more children involved in parallel play were not considered as interacting.

Negative interaction - yelling at, pushing, insulting, fighting, or in any other aggressive or destructive way interacting with another child (Individual) or group of children (Group).

Alone - any situation in which a child is clearly by him/herself and not interacting with other
children. Children involved in parallel play were included in this category.

Each positive or negative interaction was coded as occurring with a within-race or between-race individual or with a within-race, between-race, or mixed-race group. In addition, the sex of the individual with whom the subject interacted was also noted.

**Data Collection**

A pre-phase (Pre-phase I) was conducted during which various data collection techniques (i.e., frequency, time-sampling, duration, etc.) were tested. A decision on which recording system to use was based on the experimenter's subjective opinion regarding the validity and quality of the data, a comparison of the difficulty of implementing each system in the classroom and levels of reliability obtained.

Duration measures were disregarded due to the number of separate behaviors being recorded and the need to be able to code each instance of the behaviors. While the level of reliability was slightly higher for frequency data as opposed to time-sampled data, it was felt that the time-sampling data portrayed a truer picture of the ongoing behavior. For these reasons, a ten second momentary time-sampling procedure was used to collect the data in this study.

Each subject was observed for four minutes, three
to five times a week, during an unstructured free-play session.

**Reliability**

Reliability was taken at least once in each experimental phase by a second independent observer. Reliability coefficients were calculated for each subject using the following formula:

\[
\frac{\text{agreements}}{\text{agreements} + \text{disagreements}} = \text{reliability coefficient.}
\]

The overall reliability coefficient was .77 with a range across subjects of .71 to .80.

**Procedures**

**Pre-phase II.** The purpose of this phase was to empirically establish that teacher attention was a reinforcer for each of the three experimental subjects. Each participant was tested individually by having the teacher attend to some arbitrarily chosen behavior and observing the changes in the rate of occurrence of the behavior across baseline, and intervention conditions. Behaviors chosen included eye contact with the teacher or assignment and staying seated.

**Baseline.** The purpose of this phase was to obtain the ongoing rates of interactions between students for each of the participants. No instructions were given to the
teacher as to how to respond to the various types of interactions.

**Intervention.** This phase was divided into four sub-phases: (1) reinforce all interactions; (2) reinforce within-race interactions; (3) reinforce between-race interactions; and (4) reinforce all interactions. Each of these sub-phases was implemented by the teacher. The investigator met with the teacher prior to the implementation of each sub-phase and discussed the procedures for that phase. Written instructions were provided when necessary. The intervention consisted of having the teacher differentially attend to the target interaction (i.e., all interactions, within-race, or between-race) while ignoring all other types of interactions. The teacher was also instructed to prompt the appropriate type of interaction when necessary. However, no prompts were given during the last two sessions of the final phase. Differential teacher attention was defined as including some type of active participation by and/or verbal praise from the teacher regarding the activity the subject was involved in.
CHAPTER III

RESULTS

The data shown in Figure 1 is from pre-phase II for the three experimental subjects. The graph shows the percent of intervals in which the subjects were judged to be on-task across baseline and intervention conditions. Subject FB was observed to be on-task less than 50% of the time during baseline. The level of on-task behavior increased greatly during the intervention phase. FW's rate of on-task behaviors was already quite high during the initial baseline phase and very little increase in this was seen during the first intervention phase. During a subsequent session, a declining trend was seen in the percent of intervals spent on-task during baseline. The data for the second intervention phase show that the percent of intervals spent on-task was maintained at a fairly high rate. Subject MW was observed to be on-task 33% to 66% of the time during the initial baseline. A small increase in this behavior was seen during the first intervention phase. A large amount of variability was seen in the data for the second baseline phase for MW. The percent of intervals on-task was slightly higher and the variability greatly reduced during the second intervention phase.

Figure 2 shows the percent of intervals that each of the subjects (experimental and normative) spent interacting across conditions. The data shown represents the
Figure 1. The percent of intervals each experimental subject was on-task across baseline and experimental conditions.
Figure 2. The percent of intervals in each session in which a positive interaction occurred across baseline and experimental conditions for each subject. The arrow denotes the session in which prompting was added. The horizontal dashed line represents the mean for each condition.
total percent of time spent interacting with others, regardless of the type of interaction.

For subject FB, an increasing trend was seen across all conditions. Likewise, the data for FW also increased across conditions with the exception of the final all interactions phase, where a slight decrease in the average percent of intervals was seen. The graph shows that subject MW interacted a very small percent of the time during baseline. A slight increase was seen during the all interactions phase and an even larger increase occurred during the within-race phase. A decrease in the level of interacting occurred during the between-race phase and this level was maintained during the final all interactions phase.

The data for subject MB shown in Figure 2 can be analyzed in two ways. First, across all of the baseline data, he averaged 40% of his time spent interacting with others. Second, the data may be divided into time periods which correspond to the changes in phases by the experimental subjects. When this was done, MB was observed to have interacted 30% of the time during the baseline time period. This fell slightly during the all interactions period. Increases in the percent of time interacting were seen in the time periods coinciding to the within-race and between-race phases. Finally, MB's level of interacting decreased during the period associated with the final phase.

Figure 3 shows the percent of intervals the three
Figure 3. The percent of intervals in each session in which a positive within-race (open circles) or between-race (closed circles) interaction occurred across baseline and experimental conditions for each subject. The arrow denotes the session in which prompting was added.
experimental subjects (FB, FW, & MW) spent interacting with individuals of the same race or individuals of a different race. The data from this graph are also summarized in Table 1. Listed are the average data for each subject in each condition across within-race and between-race interactions and group interactions in which various races take part (mixed groups).

For subject FB, the interactions which occurred during baseline were primarily within-race interactions. When all interactions were praised by the teacher, the data remained steady and then increases in first between-race and later within-race interactions were observed. During the within-race phase, FB's interactions were exclusively within-race with one exception. The opposite results were seen during the between-race phase. That is, between-race interactions predominated, with 2 exceptions. During the final all interactions phase, the level of between-race interactions fell off sharply while the within-race interactions increased.

For subject FW, the interactions which occurred during baseline were exclusively within-race interactions. The interactions during the phases when all interactions were praised and when within-race interactions were praised also were predominantly within-race (with one notable exception). However, when only between-race interactions were praised, this type of interaction changed such that the
### Table 1
Mean Percent of Intervals for each Experimental Subject

<table>
<thead>
<tr>
<th>Subject</th>
<th>Condition</th>
<th>Within Race</th>
<th>Between Race</th>
<th>Mixed Groups</th>
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<tbody>
<tr>
<td>FB</td>
<td>Baseline</td>
<td>28%</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>All interactions</td>
<td>16%</td>
<td>18%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Within-race</td>
<td>40%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Between-race</td>
<td>9%</td>
<td>45%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>All interactions</td>
<td>61%</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>FW</td>
<td>Baseline</td>
<td>10%</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>All interactions</td>
<td>29%</td>
<td>8%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Within-race</td>
<td>42%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Between-race</td>
<td>13%</td>
<td>50%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>All interactions</td>
<td>37%</td>
<td>15%</td>
<td>4%</td>
</tr>
<tr>
<td>MW</td>
<td>Baseline</td>
<td>9%</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>All interactions</td>
<td>21%</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Within-race</td>
<td>63%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Between-race</td>
<td>10%</td>
<td>4%</td>
<td>36%</td>
</tr>
<tr>
<td></td>
<td>All interactions</td>
<td>43%</td>
<td>2%</td>
<td>1%</td>
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</table>
interactions which occurred were predominantly between-race. As with subject FB, FW's data for the final all interactions phase shows a return to low levels for between-race interactions and an increase in within-race interactions, although not as quickly.

During baseline, the all interactions and the within-race interactions phases, MW's interactions were exclusively within-race. This pattern seemed to continue through the between-race phase also. However, Figure 4, which shows the percent of intervals in which MW participated in mixed-group interactions, shows that more of these interactions occurred during this phase than in any other. MW's level of within-race interactions predominated over either between-race or mixed-group interactions during the final all interactions phase (see Figs. 3 and 4).

Figure 3 also shows the data for subject MB broken down into within-race and between-race interactions. When these data were analyzed according to the time frames in which the experimental conditions occurred, the following was seen. During baseline, within-race and between-race interactions occurred at approximately the same low levels. First between-race and later within-race interactions predominated in the period coinciding with the all interactions phase. Between-race interactions decreased and within-race interactions increased in the period associated with the within-race experimental phase. Large fluctuations in the data occurred during the experimental between-race
Figure 4. The percent of intervals in each session in which subject MW participated in a positive mixed-group interaction across baseline and experimental conditions. The arrow denotes the session in which prompting was added.
phase. During five of the eight sessions in this time period, within-race interactions predominated. During the time period corresponding to the final all interactions phase, both within-race and between-race interactions occurred with the within-race interactions occurring slightly more frequently.
CHAPTER IV

DISCUSSION

The effect of the introduction of teacher prompting and reinforcement on the interactions of the experimental subjects can be seen in two ways. First, for all experimental subjects, the percent of intervals spent in positive interactions was greater in the final phase than at the beginning of the study. That is, overall, the intervention had the effect of increasing the subjects' level of interacting. Second, the behavior of the experimental subjects conformed to the contingencies in effect during the various phases. For example, the data for subjects FB and FW show that within-race interactions increased and between-race interactions remained low when within-race interactions were prompted and reinforced. Likewise, between-race interactions increased and within-race interactions decreased when between-race interactions were prompted and reinforced. MW responded similarly to the within-race condition. However, he responded to the contingencies in effect during the between-race phase by increasing the percent of time spent in mixed-group interactions rather than by increasing his purely between-race interactions.

In all cases, the high levels of between race or mixed-group interactions were not maintained when the specific prompts and contingencies for these behaviors were
removed during the final all interactions phase. Instead, higher levels of within-race interactions were seen for each subject. It is impossible to determine why this reversal occurred especially since no information was recorded regarding the type of interaction the teacher prompted.

Close inspection of the data collected on MB compared to that of the experimental subjects shows that the levels of between-race and within-race interactions participated in by MB reflect, to a certain extent, the contingencies in effect at the time for the experimental subjects. Although the teacher was instructed not to prompt or reinforce MB, he was, at times, the student with whom an experimental subject was interacting when reinforcement was delivered.

The subjects chosen exhibited such low levels of interacting that it was necessary to include prompting in the intervention strategy. A prompt is a "stimulus used to raise the probability of a previously identified response already assumed to exist at some low level" (Skinner, 1953). In this instance, the teacher suggested activities and playmates to the subject to increase the probability that an interaction would occur.

Prompting has been used in a variety of settings, with a variety of populations, and for many different behaviors. For example, McClannahan and Risley (1975) used verbal prompts to increase geriatric patients' participation
in recreational and leisure activities. In the area of education, Rosenbaum and Breiling (1976) used verbal prompts to teach reading comprehension skills to an autistic child. Verbal prompts have also been used to train question-asking with concomitant increases in reading comprehension and on-task behaviors seen (Knapczyk & Livingston, 1974).

The use of prompting draws into question the nature of the contingencies controlling the changes in behavior which occurred. That is, are the changes in the frequency and type of interactions occurring contingency-shaped or rule-governed? A contingency-shaped behavior is a behavior which has developed through direct contact with the controlling variables of reinforcement. In this case, interactions would be directly affected by the differential reinforcement of the target response. Behavior which is rule-governed has not developed through direct contact with the contingencies. Rather, it is emitted in a certain form because the rule has stated that when a response with these properties is emitted, certain consequences will occur. New rule-governed responses are emitted because rule-following, in general, has been reinforced in the past (Skinner, 1969).

In relating this to the present study, what must be questioned is whether the behavior reinforced by teacher attention was the particular type of interaction targeted or the following of instructions given to the student by
the teacher in the form of the prompt. In both cases, interactions are altered. However, these changes occur directly in the first case and are only a by-product of instruction-following behavior in the second. The question of whether the teacher actually reinforced interactions or instruction-following is an empirical issue which, while important, is beyond the scope of the present investigation. Future research in which the use of prompts and the fading of these prompts is more closely controlled would be necessary in order to answer this question.

What has been shown is that regardless of the nature of the contingency, the intervention associated with increasing interactions in isolate children (i.e., prompting and reinforcing interactions) (Pinkston et al., 1973) did alter both the frequency and topography of the interactions participated in by the subjects. Unlike the Hauserman et al. (1973) study, this was accomplished simply using prompts and reinforcers which occur naturally in the educational environment and which do not require special materials and changes in routine, such as tokens, snacks, and time set aside for exchange of tokens. The behaviors required on the teacher's part were easily taught and mastered and were included in her classroom routine with minimum effort. It is this ease of training and inclusion of the skills mastered into the daily routine, along with the results obtained that shows promise for the acquisition of higher
levels of functional integration on a system-wide basis.

As stated before, functional integration takes into account not only the numerical criteria associated with desegregation but the level of interracial interactions occurring in the classroom, building, and/or system. The purpose of the desegregation movement in education was to provide equal educational opportunities for all students regardless of race. The meeting of numerical criteria assures that at least the physical environment, within which learning is to occur, will be equal for all students within a school building. Any further goals such as the exchange of cultural information, increased academic achievement in minority students, etc. seem to require more than simply assuring that the appropriate ratio between majority and minority students is achieved and maintained (Cohen, 1975). If the focus of the educational establishment can be shifted from achieving numerical desegregation, to working toward functional integration, given the existence of an acceptable ratio between minority and majority students, it is possible that through the increased levels of interaction and communication these further goals may be met.
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