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ABSTRACT

Investigated was whether 60 nonretarded children (ages 9 to 12) would imitate the behavior of 20 educable retarded peers more competent in an experimental task. Each nonretarded observer was allowed to imitate the task behaviors of the retarded model who was either more competent, equally competent or less competent than the observer. Results indicated that nonretarded observers imitated the behaviors of the high competent retarded model significantly more often than the moderately competent model, with the latter in turn being imitated more than the noncompetent model. The data further revealed that competent retarded models were more likely to be chosen as partners on a future game task. (Author/CL)

IMITATION OF RETARDED CHILDREN BY THEIR NONRETARDED PEERS

Abstract

The purpose of this study was to determine whether nonretarded children would imitate the behaviors of retarded children more competent in an experimental task and to determine whether this imitation would generalize to the selection of the retarded children as task partners in another situation. Each nonretarded observer was allowed to imitate the task behaviors of an educable mentally retarded (EMR) model when the model was either (a) more competent than the observer, (b) equally competent, or (c) less competent than the observer in the experimental task. Results indicated that nonretarded observers imitated the behaviors of the high competent EMR model significantly more often than the moderately competent model, with the latter in turn being imitated more than the noncompetent model. The data further revealed that competent EMR models were more likely to be chosen as partners on a future game task.

IMITATION OF RETARDED CHILDREN BY THEIR NONRETARDED PEERS

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Recent developments concerning the philosophical and logistical underpinnings of the structure of special education have combined to result in increasing reintegration of mildly mentally retarded children into the regular education mainstream. The expanding impact of court decisions in California and Pennsylvania and the pressures of various advocates of special education children have produced or have been associated with the growth of the noncategorical movement on a wide scale. Questions of whether retarded children would be accepted by normal peers, once the subject of considerable experimentation, must now necessarily be subordinated to pragmatic consideration of how such acceptance may be most readily facilitated. The considerable research concerning the sociometric status of mildly retarded children in integrated settings has generally concluded that this status is apt to be of a negative quality (e.g., Johnson & Kirk, 1950). In a comparison of the sociometric status of educable mentally retarded (EMR) children who were reintegrated into regular classes with that of EMR children who remained in a special class, Goodman, Gottlieb, and Harrison (1972) found that the former were rejected significantly more often than the latter by nonretarded male peers. In view of such evidence, then, the impetus must shift to determine techniques for improving the social acceptability of the mildly retarded child in his interaction with normal peers throughout his school years. A relevant avenue of study in this regard is to consider the utilization of modeling as a means of social enhancement.

The utilization of modeling toward this end can be approached from two directions. The first is the typical paradigm in which an individual is exposed to the appropriate or effective behaviors of a model so as to learn the appropriate behavior to be exhibited in a specific situation. There is abundant research pertaining to imitative behavior of normal children and adults under such conditions, and a number of comprehensive reviews of this research have appeared (Aronfreed, 1968; Bandura, 1972; Flanders, 1968; Gerwitz & Stingle, 1968; Thelen & Rennie, 1972; Wodtke & Brown, 1967). The application of this research to imitation of nonretarded models by retarded individuals has been a recent development, with indications that the dynamics of imitation are much the same whether the observer is of normal or retarded intelligence (Strichart, 1974). Competence of the model appears to be the single most powerful regulator of imitation, highest rates of imitative behavior occurring where the model is perceived by the observer as competent on the task at hand.

A second, potential direction of application is a paradigm in which a retarded child functions as a model rather than as an observer. In this case, concern centers upon responses of normal individuals. Studies utilizing this paradigm have not appeared, leaving open the related questions of whether retardates will be imitated by normal individuals under various conditions, and if so, what are the effects on the retardate of being imitated. There are a few studies that have employed retardates as models, but for more severely retarded observers (Berkowitz, 1968; Henker & Whalen, 1969; Whalen & Henker, 1969). Although these studies found significant rates of imitation, they still represent the case of an observer matching the responses of someone more intellectually capable.

A recent study by Strichart (1974) found that adolescent children of normal intelligence imitated the behaviors of similar age EMR models on an experimental task in which they perceived the retarded child to be more competent than themselves. However, these results were based on a restricted measurement of this phenomenon in that only the last one of a series of 12 experimental trials per subject constituted a case in which the retarded child served as a model for the normal child. In prior trials, the normal child served as a model for the retarded child, results corroborating the significant regulating effect of competence on imitation. Therefore, this finding of imitation of retarded models by normal observers can only be viewed as suggestive, and indicative of the need for more extended study.

The issue of whether retarded children will be imitated by their peers when they display competent behavior is important to our understanding of the relationship between competence and social status. If situations can be constructed that present retarded children in a more favorable light vis-a-vis the competence level of their behavior, will it serve to improve their social status? In a prior investigation, Gottlieb and Davis (1973) found that nonretarded children were more likely to select other nonretarded children, rather than retarded children, as partners to play with in a cooperative game situation. However, in that investigation it was unclear whether the nonretarded children responded as they did because of their greater liking for the other nonretarded children or becuase they perceived that the nonretarded children would be more competent on the game task. It is conceivable that had the retarded children been introduced as being particularly competent on the task they would have been selected more often as task partners by the nonretarded children. In the present experiment, the nonretarded children participated with retarded children under circumstances where the latter displayed experimenter-controlled levels of competence ranging from low to high.

In this investigation, we wished to determine whether (a) children of normal intelligence (nonretarded) will imitate the task behaviors of similar age EMR children under varying conditions of relative competence on an experimental task; (b) the imitation of retarded children by nonretarded children is associated with the selection of retarded children by nonretarded children as partners in a future game-task situation.

Method

Subjects

Sixty nonretarded children between the ages of approximately nine to 12 years, and 20 educable mentally retarded (EMR) children of the same approximate age were selected as subjects. Both groups were equally divided by sex. All EMR subjects attended special classes. Subjects in both groups attended a single school located in a predominantly middle class area.

Parental consent was necessary before any child, EMR and nonEMR, was allowed to participate in the experiment. In order to insure the availability of 60 nonEMR and 20 EMR children required for the experimental design, a slightly higher number of consent forms were sent out in each case. Children were selected as subjects in the order in which their consent slips were returned to the school, with selection terminating at the point at which the required numbers were realized. In all, 66 letters were sent to parents of nonEMR children of which 63 were returned with the necessary approval. Similarly, 24 letters were distributed to the parents of EMR children, all of which were returned with the signature of consent.

Procedure

Three treatment conditions were established. Each condition employed pairs consisting of one nonEMR child and one EMR child of the same age and sex. In the three treatment conditions, the nonEMR subject was given an opportunity to imitate task behaviors of the EMR child. Thus, the nonEMR child was an observer and the EMR child was a model in all conditions. Depending upon the particular experimental condition, a nonEMR observer interacted with either a competent EMR model, a moderately competent EMR model, or a noncompetent EMR model. The nonEMR observer was moderately competent in each condition.

Subjects in each of the three treatment conditions were equally divided by sex. The mean age and IQ of nonEMR observers in each condition is presented in Table 1.

Insert Table 1 about here

Competence level of the subjects in each pairing was manipulated by the experimenter during the three treatment conditions. The model and the observer performed on the Vertical Aspiration Board (Rotter, Liverant, & Crowne, 1961) which consisted of a small, slightly slanted platform that could be raised along a vertical board by a wire pulley. A small steel ball was placed on the platform, the task being to pull the wire carefully in order to raise the ball as high as possible without it rolling off. Unknown to the performers, the ball was held on the platform by an electromagnet concealed in the bottom of the apparatus. The experimenter could unobtrusively break the contact, causing

Table 1

Means and (Standard Deviations) for Age and IQ

Observers	CA (in months)	IQ
Competent	129.50 (13.06)	108.83 (11.81)
	(N = 20) [a]	(N = 18)
Moderate	128.68 (13 81)	112.65 (12.40)
	(N = 20)	(N = 18)
Noncompetent	128.89 (11.75)	118.60 (9.27)
	(N = 20)	(N = 15)

[a]N refers to number of Ss for whom data were available. Maximum N per competence condition is 20.

the ball to roll off the platform at any point. The vertical board was marked in units of 10, from 0 at the bottom to 100 at the top, the score on any trial designated by the height of the platform at the time the ball rolled off. By breaking the contact at a certain point on the board, the experimenter could control the score of any subject using the apparatus and thereby control the subject's level of competence.

Participants were taken into the testing room and shown the task apparatus. Each child was introduced to the other as a member of (teacher's name) class. In this way it was clear to each child that one was in a regular class and one was in a special class. The experimenter introduced the task apparatus to each pair of children, explaining that it was a test of coordination. The experimenter then explained that he was interested in how well children of various ages did on the task, noting that many children seemed to have problems with coordination, such as when girls thread a needle and boys put things together. The experimenter stated that he was also interested in what the best way was to perform the task, since there were a number of ways to do it. He then performed a number of simulated trials without placing the ball on the platform, demonstrating all of the following task behaviors:

1. Gripping the handle of the wire pulley with one hand or with two hands.

2. Winding some of the wire around the handle to shorten it, or not winding it.

3. Standing on a tape placed slightly to the left of the center of the apparatus, or on one slightly to the right.

4. Standing with feet together or with feet apart.

The experimenter stated that he had already tested in many schools, and that from this he knew that a score of 80 or higher was good, while a score of 30 or lower was poor. Scores ranging from 40 to 70 were described as being neither good nor poor, but somewhere in between. The experimenter then explained that he was curious as to whether, when one was trying to learn to do something new, it was helpful to watch someone else do it. In a seemingly arbitrary fashion, the experimenter designated the model (i.e., EMR child) to go first on each trial while the observer (i.e., nonretarded child) watched. The model was not allowed to watch when the observer performed, sitting in a chair facing away from the observer at these times. This was necessary to insure that, whereas the observer had an opportunity to imitate the model, the model could not imitate the observer. To help insure that the observer attended to the model's task behaviors, he was instructed to call out each of the model's behaviors, purportedly so that the experimenter could record them accurately.

The experimenter informed both participants that they were on their own in choosing the manner in which they performed the task. That is, they could choose any pattern of four of the eight task behaviors previously demonstrated by the experimenter. They were given 12 trials and were told that they could change behaviors as much as they wanted from trial to trial. The number of task behaviors of the model imitated by the observer constituted the dependent measure of this phase of the study.

Under the experimenter's control, performers in the competent treatment received a random schedule of scores ranging from 80 to 100 on each of the 12 trials, while performers in the moderately competent cell received scores ranging from 40 to 60. Noncompetent performers received scores ranging from 0 to 30.

One EMR subject served as a model for the three treatment conditions. That is, he interacted with three different nonEMR observers. The order of competence of EMR models was randomly varied from observer to observer. To reduce the possibility of the model becoming suspicious of his changing competence from observer to observer, the experimenter pretended to make certain adjustments to the mechanism between each condition, explaining to the model that this would make the task either more or less difficult depending upon the direction in which the model's competence would be shifted in th condition. Models were instructed not to discuss their previous performance with new observers.

At the completion of the 12 trials, each nonEMR participant was taken to an adjoining room and informed that the experimenter would be coming back to the school in two weeks to conduct another test. The new test would be played as a game in which two children could work together to win a prize. The experimenter then showed the child the Crawford Test of Manual Dexterity and told him that children who did well on the test he had just taken usually also did well on this test, and that children who did poorly on the test he had just taken usually did poorly on the new test. Stress was placed on the fact that both he and his partner would each have to get a good score if their team was to win, since their scores would be added together to determine whether they would win a prize. The nonEMR subject was then told that he could take the test either with the child he had just been with, or with a child from his own class to be chosen later by the experimenter. He was then dismissed after indicating his choice.

Scoring

Two dependent measures were analyzed. The first was Imitative Behavior, the total number of the model's task behaviors imitated by the observer summed over twelve trials. Since the observer was able to imitate up to four of the model's behaviors on each trial, Imitative Behavior scores for each observer could range from 0 to 48.

The second dependent measure was the Index of Change, a score reflecting the degree to which the observer changed his behaviors from the previous trial to match the model's behaviors on the next trial. The Index of Change score is a proportion, with the numerator representing the number of times the observer changes his behavior to match a different behavior of the model, the denominator representing the number of opportunities the observer has to do so. To determine the observer's Index of Change score for a given trial, his performance on the previous trial was used as a baseline. The model's performance on the next trial was compared with that baseline to determine how many of the model's behaviors were different from those of the observer. This figure summed over 12 trials was used as the denominator. The observer's new performance was then studied to indicate how many of his previous behaviors were changed to conform to the different behaviors of the model, and this figure constituted the numerator.

The Index of Change proportion was transformed to arcsine scores for statistical analysis. This procedure was used to differentiate among scores when the observed proportion was 0 or 1. To illustrate, the proportions of 0/1 and 0/20 are both equal to 0, yet their meanings are quite different. The former may be a chance phenomenon while the latter represents a consistent occurrence. The arcsine transformation accounts for this difference, the respective transformed values of 0/1 and 0/20 being 1.0472 and 0.2241, respectively.

Results

Imitative Behavior was analyzed in a 3 X 2 (Competence X Sex) analysis of variance design with orthogonal polynomial contrasts on the competence factor. Ten subjects were included in each of the six cells. Two significant findings emerged:

a significant linear trend of the competence factor ($F = 5.10$, $df = 1/54$, $p < .03$), and a significant interaction between Sex and the quadratic trend of the competence factor ($F = 4.57$, $df = 1/54$, $p < .04$). Means and standard deviations for the six cells, which are presented in Table 2, indicate what without regard to sex, imitative behavior increased as the competence of the model increased. The significant quadratic interaction was attributable to the fact that boys imitated moderately competent models more than girls did, but girls imitated both noncompetent and highly competent models more frequently than boys.

Insert Table 2 about here

The change behaviors (Index of Change) were analyzed in a two-way analysis of variance design with the same factors as before. One significant finding emerged: the linear trend for the competence factor ($F = 4.54$, $df = 1/54$, $p < .05$). As can be seen from the means for the change behaviors that are reported in Table 2, the more competent the retarded model, the more likely the nonretarded models were to change their own behaviors to become consonant with those exhibited by the retarded child.

Finally, the investigators sought to determine whether the frequency with which retarded children were chosen as play companions was related to their level of competence, the extent to

TABLE 2

Means and (Standard Deviations) for Imitative Behavior and Index of Change Scores

Treatment	Imitative Behavior		Index of Change[a]	
Noncompetent boys	30.80	(6.63)	.986	(.452)
Noncompetent girls	35.00	(6.06)	1.322	(.679)
Moderately competent boys	36.40	(5.10)	1.613	(.409)
Moderately competent girls	33.00	(2.75)	1.322	(.472)
High competent boys	36.00	(5.89)	1.416	(.529)
High competent girls	37.30	(4.08)	1.643	(.725)

[a]Means and standard deviations based on arcsine transformed scores.

which they were imitated, the observers' Index of Change, or sex. Correlations were computed between "choice behavior" and each of these four variables. Significant correlations were found between the retarded children's competence levels and the frequency with which they were chosen as future play companions ($\underline{r}$ = .33, $\underline{df}$ = 58, $\underline{p}$ <.05), as well as between the nonretarded children's propensity to change their behaviors to those exhibited by EMR children (Index of Change) and their selection of the latter as play companions ($\underline{r}$ = .35, $\underline{df}$ = 58, $\underline{p}$ <.01). No significant correlations were found between choice behavior and Imitative Behavior ($\underline{r}$ = .05, $\underline{df}$ = 58, $\underline{p}$ = NS) or between choice behavior and Sex ($\underline{r}_{pbi}$ = .17, $\underline{df}$ = 58, $\underline{p}$ = NS).

Discussion

The results of this investigation indicate that retarded children are imitated more often and are chosen as future play companions more often by nonretarded peers under circumstances where they display competent behavior.

In this investigation there was a linear relationship between degree of competence and amount of imitation. That is, the retarded child was imitated most often when he was more competent on the task than his nonretarded partner, and least often when he was less competent. These results support Strichart's (1974) preliminary findings of the same phenomenon which were based upon limited data. Apparently, the dynamics of imitation behavior operate similarly for retarded and nonretarded children, regardless of the label assigned to particular children. Imitation of peers appears dependent upon the perception of the participants as to who is the more competent person in the given situation. To the extent that being imitated by one's peers represents a high prestige value for children, it appears that the level of competence manifested by a child, and not the label that is attached to him, is the critical determinant of his social worth in interpersonal situations. Similar data are available elsewhere (Gottlieb, in press) which indicate that the level of competence rather than the label is the critical determinant of attitudes toward children by other children. That is, it is conceivable that the social acceptability of retarded children to their nonretarded peers may be raised by providing them with skills that enable them to function more equitably with their nonretarded peers. With the increasing integration of retarded children into the mainstream of general education, it is all the more imperative for the schools to equip these children with the skills necessary to compete successfully with their new classmates.

The results of this investigation also indicate that competent retarded children will be chosen as a task partner by nonretarded peers for a new task apparently requiring similar abilities as those demonstrated by the retarded child on a prior task. Furthermore, it is not necessary for the retarded child to demonstrate competence on the new task. Rather, a transfer of the perception of the abilities of the retarded child occurs, indicating some generalizeability of the effects of competence.

Interestingly, choice behavior was not significantly related to the frequency with which the retarded child was imitated but was significantly related to the change behavior (Index of Change). However, the Index of Change score is probably a more sensitive index of imitation than is the global Imitative Behavior score since it signifies that the observer actually changed behaviors to match those of the model.

The present data raise several questions. First, what are the effects on retarded children of being imitated by normal peers? Does it enhance their level of self-esteem to see their behaviors matched by other children? Are there particular characteristics that must be possessed by the imitator if the self-esteem of the retarded child is to be positively affected? Specifically, will there be a greater effect when the imitator is a nonretarded, rather than a mentally retarded, child?

The second major line of inquiry that might follow this investigation concerns the generalizeability of perception of the retarded child as competent by the nonretarded child to situations other than that in which competence was actually demonstrated. Whereas in the present study both the actual and described tasks both purportedly involved motor coordination, would similar choice selections have occurred if the new task was presented as requiring cognitive or academic skills?

Another question concerns the extent to which a demonstration of competent behaviors can be mitigated by the expression of inappropriate social behaviors by retarded children. For example, some retarded models in the present experiment were not selected as task partners because the nonretarded observers indicated that they were annoyed by the manner in which the retarded models flaunted their more competent performance. This would imply that training cognitive and academic skills in retarded children need also be be accompanied by training in the social graces that must coexist with the skills if social acceptability is to be appreciably enhanced.

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