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EFFECTS OF SOCIAL MODELING ON CLASSROOM PERFORMANCE*

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SUMMARY

The effects of peer modeling on academic task attention were examined in three subjects using a single-subject research design. Models were chosen on the basis of playground observations and introduced for brief periods in the classroom near the target subjects. Positive effects were present in two subjects, but adverse effects were found in the third. Differential uses of modeling techniques in the classroom were discussed.

INTRODUCTION

Prior investigations of modeling (imitative learning) have demonstrated its use in the establishment of novel responses in children who had previously observed these responses in high status models (Bandura and Walters, 1963). Other work has demonstrated the wide range of overt responses imitated by normal children (Baer and Sherman, 1964) and by exceptional children (Lovaas et. al., 1966 and Quay et. al., 1966). The use of social modeling techniques in classroom settings, however, has remained largely unexplored yet would seem to hold considerable promise in establishing academic responses in children.

The present study explores the effect of social imitation on academic task attention. The rationale for task attention both as a requisite for successful academic performance and as a dependent variable in research has been presented by Hewett (1968). Particular concern was given aspects of modeling which could be replicated by teachers in actual classroom practice.

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METHOD

Three male subjects were selected from the elementary classroom in an inpatient school for psychiatrically impaired children. Classroom management and motivation techniques were based on a behavior modification approach in which students received checkmarks (exchanged for tangible rewards or free time) for meeting classroom behavioral and academic standards and in which instruction was largely individualized (Hewett 1968). Subjects were selected who displayed higher than average non-attending behaviors as compared to other children in the classroom, based on teacher reports.

None of the subjects had been admitted to the hospital more than ten weeks prior to the study. S_1 and S_2 were 9 and 10 years old, respectively, with WISC intelligence quotients of 91 and 100. Both had been referred for acting out and agressive behavior which was also evidenced in the inpatient classroom. S_3 was 11 years old with a WISC intelligence quotient of 57 who evidenced no aggressive behavior but, like S_1 and S_2, had extremely short attention span relative to classroom tasks.

A single-subject research design was used, each of the subjects serving as his own control under both baseline and modeling conditions. The three subjects were run consecutively in the order of their given numerical designations. The paradigm of three baseline days, a modeling day, two baseline days, three modeling days, and three baseline days was used on all three subjects.

In order to determine an appropriate peer model, six consecutive days (bypassing weekends) of each S's peer interactions were observed on the playground for 15 minutes prior to the morning class period during which the experiment was to be held. All interactions between S and all other children (approximately 18) were observed by two independent raters and scored as positive or negative. An interaction was defined as physical or verbal contact between S and a peer irrespective of the child initiating the contact; but, in order to be scored, an encounter had to eventuate in an observable verbal or non-verbal response from the child being approached. Any interaction which resulted in physical acts of aggression (e.g., kicking, hitting, spitting, etc.) or obviously hostile verbal retorts were counted as negative interaction. All others were scored as positive. An inter-rater reliability coefficient of .95 was obtained over the first four days of observation for S_1.

The algebraic sum of negative and positive interactions was computed for each day's observation. The peer having the highest cumulative number of positive interactions with S was chosen as a peer model.

Concurrent with the last three days of playground observation, three consecutive days of 15 minute baseline measures of S's task attention were measured in the elementary classroom from behind a one-way observation window. Task attention was defined as seconds during which the target child was looking at teacher-assigned arithmetic tasks. The classroom teacher was forewarned of the purpose of the investigation and was instructed to keep the format and difficulty of the tasks (math workbook or teacher-prepared math worksheet) constant for the period of the study. Only overt ocular fixation toward learning materials was scored. Occasional looking up and counting on fingers was included since it represented task involvement. Drawing pictures or coloring on assigned pages was excluded. A previous pilot study indicated observer agreement at 95%.

On the fourth day, the peer model was introduced during the second 5-minute subperiod. The teacher escorted the model to a place near the subject and at the end of the 5-minute modeling period escorted the model away from the subject. This constituted the procedure on modeling days. In addition to task attention, a measure of the time the subject spent "looking at" the model was recorded during the second 5-minute subperiod.

The instructions to the model were to sit near S and work or "pretent to work" on an assignment similar to the subject's. The model was told briefly that the purpose of the investigation was to help S since S worked better if he could see that others were working hard too. He was encouraged not to look at S nor to respond to S's questions or advances. The model was given two sets of checkmarks after each session: one for participating successfully in the study and a second for not letting other students in the classroom know about the study.*

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*The "hush money" was reported by both teacher and ward staff to be working effectively, and no evidence of revealing the "secret" was found for the duration of the investigation.

RESULTS

Subjects S_1 and S_3 tended toward overall greater task attention on modeling days as compared with baseline days during which no peer model was present, but with S_3 this trend was somewhat reversed by the inclusion of a modeling day (Figures 1 and 2).

TABLE 1
Mean Seconds of Task Attention in Each 5-Minute Subperiod for Both Baseline (B) and Modeling (M) Days

Subject	1st Subperiod		2nd Subperiod		3rd Subperiod		Total	
1	164.3	165.8	90.3	236.5	67.8	166.8	334.8	569.
2	51.6	48.8	58.3	60.5	53.9	59.8	162.5	169.
3	124.9	97.3	108.1	242.0	95.9	113.0	327.6	452.3

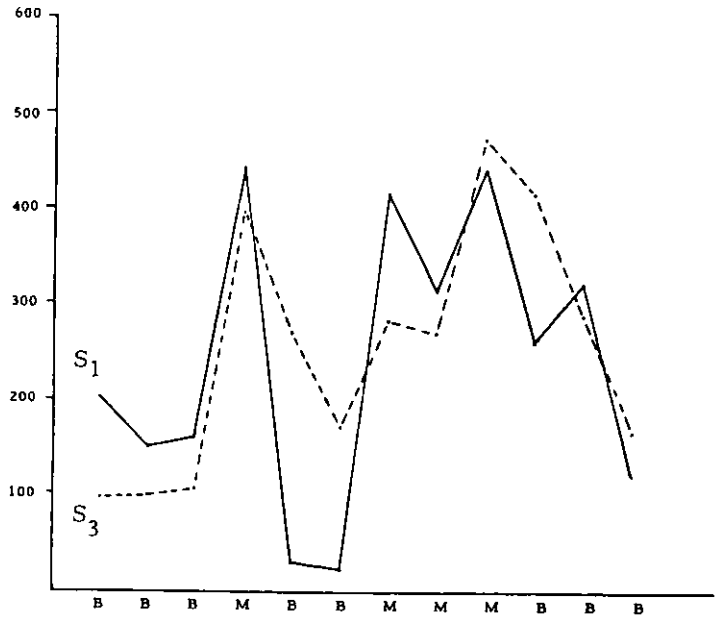

FIGURE 1. Total seconds of task attention (for second and third subperiods) on baseline (B) and modeling (M) days for subjects 1 and 3

Comparing the first 5-minute subperiod with the second 5-minute subperiod on modeling days resulted in a one-tailed correlated t of 3.09 for S_1 and 2.68 for S_3 significant at the .05 level. The same comparison for S_2 was insignificant. Comparing the first baseline period with second baseline period (third subperiod) on modeling days did not result in a significant difference for any subject (Table 1).

The performance of S_2 was qualitatively different from that of S_1 and S_3 in that trend analysis revealed no deteriorative trends in his task attention on initial baseline days. In addition, S_2 showed a much lower average total task attention on baseline and modeling days except on the fourth modeling day in which there was an increase in this student's task attention over all previous days (Figure 2). S_2 also spent more time looking at the model than did the other two subjects (mean seconds per session = 48, as compared with 8 and 17 respectively for S_1 and S_3).

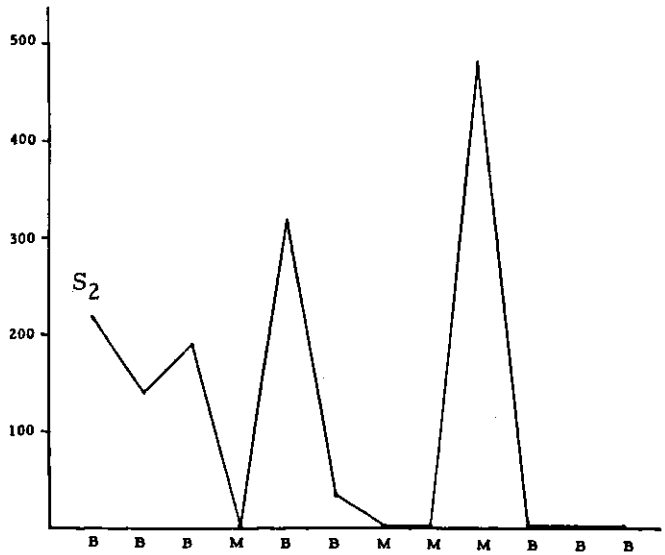

FIGURE 2. Total seconds of task attention (for second and third subperiods) on baseline (B) and modeling (M) days for subject 2

DISCUSSION

Task attention improvements did not appear to be the result of just having any child approach the subject or of increased attention paid to the Ss by having novel persons sitting near him. Earlier pilot work in the same classroom indicated that models who are disliked by subjects tended to cause a reduction in task attention when seated nearby. Though practical considerations limited further investigation in this regard, further use of modeling techniques in the classroom should be accompanied by solid sociometric evidence of the model's peer status relative to the target subject.

Since S_1 and S_3 showed peer modeling whereas the evidence in S_2 was relatively negative, certain parameters relative to further use of modeling techniques were suggested. Though it is impossible with such a small sample to make meaningful comparisons between subjects, S_2 was the only subject for whom playground observations determined the use of a female model. Sex differences might be of considerable importance particularly during late childhood years when sex role identity is being established. A related aspect is that playground observations may have provided data unacceptable for use in the classroom setting in that the model for S_2 may have had certain characteristics which, while evident and perhaps even acceptable on the playground, might have been somewhat less desirable in the classroom as far as S_2 was concerned.

Another consideration relates to the somewhat more variable performance of S_2 including extremely low performance in half of the 12 daily sessions. Informal observations of the classroom performance of S_2 also suggested highly unpredictable behavior and a lessened concern for interpersonal relationships. For modeling approaches to be successful, therefore, at least a certain consistent level of social functioning would appear to be necessary which would preclude its use with more disturbed children. Though other classroom interventions were held constant during the investigation, it eventually became necessary for the teacher to place S_2 on warning for misbehavior. The large improvement in task attention on the last modeling day is thought to be the result of the interaction between modeling and negative reinforcement used in combination since warnings on the last set of baseline days failed to work when used alone.

Social modeling as an intervention in the classroom would seem to have promise as an alternative or at least a supplement to other behavioristic approaches such as operant conditioning. Social imitation of more competent peers in one task might be expected to generalize quite readily to other classroom behaviors. Further investigation should focus on developmental trends referable to the effectiveness of modeling techniques at various ages.

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