*READING-RELATED BEHAVIOR IN AN OPEN CLASSROOM:
EFFECTS OF NOVELTY AND MODELLING ON PRESCHOOLERS¹*

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Eight preschool children were exposed initially to an unstructured (open) classroom in which, among other objects, a dozen different books were continuously available. Samples of the subjects' behavior over several weeks documented a very low frequency of reading-related activity (attention to books). Introduction of novel books into the classroom increased some children's reading-related behavior, but adults who modelled reading by reading aloud produced larger and more stable increases of such behavior. There was also a relative increase in frequency of independent and a relative decrease in mutual-peer reading-related activity, possibly as a result of modelling. The study calls attention to the need to evaluate the open-classroom setting in a manner compatible with the experimental analysis of behavior in other applied settings—a manner that is also consistent with the real aims of open education.

The movement toward "free" education and "open" classrooms is today one of the prominent reformist movements in education. The primary difference between traditional or formal schools and open schools is that, whereas the former are typically structured for group learning, open classrooms provide a more flexible, individual, or child-centered structure for learning. Advocates of the free-school movement feel that school should be a place in which the child him-

self can assume the "natural" responsibility for his own learning, and in which he is encouraged to explore and develop his unique "inner" potential. In doing this, it is said, the child will grow to become a more fully functioning human (see Graubard, 1972, for a review of these beliefs). Exponents such as Holt (1967), Kohl (1969), and Kozol (1972) claim that for the child to become better educated, he must at least have more freedom (less formal or group structure) to learn.

Most of the important language of the open-classroom movement is more suited to rhetoric than to experimental consideration. Yet, as the free-school movement gains in popularity among parent-teacher groups, more and more educators appear to be moving to adopt its philosophies and techniques, despite the fact that there is little or no research demonstrating academic or other benefit favoring open classrooms over the formal programs they are meant to replace. While for many the open classroom is a movement toward happier children and teachers, for others it represents a dangerous extension of permissiveness, all of which recalls earlier debates on progressive education in the years that Dewey (*e.g.*, 1938) was writing about the continuity of educational and mis-educational

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experience. Kagan (1971), having observed a number of open classrooms, had this to say: "There is more than a bit of romanticism in some of the harsh and almost totally destructive criticism of the [formal or traditional] school. These attacks place the total responsibility for educational failures on the authoritarian and rigid structures and practices of the elementary school system and suggest—dangerously, we believe—that if the child were left completely free he would seek the proper intellectual diet. This conclusion is probably untrue. . . . In one class that stands out clearly, almost half a fourth-grade class of middle-class children was seriously behind normal grade level in reading competence. This would not be a tragedy if the students had developed an exciting proficiency in poetry or gymnastics. But they had not. The classroom was merely a permissive atmosphere in which the child, from first-grade entrance, had not been persuaded to master the subject-matter competences that schools require. The result was a quiet, almost apathetic classroom" (p. 146).

The problem for the open classroom would seem to be that of maximizing the number of learning experiences for each child, while at the same time maximizing the chances that the pupils will be learning those skills that characterize intellectual development and academic achievement. If that is true, then open-classroom programs, like all educational programs, must be based on knowledge of the young child. Therefore, how the behavior of pupils can be structured in an open classroom will depend largely on what is known about causes of behavioral change.

In particular, three dimensions of the environment are demonstrably important in structuring children's behavior, and these are manipulable in all classrooms. They are novelty (and variety), modelling, and contingencies of material, social, and activity reinforcement. Novelty and variety in the environment are often associated with increased attention and exploratory behavior in young children (*e.g.*, Cantor

and Cantor, 1964). Modelling can be useful to the child's acquisition of behaviors important to schooling (*e.g.*, Lahey, 1971) and to socialization generally (Bandura, 1969; Bandura and Walters, 1963). Finally, contingencies of reinforcement have successfully enlarged the repertoires of academic behavior of both preschool (Miller and Schneider, 1970; Tawney, 1972) and older children (Brigham, Graubard, and Stans, 1972) in the classroom.

Although these dimensions can be manipulated in virtually any educational setting, many teachers seem to be unaware of their contribution to the management of children's academic behavior. Thus, while contingency management in the classroom has received favorable attention among researchers and educators, experimental evaluation of other features of the classroom setting, such as novelty and modelling, have suffered relative neglect. Since reading is one of the skills the child must acquire if he is to be successful in later schooling, the present study manipulated these two features of the classroom environment—novelty of reading material and modelling of reading behavior—to determine how children's attention to reading materials can be increased in an open, relatively unstructured preschool (or kindergarten) classroom.

METHOD

Subjects and Setting

Eight children enrolled in a university preschool project varied in age from 3 yr, three months to 5 yr, nine months. All subjects were from middle-class to professional family backgrounds. Six of the eight varied in IQ from 114 to 134 on either the Binet or WISC test; two (who were brothers, M3 and M4) were in the very superior (Binet) range of IQ. The latter two subjects, who were 4 yr, three months and 5 yr, nine months of age, scored at the 1.5 and 5.5 grade level, respectively, on the Wide Range Reading Achievement Test. They therefore read well beyond the level demonstrated by their age-mates.

The preschool operated Monday, Wednesday, and Friday from 9 a.m. to 4:30 p.m. for approximately eight weeks. A special area of the classroom (facing a one-way mirror) was designated a reading area and was stocked initially with 12 different children's books. Other objects in the room included kindergarten desks and chairs, toy appliances, a record player with records, painting and drawing materials, an assortment of donated toys, Play-Doh, and a wagon.

Psychology and education undergraduates served as tutors, who saw to it that a child's (or sometimes two or three children's) interests in the classroom were satisfied with the objects and activities that they requested. The tutors' activities in the classroom thus ranged broadly, from painting and drawing, to talking and reading, to playing musical instruments and various children's games. In addition, special tutors regularly engaged the children in number and arithmetic and in letter and vocabulary training. No activities other than lunches, snack-times, and outdoor excursions were scheduled for the group as a whole.

Observation Procedure and Observer Agreement

The subjects' and tutors' behavior was measured each day during two 15-min free-play sessions, once about 10 a.m. and again about 2 p.m. During these sessions, tutors suspended whatever interactions they were engaged in and became only verbally responsive to the children. That is, the tutors stationed themselves in different sections of the room and primarily answered the children's questions. Requests by the children to engage in activities with the tutors (for example, reading, running about, or other playing) were responded to in the general form: "I can't just now, but you can if you'd like".

Undergraduate observers sampled the behavior of the children on a check sheet; they observed all children for 6 sec and then recorded for 6 sec continuously during each 15-min session. The behavior sampled, reading-related be-

havior, was defined as a subject's looking (eyes directed) at the pages of an open book. Observers also noted whether a subject, during any part of the observation interval, exhibited this behavior with no peers beside him (independent reading), with a peer looking at the same book (mutual-peer reading), and/or was looking at a book being read aloud by a tutor. Initially, only one observer was needed to record the behavior of all the subjects, since reading-related activity was so infrequent. As reading-related activity increased among the subjects, several observers were used, each monitoring not more than four subjects at once.

Two tutor behaviors were also recorded by other observers: suggesting (in words or by motioning) that a child read, and modelling by reading aloud. During the first session of the novel-books phase (explained below), one tutor mistakenly read to one subject during the later portion of that session. There were no other deviations from tutor instructions at any other time, and it seems unlikely that that unplanned and brief mistake influenced any of the other children. Since the subject mistakenly read to by one of the tutors subsequently dropped out of the study, none of her data are included in the results.

Agreement between two independent observers was defined as the number of agreements that a behavior occurred within a particular 6-sec interval, divided by the number of such agreements plus disagreements per 15-min session. Intervals in which no behavior was scored were not counted in the estimates of agreement. Agreement was established at 98.6% before the first session of the study, and in six subsequent agreement sessions scheduled intermittently throughout the study, agreement ranged from 80% to 98%, averaging 90.4% overall.

Procedure

The experiment moved in five steps, or phases, although the number of 15-min sessions in each phase for any particular subject varied, depending on attendance in the preschool.

Baseline measures of reading-related behavior were first obtained over seven consecutive 15-min sessions (covering three and one-half days). During baseline, the same dozen books were continuously available in the reading area, but tutors neither encouraged the children to read nor did they read to them. The next five sessions involved introduction of new reading materials; each session began with a familiar adult entering the classroom, carrying 10 to 15 new and different books into the reading area, and announcing their presence to the children. (The reactions of some subjects, such as "More new books?" and "Oh, no, not *more* books!" indicated the announcement was heard.) By the fifth session, about 60 new books had been introduced. As always, the tutors were not permitted to encourage reading or to read to the subjects.

During the next five sessions, the several tutors each modelled reading behavior. At the beginning of each session, usually three (but occasionally two or four) tutors picked up a book in the reading area, moved to separate areas of the classroom, settled into chairs, and began reading aloud. But the tutors did not encourage the children to sit or read with them. Tutors continued reading aloud throughout each session, with brief pauses to answer children's questions on the reading material.

The next five sessions replicated the earlier novel books condition, in which additional books were brought into the reading area at the beginning of each session. At this point in the experiment, fully 100 new books had been introduced into the reading area. The final three sessions of the experiment replicated the earlier modelled-reading condition; tutors again modelled by reading aloud, but did not encourage the children to sit or read with them.

Experimental conditions were not changed on an individual basis. Because the preschool was a group setting, experimental conditions (phases) were manipulated on the basis of the general behavioral trends noted among the subjects under each condition.

RESULTS

For approximately two weeks before formal baseline observation, the children had been free to familiarize themselves both with the classroom and with the tutors and other adults associated with the project. Informal observations during this time disclosed extremely infrequent reading-related behavior among all subjects, including M3 and M4, whose reading competence was well above expected levels. The absence of these two subjects during most of baseline (absences are denoted by Xs in Figures 1 and 2), then, would not appear to compromise the general finding across subjects (see Figure 1) that initial frequency of reading-related behavior was extremely low.

The introduction of novel books for the next five consecutive sessions was associated with an increase in the reading-related behavior of some, but not all, of the subjects. The effect of novel books was highly variable across children, and provides an interesting comparison with the next set of five sessions, in which reading behavior was modelled by the tutors. Under the modelled-reading condition, results were quite uniformly reliable across both sessions and subjects. The reading levels generated during these five sessions remained both more stable and higher than during the previous five novel books sessions. The effect of novel books and of modelling on the total level of reading-related behavior was replicated in all of the subjects (including M2) in the last two phases of the experiment.

Figure 2 shows the frequencies of mutual-peer and independent reading-related behavior for six of the eight subjects for whom there is appreciable data. (Subjects F1 and M5 totalled nine and four instances, respectively, of relevant data.) Comparing Figure 2 with Figure 1, it is clear that most of the increase in reading-related behavior during the study is accounted for by an increase in attention to a tutor's book. The children paid more attention to reading material when the adults were reading aloud (mod-

Fig. 1. Total number of intervals in each session (maximum 75) during which each subject was observed to be attending to books. Absences are denoted by Xs along the ordinates. M = male; F = female subject. Numbers below subject identification denote years-months of age.

Fig. 2. Number of intervals in each session during which six subjects (see text for explanation) were observed to be attending to books with one or several peers (mutual-peer reading) or alone (independent reading). Absences are denoted by Xs along the ordinates.

elling). In turn, this preference for having material read by a tutor is probably due to the rudimentary level of most subjects' reading skill. However, there was an apparent shift in relative frequency from mutual-peer to independent reading-related behavior from the first to the second novel books condition. Four of the six subjects whose reading level increased during the first novel books condition demonstrated 70% mutual-peer *versus* 30% independent activity, whereas in the second novel books condition, fully 90% of their reading-related activity was independent. This reversal may tentatively be attributed to the intervening modelling experience, but only tentatively at this point. While this reversal of mutual-peer and independent reading-related behavior might have been an effect of the modelling condition, there was no detectable difference in the overall level of reading-related behavior from the first to second novel books condition. These results therefore provide no evidence that modelling alone (at least for a brief period of time) increases the probability that children will read without benefit of tutor.

DISCUSSION

Reading behavior does not arise necessarily and spontaneously in an open classroom in which, among other things, a set of books is continuously available. Indeed, one is apt to be astonished that so little reading or reading-related activity can be observed in an open, unstructured preschool setting in which the children are "free" to open books (or ask tutors to read to them), as well as to play with paints, records, and other things. Certainly, for the beginning reader, books are in competition with other classroom objects that provide more opportunities for manipulation and thus more variable sensory feedback or reinforcement. Warnings from critics of open education concerning the effects of "freedom" in the early school years are not, therefore, unfounded.

Introducing new books into the open class-

room can raise the probability that some children, at least, will explore more reading material. In the present study, the persistence of the novelty effect, like the novelty effect itself, seemed to be highly variable; and precisely because of such variability, simply introducing novel books would not seem to be the most useful manipulation in increasing the reading behavior of those pupils who demonstrate a small likelihood of such behavior in the first place. However, providing novel books may *set an occasion* for independent or small-group reading, the enhancement of which would be a function of reinforcement from teachers and from the reading material itself. The data on Subject M4 are of special interest in this respect. While demonstrating the same pattern as most of the other subjects, M4's responses suggest that when reading competence is at a fairly advanced (fifth-grade) level, novelty and variety of reading materials themselves may increasingly dictate the frequency of reading behavior. M4's attention to reading materials during the novelty conditions, however, was never as high as it was during adult-modelling conditions, indicating that even at this level of competence, reading is not necessarily freed from external contingencies of social or other reinforcement.

Adult models were found to be the most effective stimulus to children's reading-related behavior in the particular classroom setting described here. Several children, in fact, were themselves observed to pick up a book after the tutors had begun to read aloud, to sit near a tutor, and to read independently while the tutor read, alternately looking at their own books and then looking at the tutor's book. These children apparently quite literally imitated the tutors. That modelling was effective corroborates a general observation throughout the investigation; namely, that the preschoolers could most often be found clustered about the adult tutors. Thus, there appeared to be a predictable association between the activity (or inactivity) of the tutors and the behavior of the children. It suggests that preschoolage children

may be generally set or primed (as it were) to imitate or to interact with their teachers regardless of what the teachers happen to be doing.

The unexpected shift from predominantly mutual-peer reading before the first modelling phase to predominantly independent reading afterward might have been an effect of the intervening modelling experience. It would be important to examine this possibility further, since one of the ultimate aims of open education is independent learning through independent reading. However, that there did not appear to be any sustained effect of the modelling experience on overall amount of reading behavior in the fourth phase is probably a reflection of the brevity of the modelling condition. It should at least suggest caution in assuming that modelling without reinforcement in the early stages of reading leads quickly to sustained increments in reading behavior. It can also be suggested that in this study, maintenance of reading-related behavior, without modelling, was not so much a function of previous modelling as it was under the influence of the more immediate consequences of reading; for example, the nature of the reading materials or the (lack of) social or other reinforcement for reading.

One horse regularly beaten by behavioral psychologists is the problem of variability both within and across subjects during experimental conditions. It is clear from the present results that this animal is very much alive in open classroom settings. This is to be expected, however, when the classroom consists of not one, but of many kinds of events occurring simultaneously—a feature built into the structure of the open classroom. This feature, although certainly not unique to open classrooms, can be dealt with best, we believe, by isolating certain features of the open classroom environment for study over longer periods of time. That there can be some benefits of such research commitments by educators to future educational structuring seems obvious enough. Whether educators will readily accept a certain amount of complexity and time is quite another matter (*cf.*

Haskett, 1973). In any event, the present study illustrates a method of evaluating behavior in an open-classroom setting that is compatible with the experimental analysis of behavior in other applied settings.

Free education and the concept of the open classroom do not mean that the child's behavior is freed from *causes*. The larger environment of the open classroom acquires new properties and new meanings when contrasted with that of the traditional school. Both the larger social and physical environment begin to play a more complex, but not unregulated, role in the control of individual children's behavior in the open classroom. When teachers are freed from having to manage the behavior of all their pupils simultaneously, they assume an even larger task in ensuring that all events in the classroom do, in fact, contribute to individual pupil growth. The open-classroom teacher must therefore be mindful of the ways of arranging classroom conditions—not the least of which is the teacher's own behavior—so that pupil interest and advancement in important skills, such as reading, will be maximized.

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