THE CHOICES AND PREFERENCES OF NURSERY SCHOOL CHILDREN¹

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After a period of equal reinforcement for choices of any job revealed which of 10 jobs each of 24 preschool children preferred and did not prefer, token payment became dependent on particular choices. Some children received tokens only for choosing previously non-preferred jobs, others for choosing previously preferred jobs. When tokens depended on choosing the nonpreferred jobs, those came to be preferred. When tokens depended on choosing the preferred jobs, the preferences were strengthened. The effects were replicated both within and between subjects, except in the case of one boy who consistently avoided token pay.

Children often choose to engage in one of several simultaneously available activities. In addition to the choices made during play and at home, an integral part of more formal settings such as nursery schools is that there are opportunities for choices of games, jobs, stories, songs, *etc.* What factors determine childrens' choices and preferences? When asked why they have chosen a particular activity, children often respond in terms of liking a particular teacher, wanting to be with friends, the fun of a particular activity, the desire to help, or explanations of a similar nature. Although these may in fact be significant factors, the research of Ayllon and Azrin (1965) with psychotic adults showed that extrinsic consequences of activities could be introduced as the most potent determinant of preferences. When only certain activities paid tokens that could be used to buy a variety of items, the adults abandoned their originally preferred activities in favor of those that paid.

Ayllon and Azrin's data were obtained in a setting sufficiently different from the normal environment that extrapolations might be unjustified. The generality of their results could

possibly be restricted to environments that provide a degree of control that is impossible elsewhere. If so, their results would be relevant when most or all of the experiences of the individual can be specified by the experimenter. The present study of choices and preferences took place in a nursery school, and the subjects were normal children who were in school for less than 4 hr per day and lived at home. The experiment stemmed from the need to evaluate the generality of Ayllon and Azrin's data.

The nursery school did not have a token system except in the context of this experiment. The system was instituted for the sole purpose of determining whether tokens that could be traded for the opportunity to indulge in normal school activities could be used to control preferences.

METHOD

Subjects

Twenty-four 4- and 5-yr-old children enrolled in the afternoon session of the University of Iowa Preschool Laboratories during the Spring semester served as subjects.

Apparatus

A 25 by 42-in. (62.5 by 106.6 cm) board covered with black felt displayed a list of 10 jobs normally performed by children in the school (water plants, feed pets, deliver snack, stack chairs, empty wastebasket, pour milk, clear

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table, return trays to kitchen, pass napkins, leader) and the number of tokens paid for each. A sketch drawn with a black pen on 3.5 by 3.5-in. (8.75 by 8.75 cm) yellow cardboard provided a simple representation of the job. These sketches were arranged 1 in. (2.54-cm) apart in a column 1 in. from the left edge of the board. The order of the sketches changed according to a random sequence for each child on each day. The tokens paid for a job were displayed in a horizontal array to the right of the sketch. The tokens were 3.0 by 0.75 in. (7.5 by 1.8 cm) yellow plastic oblongs (American Guidance Service).

Procedure

General description. The experiment had five phases. In the preliminary phase, the children were exposed to the 10 jobs and the general experimental routine. The manipulations of interest occurred in the next phases, described as Phases 1 to 4. In Phase 1, the children received an equal number of tokens for all jobs, and the preferred and nonpreferred jobs were ascertained for each child. In Phase 2, some of the children (Experimental Group) received tokens only for choices of their nonpreferred jobs of Phase 1 to determine if such differential token pay would shift the preferences. Other children (Control Group 1) continued to receive equal tokens for all jobs to determine whether changes in job preferences might occur spontaneously. The remaining children (Control Group 2) received tokens only for choosing their preferred jobs of Phase 1 to determine whether preferences might change due to the introduction of differential token payment. In Phase 3, all of the children again received equal tokens for all jobs to reveal whether the initial preferences were recovered. In Phase 4, all of the children received tokens only for choices of their nonpreferred jobs of Phase 3 to replicate the conditions of Phase 2 for the Experimental Group. This was a direct repetition of the differential token pay for nonpreferred jobs for the Experimental Group, and the first exposure to such conditions for the two control groups.

Preliminary phase. In each of 10 sessions, every child individually looked at the sketches, was read the list of 10 jobs, was assigned to one of them, and was paid 10 tokens. A different job was assigned on each day. Throughout the experiment, tokens were paid after the job was

assigned, not after it was completed. There were no consequences for job completion. Despite this, the children always performed the assigned jobs. After receiving the tokens, the child went to a different room where a teacher provided a choice among activities to be available later in the afternoon. Activities requiring tokens were: art, carpentry, blocks, dramatic play, cooking, games and puzzles, visit to the museum, and wheel toys. These activities were those that the teachers considered to be of the highest priority for the children. Each activity required an advance payment of 10 tokens. Other activities, typical of nursery schools, were also available without token pay and varied from day-to-day.

Phase 1. Phase 1 was a baseline condition for determining job preferences, and consisted of 10 sessions with equal token pay for all jobs (nondifferential token pay). This phase differed from the preceding one in that the child was asked to select his or her three preferred and three nonpreferred jobs from the list of ten. The instructions were as follows: "We have ten jobs, and each job pays ten tokens. I am going to name the jobs. Then you name the three jobs you would like to do today." The experimenter read the list of jobs, and the child replied. The experimenter then said: "Now tell me the three jobs you would not like to do today." The experimenter read the list again, and the child answered. The child was then assigned to one of the three preferred jobs. Several jobs could be done by more than one child, others could be done by only one. The experimenter based the assignment on which jobs were still available at the time the child stated the preferences. The child then received the 10 tokens, and reported to the teacher to choose and pay for the late afternoon activity.

The three jobs that a child most often named as preferred and the three most often named as nonpreferred in the 10 days were considered the preferred and nonpreferred jobs respectively. The experimenter did not rate preferences; they were measured by recording the child's explicit statements of the three preferred and nonpreferred jobs. Children varied in their day-to-day consistency, some naming the same jobs in each category throughout the phase but others being more variable. Children were assigned to three groups, an Experimental Group ($N = 12$), and

two Control Groups ($N = 6$ in each). The attempt was made to match children on the basis of their consistency, and then to assign them so that, as nearly as possible, the three groups had equal proportions of boys and girls and proportionately equal representatives of the different levels of consistency.

Phase 2. The children in the Experimental Group received 10 tokens only if they selected the three nonpreferred jobs of Phase 1 as those preferred. The display board showed 10 tokens for those jobs and none for the others, so that the child saw, before choosing, which jobs paid tokens. The instructions were as follows: "We have ten jobs. Three jobs pay tokens. The other jobs do not. I am going to name the jobs. Then you name the three jobs you would like to do today." The list was read, and the child replied. The experimenter continued: "Now tell me the three jobs you would not like to do today." The child responded accordingly. If the child mentioned any nonpaying job as one of the preferred jobs, that job was assigned and no tokens were paid. Otherwise, one of the three jobs named as preferred was assigned.

The children in Control Group 1 received 10 tokens for choices of any job, and were assigned to one of the jobs named as preferred. Instructions were as in Phase 1.

The children in Control Group 2 received 10 tokens only for selecting their three preferred jobs of Phase 1. Instructions were identical to those of the Experimental Group. The children were assigned to one of the three jobs named as preferred; they were assigned to a nonpaying job if that was included as one they wanted to do.

After stating their preferences, the children chose their late afternoon activity. Those that had tokens could choose any activity, and those that had no tokens could choose from among a group of activities that were free.

Phase 3. This phase lasted for five sessions and replicated Phase 1. Each child received 10 tokens regardless of his job choice and each was then assigned to one of the preferred jobs.

Phase 4. Each child received 10 tokens only for choosing the three nonpreferred jobs of Phase 3. The criteria for job assignment and the instructions were those described for Phase 2 for the Experimental Group. Phase 4 lasted a maximum of five sessions because of the end of the school year.

RESULTS

The instructions were effective in having each child name three preferred and three nonpreferred jobs on each day. Children never named more or less than three in each category, nor did they change their preferences after they were stated.

During Phase I, when tokens were given for any choices, children varied in the consistency with which they named a particular job as preferred or nonpreferred. Overall preferences were measured by the number of times that a job was named; the three named most often in each category were those considered as the preferred and nonpreferred jobs. Consistency was measured in terms of the total number of jobs that were named in each category over the 10 days. Fifteen children named three or four jobs in each category, and the remaining nine children named between five and eight. Consistency did not change in the first and second halves of the phase. Even the most inconsistent children rarely placed the same job in both categories over the 10 days. The other four jobs accounted for most of the preference changes, sometimes being preferred, sometimes not preferred, and sometimes not named at all.

Choices of Nonpreferred Jobs

In Phase 2, the children of the Experimental Group received tokens only if they said that the three jobs they wanted to do were the three nonpreferred jobs of Phase 1. Figure 1 shows the effect of this requirement. Whereas in Phase 1 no child had chosen to do all of the

Fig. 1. Percentage of children in the Experimental Group choosing the three nonpreferred jobs of Phases 1 and 3 on each day of all four phases. The reinforcement conditions are indicated at the top of each segment.

nonpreferred jobs, in Phase 2 they did elect those same jobs. By the tenth session of Phase 2, 10 of the 12 children chose the three previously nonpreferred jobs as the three they wanted to do.

Once a child's preferences changed, they remained constant throughout the phase. The children differed in the rapidity of their preference changes. Two switched their preferences on the first day of Phase 2 and maintained these new preferences for the remainder of the phase. Four shifted in the second or third session, and then continued these new preferences thereafter. Four other children changed more gradually, beginning Phase 2 by never choosing the previously nonpreferred jobs, then choosing one, then two, and finally all three. Another child never named all three nonpreferred jobs of Phase 1 as the three preferred on any day of Phase 2, but did come to choose at least one of those jobs on each day after never choosing any in Phase 1.

In contrast, Figure 2 shows that only one child in either control group chose the three nonpreferred jobs of Phase 1 as those he or she wanted to do on any day of Phase 2. The behavior of this one discrepant child does not seem particularly noteworthy, because she had been very inconsistent in her preferences in Phase 1 and received nondifferential pay in Phase 2.

When nondifferential token pay was reinstated in Phase 3, all of the subjects reverted to their original preferences. None of the members of the Experimental Group continued to choose the jobs for which they had received tokens in Phase 2.

In Phase 4, the children in all three groups received tokens only if they chose the three nonpreferred jobs of Phase 3. The resulting behavior was similar to that displayed in Phase 2 by the members of the Experimental Group. Choices shifted to the previously nonpreferred jobs with some children switching immediately and others more gradually. Absences and the end of the school year prevented 13 children from having five sessions. Based on observations from Phase 2 with the Experimental Group, it seems likely that longer exposure to differential token pay would have produced stronger shifts in preference.

Two children differed notably from the others. One boy of the Experimental Group never chose a previously nonpreferred job in

Fig. 2. Percentage of children in the two control groups combined choosing the three nonpreferred jobs of Phases 1 and 3 on each day.

either Phase 2 or Phase 4. He thereby received no tokens in either phase. A boy in Control Group 2 revealed a significant increase in choices of Phase 1 nonpreferred jobs in Phase 2 even though only his previously preferred jobs paid tokens. His behavior will be described in more detail below.

Choices of Preferred Jobs

In Phase 2, Control Group 2 received tokens only for naming the three preferred jobs of Phase 1 as the ones they wanted to do. Figure 3 shows that in Phase 1 the children were not completely consistent in their choices in that the three specific jobs that were named as preferred most often over the 10 days were not selected every day; depending on the child, one, two, or three of the jobs was named. How-

Fig. 3. Percentage of children in Control Group 2 choosing the three preferred jobs of Phases 1 and 3 on each day.

Fig. 4. Percentage of the three jobs most often named as preferred in Phases 1 and 3 that were chosen on each day by Subject S7.

ever, the differential token pay of Phase 2 stabilized the preferences: the children increasingly confined their choices to the three jobs paying tokens. In Phase 2, when tokens again were available for all jobs, the less consistent behavior of Phase 1 recurred. These preferences weakened considerably in Phase 4 when tokens entailed choices of the previously nonpreferred jobs.

A notable exception was child S7, whose behavior is excluded from Figure 3 and is shown in Figure 4. In Phase 1, this boy usually named the same three jobs as those he wanted to do. When, in Phase 2, he received tokens only if he chose those same three jobs, he abruptly changed his behavior. Now he either exclusively or predominantly chose those jobs which did not pay tokens. In Phase 3, when he received tokens for all jobs, he resumed his consistent preferences of Phase 1 and continued to do so in Phase 4 when tokens were paid only if he chose his nonpreferred jobs of Phase 3. Verbal reports indicated that he understood the token system and the need to have tokens to be able to engage in his favored activities, but provided no explanation for his choices.

DISCUSSION

The token system controlled preferences in the majority of nursery school children. Jobs

that were never or infrequently chosen when others paid equally came to be chosen regularly when they alone provided tokens. Also, jobs that were preferred in the absence of differential token pay came to be preferred more consistently when these jobs alone paid tokens.

Although the nursery school environment was quite uncontrolled, relative to the institutional setting used by Ayllon and Azrin (1965), the results were similar. Despite differences in what the tokens bought, in the ages of the subjects, and the institutional *versus* the normal school environment, in both situations tokens bought preferred activities. The tangible consequences of choosing certain activities apparently outweighed the factors that previously were responsible for the behavior. It may be noteworthy that children never complained about having to do undesirable jobs in order to get tokens, nor did they seem reluctant to choose token-paying jobs. This may have occurred because the less tangible social consequences of choosing any job was constant and only token pay varied. Whether the same effects would be observed if intrinsic and extrinsic reinforcing events were put in opposition is an open question. Another question is whether the tokens themselves were critical or whether it was what the tokens bought. The token system was based on the opportunity to buy activities: tokens were traded for activities that the teachers assumed had high priority for the children. There was no independent determination of a child's hierarchy of preferences for these activities, or of whether these activities were even essential in establishing the effectiveness of the tokens. Perhaps the tokens controlled the behavior because they were tangible signs of the teacher's approval rather than because they bought anything.

The experiment showed that a token system could be used effectively in connection with a restricted set of activities even though the school did not have a token economy. A practical implication of this is that teachers may be able to accomplish particular objectives by use of a token system even if a total system is not established. Outside of permitting flexibility, there would seem to be no advantage of the limited system, however. Total token economies have been useful with normal children from nondeprived environments (*e.g.*, Bushell, Wrobel, and Michaelis, 1968; O'Leary, Becker, Evans, and Saudergas, 1969).

One subject did not shift preferences in accordance with the differential token pay, and another showed that the tokens functioned as aversive rather than as positively reinforcing stimuli. This second child chose jobs that avoided the delivery of tokens even when the tokens were paid for choices of his preferred jobs. This could not be attributed to spontaneous changes in preferences, since the preferred jobs were abandoned only if they alone paid tokens. Why the token system was ineffective or indeed aversive for two children cannot be explained at this time. The important implication, though, is that a particular event found to be reinforcing for most individuals may not be reinforcing for all.

REFERENCES

- Ayllon, T. and Azrin, N. H. Measurement and reinforcement of behavior of psychotics. *Journal of the Experimental Analysis of Behavior*, 1965, 8, 357-383.
- Bushell, D., Wrobel, P. A., and Michaelis, M. L. Applying "group" contingencies to the classroom study behavior of preschool children. *Journal of Applied Behavior Analysis*, 1968, 1, 55-61.
- O'Leary, K. D., Becker, W. C., Evans, M. B., and Saudargas, R. A. A token reinforcement program in a public school: a replication and systematic analysis. *Journal of Applied Behavior Analysis*, 1969, 2, 3-13.

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