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The study was designed to determine the reward preference of a group of intermediate grade school children and to describe any differences which might exist in the preference patterns of these children when they were partitioned into groups according to grade level, sex, and intelligence level. The procedures including the use of the experimental Dunn-Rankin Reward Preference Inventory are described. Results include a general conclusion that different reward preference profiles did not emerge for the students in this study. It is believed that this outcome was due to the restricted range of characteristics which were used to categorize subjects. References are included as are seven tables of data used in this experiment, and a previous study of retarded children. (SJ)

REWARD PREFERENCE PROFILES OF ELEMENTARY SCHOOL CHILDREN*

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There is increasing interest among educators in the techniques of behavior modification and in reinforcement theory. This interest is based, at least in part, on research evidence which indicates that judiciously applied reinforcement can enhance the academic achievement of children in the elementary grades. Many educators believe that teachers can become more effective in the management of the learning process if they are provided with information which extends their knowledge of, and increases the adequacy of their provisions for, behavior modification and reinforcement in classroom learning situations.

Defined generally, reinforcement is a stimulus that increases the probability of the occurrence of a response in a particular situation. Specifically, behavior increases in frequency when, as a consequence of the behavior, "satisfying" conditions are presented (positive reinforcement) and when "annoying" conditions are eliminated (negative reinforcement). The term incentive denotes a construct which represents expectancy of reinforcement. When a child is promised a certain stimulus contingent upon successful completion of a task, the child's expectation that he will eventually receive the stimulus is his incentive. When the stimulus is finally presented, and if the probability of the occurrence of the behavior in the particular situation increases, the presentation of the stimulus constitutes reinforcement.

Nothing in the liberal definition of reinforcement implies a need to predict which stimuli will have reinforcing properties in a particular situation with a group of pupils or an individual learner. The ability to

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predict appropriate reinforcers in a more efficient practice than that of making assumptions about the reinforcing value of stimuli, i.e., prediction eliminates the need to present various stimuli as potential reinforcers on a trial-and-error basis. Since an incentive is set up prior to an opportunity to note the subsequent effect of reinforcement upon behavior, the effective manipulation of incentives also requires accurate predictions about meaningful reinforcing stimuli.

According to secondary reinforcement theory, neutral stimuli become meaningful reinforcing agents through a process of continual association with those stimuli serving primary human needs. Since each child experiences an idiosyncratic history as to the kinds of neutral stimuli that are paired with the primary need-fulfilling stimuli, and the number of times these associations occurred, it is to be expected that stimuli which are typically used as reinforcers are differentially meaningful to children. Several researchers attempted to determine effective reinforcers on an a priori basis by providing a situation in which individuals could make a choice from among alternative reinforcers (Brackbill and Jack, 1958; Finley and Staats, 1967; Kints and Pappas, 1965; Witryol, Tyrrell, and Lowden, 1965). These researchers demonstrated that subjects' preferences from different stimuli were related to task performance.

The purpose of this study was to determine the reward preferences of a group of intermediate grade school children and to describe any differences which might exist in the preference patterns of these children when they were partitioned into groups according to grade level, sex, and intelligence level.

Method

Subjects

All pupils enrolled in grades 4, 5, and 6 (N = 443) in two elementary schools in central Pennsylvania participated in the study. Subjects were

divided into groups on the basis of grade level, sex, and intelligence quotient. information about intelligence quotients were determined by examining school records. The Otis Quick Scoring Test of Mental Ability, Forms As, Em, and Dm had been administered to pupils in grades 4, 5, and 6 respectively.

Instrumentation

An inventory to assess reward preferences was developed by Peter Dunn-Rankin of the University of Hawaii. The instrument, called the Reward Preference Inventory, is an experimental instrument, but results of studies directed toward determining reliability and content validity are encouraging. The inventory consists of 60 paired-comparison statements about rewards sampled from five categories of rewards. The child indicates his preference for one statement from each pair and thereby indicates a reward preference. The following is a list of some of the items included in the inventory for each category of rewards:

Adult Approval:	A grade of "A" on your paper. A grade of "100" on your paper. Teacher writes "excellent" on your paper.
Competition:	Teacher tells the class your work was the best. Teacher writes your name on board because your work was the best. Be the only one in class who could answer a question.
Consumable:	A soft drink. A nickel. A scoop of ice cream.
Peer Approval:	Smartest student in class says you did better than he. Friends ask you to sit with them. Students ask you to be on their team.
Independence:	Be free to play outside. Be free to draw pictures. Be free to look at different books.

The inventory is scored to yield both group and individual profiles. A rank order over the five categories of reinforcers per subject can be

obtained. Scaled scores can be computed from the cumulative rank totals, and group profiles can be obtained from the scaled scores. A complete description of the development of the inventory and the scaling procedures was presented by Cartwright (1968).

Procedures

Dunn-Rankin's Reward Preference Inventory was employed to determine subjects' preferences for rewards. The inventory was administered by one of the investigators to all subjects in their regular classroom groupings. Standard instructions were used for all administrations of the inventory. In order to eliminate the effect of reading ability, the items in the inventory were read aloud as children read silently and marked responses.

The computer program designed to score the inventory was applied to determine the reward preference profiles for each group.

Results

The reward preference profiles for each group of subjects are presented in Tables 1, 2, 3, 4, and 5. These data indicate relatively stable patterns of reward preference over grade level, sex, and intelligence level for the subjects participating in this study. Adult approval is the most highly preferred class of reinforcers for all groups. Peer approval begins to replace competition as the second-most highly preferred class of rewards for groups of sixth grade pupils with average (IQ 96-115) and high (IQ 116-140) intelligence levels. Either independence or consumable rewards are ranked lowest in preference for all groups.

It must be emphasized that these data are group profiles. Individual profiles were obtained for each child also. The individual profiles were quite different, in many instances, from the group profiles.

Discussions and Conclusions

In general, different reward preference profiles did not emerge for the groups of intermediate grade pupils involved in the study. It may be

that the range of characteristics used to place subjects in the groups was too restricted to allow for the emergence of differentiated preference patterns. The foregoing statement was suggested by information obtained when results of this investigation were compared with results of similar studies undertaken with different groups of children. For example, the same type of study was carried out with a group of institutionalized mentally retarded individuals (N = 96) as subjects. Data for the reward preferences of the institutionalized retardates, grouped according to intelligence quotient, chronological age, and sex, are presented in Tables 6 and 7.

Information presented in Tables 6 and 7 indicates younger (chronological age of 12-0 and below) retardates with intelligence quotients of 70 and below preferred consumable rewards most highly; it should be noted that this finding is exactly the opposite from the preferences of their chronological age peers of normal intelligence. Retardates of the chronological age range 12-0 to 15-11 indicated no strong preferences for the rewards included in the inventory. Retardates who were older (chronological age range of 16-0 and above) preferred adult approval rewards most highly. The similarity in reward preferences for the oldest retardates and the groups of intellectually normal intermediate grade pupils is notable. These findings suggest a rather strong mental age influence on reward preferences. Dunn-Rankin and Shimizu (1969) recently obtained data which indicated reward preferences were partly related to sex, ability, grade level, and achievement variables.

The validity of the Reward Preference Inventory may, of course, be a factor in the lack of different reward preference profiles for the children in this study. However, construct validity of the instrument is supported by the correspondence of the reward preference profiles and certain tenets

of personality theory in children. Two examples of this relationship are the negative correlation between mental age and preference for concrete rewards (consumables), and the emergence of peer approval as a preferred reward for children with higher mental ages. Some support for the predictive validity of the inventory was obtained by Cartwright (1968). Additional investigations directed toward establishing predictive validity for the Reward Preference Inventory are needed.

The comparison of reward preference profiles between the intermediate grade children and the institutionalized retardates reported above suggests the use of the inventory has considerable promise for future research. This technique might be a useful aid for classroom management and a means for providing individualization of rewards in conjunction with individualization of instruction.

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Table 1

Rank Order Profiles of Fourth Grade Children

Grade 4 Males (N=25)
IQ 70-95, $\bar{x}$=86.8

1. Adult Approval
2. Competition
3. Peer Approval
4. Consumable
5. Independence

Grade 4 Females (N=14)
IQ 70-95, $\bar{x}$=85.1

1. Adult Approval
2. Competion
3. Peer Approval
4. Independence
5. Consumable

Grade 4 Males (N=34)
IQ 96-115, $\bar{x}$=103.3

1. Adult Approval
2. Competition
3. Peer Approval
4. Consumable
5. Independence

Grade 4 Females (N=33)
IQ 96-115, $\bar{x}$=104.2

1. Adult Approval
2. Competition
3. Peer Approval
4. Consumable
5. Independence

Grade 4 Males (N=9)
IQ 116-140, $\bar{x}$=117.6

1. Adult Approval
2. Competition
3. Peer Approval
4. Consumable
5. Independence

Grade 4 Females (N=8)
IQ 116-140, $\bar{x}$=121.1

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

*Solid vertical line adjacent to two or more categories indicates no significant differences in preferences for the categories, ($P < .01$). Dotted line indicates significant differences at the .05 level, but not at the .01 level.

Table 2
Rank Order Profiles of Fifth Grade Children

Grade 5 Males (N=12)
IQ 70-95, $\bar{x}$=88.4

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 5 Females (N=3)
IQ 70-95

Too few subjects

Grade 5 Males (N=42)
IQ 96=115, $\bar{x}$=106.3

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 5 Females (N=27)
IQ 96-115, $\bar{x}$=104.1

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 5 Males (N=21)
IQ 116-140, $\bar{x}$=121.9

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 5 Females (N=17)
IQ 116-140, $\bar{x}$=120.7

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Table 3
Rank Order Profiles of Sixth Grade Children

Grade 6 Males (N=27)
IQ 70-95, x=88.1

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 6 Females (N=15)
IQ 70-95, x=89.5

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 6 Males (N=65)
IQ 96-115, x=106.2

1. Adult Approval
2. Peer Approval
3. Competition
4. Independence
5. Consumable

Grade 6 Females (N=46)
IQ 96-115, x=105.5

1. Adult Approval
2. Peer Approval
3. Competition
4. Independence
5. Consumable

Grade 6 Males (N=25)
IQ 116-140, x=120.7

1. Adult Approval
2. Peer Approval
3. Competition
4. Consumable
5. Independence

Grade 6 Females (N=20)
IQ 116-140, x=120.1

1. Adult Approval
2. Peer Approval
3. Competition
4. Independence
5. Consumable

Table 4
Rank Order Profiles, Grade Levels Combined

Grades 4,5,6 Males (N=64)
IQ 70-95, $\bar{x}$=87.6

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grades 4,5,6 Females (N=32)
IQ 70-95, $\bar{x}$=87.3

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grades 4,5,6 Males (N=141)
IQ 96-115, $\bar{x}$=105.5

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grades 4,5,6 Females (N=106)
IQ 96-115, $\bar{x}$=104.7

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grades 4,5,6 Males (N=55)
IQ 116-140, $\bar{x}$=120.7

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grades 4,5,6 Females (N=45)
IQ 116-140, $\bar{x}$=120.5

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Table 5
Rank Order Profiles, IQ Levels Combined

Grade 4 Males (N=68)
IQ 70-140, $\bar{x}$=99.1

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 4 Females (N=55)
IQ 70-140, $\bar{x}$=101.8

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 5 Males (N=75)
IQ 70-140, $\bar{x}$=107.8

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 5 Females (N=47)
IQ 70-140, $\bar{x}$=110.5

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Grade 6 Males (N=117)
IQ 70-140, $\bar{x}$=105.1

1. Adult Approval
2. Peer Approval
3. Competition
4. Independence
5. Consumable

Grade 6 Females (N=81)
IQ 70-140, $\bar{x}$=106.1

1. Adult Approval
2. Competition
3. Peer Approval
4. Independence
5. Consumable

Table 6

Highest and Lowest Reward Preferences for Institutionalized Mental Retardates Grouped by IQ and Chronological Age

	IQ 60 and Below (N=62)		IQ 61-70 (N=29)	
CA Levels	Highest	Lowest	Highest	Lowest
12-0 and below (N=25)	Consumable	*None	Consumable	None
12-0 to 15-11 (N=44)	None	None	None	None
16-0 and above (N=22)	Adult Approval	None	Adult Approval and Peer Approval	Competition

Table 7

Highest and Lowest Reward Preferences for Institutionalized Mental Retardates Grouped by Sex and Chronological Age

	Males		Females		Total	
CA Levels	Highest	Lowest	Highest	Lowest	Highest	Lowest
12-0 and below (N=25)	Consumable	None	Consumable	None	Consumable	None
12-0 to 15-11 (N=44)	Adult Approval and Competition	None	Consumable	None	None	None
16-0 and above (N=22)					Adult Approval	None

*No single category emerged as significantly different from other categories.