Preference for work over "freeloading" in children*

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White and American Indian children were tested in a choice situation where marbles could be obtained free or by barpressing. Results show that children prefer to obtain marbles by barpressing and that this preference is not affected by sex, IQ, or need-achievement of the children. The results are taken as an evidence of the limitation of drive theory, and an explanation is offered in terms of a competence motive.

The notion that every motivated behavior has some underlying tissue need, absence of which leads to inactivity, has been challenged by White (1959). On the basis of the then available studies, White suggested that all organisms are primarily motivated to control and modify their environment. A great many recent animal studies seem to support White's suggestion. For example, Kavanau (1967) raised and tested deer mice in a situation where they had the opportunity to control certain components of the environment; by leverpressing, mice could obtain food or water, stop and start an activity wheel, or regulate light in the living cage. Kavanau reports that mice engage in those activities which permit "... manipulation, and altering relationships with, any susceptible environmental feature [p. 1623]." Furthermore, "... an act or situation which is rewarding when carried out volitionally is avoided when initiated by force—the animal responds by doing the opposite [p. 1631]."

The limitation of traditional drive theories is further demonstrated by those studies which show that, given a choice, an animal prefers to work to obtain reinforcement over "freeloading" (Neuringer, 1969; Singh, 1970). Neuringer (1969) reported that pigeons and rats continue to work (i.e., keypressing and barpressing, respectively) in the presence of freely available identical food. Similarly, Singh (1970) reported that, given a choice, food-deprived rats prefer to barpress to obtain food over "freeloading" and maintain this preference even when the amount of work to obtain a reward is increased. Also, when children are given a choice to obtain marbles by working or

receiving marbles free, children prefer to work (Singh, 1970).

The present experiment was conducted to investigate whether or not results similar to previous studies would be obtained with children raised in different subgroups of culture. It can be argued that the preference for barpressing to obtain marbles in children—a much more laborious process than freeloading—was due to certain attitudes prominent in Western cultures, especially white Protestant ethics, which stress that one should work to obtain rewards. It follows, then, that children reared in this culture learn from their parents the "virtue" of work and thus prefer to work in spite of the fact that identical reward can be obtained free. Notwithstanding findings from animal studies employing an identical situation, if this argument is correct, then children from a non-Protestant Western culture should show less preference for work, as compared to freeloading. To explore this alternative, white and American Indian children were tested for preference for work. Though many American Indian children share the geographical area and religion with white children, marked differences in parental influences and training are known to exist between the two groups (cf. Hoebel, 1960). Furthermore, since child-rearing practices affect need-achievement (McClelland et al, 1961), a second purpose of this experiment was to investigate whether there was any relationship between achievement motive and preference for work in Indian and white children. As in previous studies, the work condition is defined as the situation in which some specific responses must be executed in order to obtain reward, while freeloading is defined as that situation in which reward is not contingent on any specific response.

SUBJECTS

The Ss were 40 white (20 boys and 20 girls; age range: 109-147 and

98-147 months, respectively) and 40 American Indian (20 boys and 20 girls; age range: 97-150 and 91-143 months, respectively) children, selected randomly from second through sixth grades. An attempt was made to match the groups in socioeconomic status by selecting a lower income area school for the source of white children. All white children lived with their families, while the Indian children lived in an Indian residential school.¹

APPARATUS

A wooden choice box (6 ft high x 6 ft long x 5 ft wide), painted black with a white top, was used. On both extreme ends of the front sides of the box, a retractable lever (Scientific Prototype) and a plastic marble receptacle with a lid was mounted. Marbles were dispensed through a metal tube by E sitting inside the box, and delivery of each marble made a distinctive metallic sound. A peek hole permitted E to see when S had made a choice. A chair was placed in front of each marble receptacle, and S was required to sit on the chair during training and testing. The choice box was placed in a room illuminated by a 100-W lamp, and S was alone in the room during testing sessions.

TRAINING AND

TESTING PROCEDURES

All Ss were given intelligence and need-achievement (n-Ach) tests. To take into account the effect of reading disability on intelligence scores, both WISC and Porteus Maze tests were administered. Furthermore, only five subtests of WISC (similarities, object assembly, arithmetic, picture completion, and picture arrangement) were given and IQ rating was prorated from these subtests.

To obtain comparable need-achievement (n-Ach) scores for white and Indian children, McClelland² suggested the use of verbal cues rather than TAT-type pictorial stimuli. Therefore, the French Test of Insight (FIT) was used to measure n-Ach. It was adapted to the child population by altering names and phrases in the statements.

Detailed administrative procedures for all these tests are being reported elsewhere.

The Ss were assigned randomly to two groups; half of the Ss worked for marbles on the left side of the box by pressing the lever and obtained marbles on the right side (lever retracted), while the remaining Ss obtained free marbles on the left side and worked for marbles on the right side. Furthermore, for preliminary training, half of the Ss from each group were assigned to obtain free marbles first and then work, while the remaining Ss worked first and then obtained free marbles.

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Table 1
Mean IQ, n-Ach, and Percent Marbles Obtained by Working by Indian and White Boys and Girls During Testing

Item	WISC IQ	Porteus IQ	n-Ach	Day 1		Day 2	
				Percent Marbles	Ss Work- ing†	Percent Marbles	Ss Work- ing†
Indian Girls (N = 20)							
M	96.9	111.4	1.4	60.0	13.0	60.4	14.0
σM	3.7	5.1	.70	5.3		6.8	
p*				0.05		0.05	
White Girls (N = 20)							
M	101.9	110.5	2.2	59.6	15.0	65.7	16.0
σM	2.6	4.4	.30	4.6		7.5	
p				0.05		0.05	
Indian Boys (N = 20)							
M	94.1	107.8	1.4	67.9	15.0	65.5	15.0
σM	3.1	4.5	.43	6.2		5.8	
p				0.05		0.05	
White Boys (N = 20)							
M	112.2	112.0	2.0	60.4	13.0	71.2	17.0
σM	2.3	3.8	.20	5.9		8.9	
p				0.05		0.05	

*Probability based on two-tailed *t* test testing the hypothesis $\mu = 50\%$

†Ss obtaining 51% or more marbles by working

Teachers in each classroom informed the class that each child would be taken out one at a time to play a game. A female E then brought the child to the experimental room. Each S was instructed to obtain as many marbles as possible from the machine; furthermore, the child was told that he could either keep all the marbles or trade them for any one of the toys displayed outside the experimental room. If S belonged to the work-first condition, E demonstrated by pressing the lever (FR 10 schedule) to obtain two marbles, after which the child was instructed to sit on the chair and press the lever until he had obtained five marbles. Thereafter, E took S to the other side and S was told that all he had to do to obtain marbles was to sit on the chair and the machine would dispense marbles. E waited until two marbles were dropped, then told the child to sit on the chair and find out if the machine would work for him; the rate at which the marbles were dropped was based on the average rate established on the work side, and S received a total of five marbles. If S began on the nonwork side first, he was given the same instructions but received the five marbles at the rate of one every 3 sec. After this preliminary training, E closed the lids of both receptacles and informed S that he could obtain marbles from either side and that he could switch from one side to another as many times as he wished or not switch if he preferred one side over another; the only condition required for the machine to remain operative was that he must be sitting on one of the chairs. Then S was taken out of the room to select his toy, after

which he was told to go back to the experimental room alone. Each child was tested for 5 min a day for 2 days. The number of marbles obtained on each side, time spent on each side, and the number of switches were recorded for each child during the 5 min testing period.

RESULTS

The FIT response protocol of each child was scored for n-Ach by two independent judges familiar with the McClelland scoring method. Only those n-Ach scores which were scored commonly by both judges were used for data analysis. Table 1 presents mean IQ, n-Ach, percentage of marbles obtained by working, and number of children working during 2 days of testing.

All groups obtained significantly more marbles by working and spent significantly more time on the work side. No significant group differences were obtained for marbles obtained by working, time spent on each side, or for the number of switches for either day of testing. Although Indian children scored significantly lower ($t = 2.56$, $df = 78$, $p < .02$, two-tailed) on n-Ach than white children, no significant relationship between n-Ach scores and number of marbles obtained by working was obtained for any group. Likewise, no significant relationship between IQ and the number of marbles obtained by working or for number of switches was obtained for either day of testing. It should be pointed out that the Porteus test, as a measure of intelligence, was less penalizing to the Indian children than was WISC, despite the fact that the latter test was gleaned of its more highly verbal subtests.

DISCUSSION

The findings from this experiment show that children, regardless of their culture, sex, IQ, and need-achievement, prefer to obtain reward by working. The similar preference for working shown by Indian and white children, despite cultural differences (reflected in differential need-achievement scores) and along with findings from animal studies, make a parental imitation explanation (i.e., children learn from their family the "virtue" of work) less tenable. Furthermore, present findings, coupled with animal studies, indicate the generality of this phenomenon.

However, it should be pointed out that this preference for work in children and animals can be changed by manipulating incentive properties associated with "freeloading." For example, Neuringer (1969) found that if a transparent shield was placed over the feeder opening so that the pigeons could see the grain but not eat it, keypecking was drastically reduced and the pigeon started to freeloading; rats also reduced barpressing and began freeloading if the barpressing did not produce pellets. Likewise, we have found that when barpressing does not produce marbles, children show very little preference for barpressing (unpublished observation). The above findings suggest that barpressing per se may not be rewarding and that the organism will work as long as some reward is contingent upon it.

The lack of "intrinsic appeal" in barpressing seems to be consistent with the notion of competence (White, 1959) and control of the environment (Kavanau, 1967). If a given behavior does not bring about a change in the environment, it could not possibly constitute evidence for competence. A self-administered and self-regulated change in the environment, whether real or apparent, seems to be essential for continuation of a specific behavior. Children prefer to engage in those plays which permit them to produce dramatic effects by their actions and movements (White, 1959). An example of apparent or subjective control of the environment can be seen in the development of highly stereotyped "superstitious behavior" in animals, where, objectively, reward is not contingent upon any specific response (Skinner, 1948). The ritualistic behavior of certain tribes to bring about rain and other favors from nature basically represents a similar situation. Furthermore, it appears that the behavior to effect a change in the environment is engaged in even when the goal is already available. Kavanau (1967) reports that mice will take apart a nest provided in the living cage

by the E and rebuild it many times at the original site.

Thus, it appears that, given a choice, an organism will engage in a behavior which is directed toward obtaining a reward but which is also directed toward interaction with and control of the surrounding environment.

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NOTES

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2. Personal communication, February 1969.

Interpersonal attraction as a function of amount of information supporting the subject's opinions*

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Based on the reinforcement theory of attraction and its model (classical conditioning), amount of information given in support of a S's opinions was found to be an analog of magnitude of reinforcement (UCS intensity). As the model predicted, varying amount of information led to significant differences in attraction ($p < .001$).

The theory of interpersonal attraction through attitude similarity-dissimilarity is based upon the hypothesis that attitudinal statements which express views similar to or dissimilar from those of an individual constitute, respectively, reinforcing and punishing stimuli for him (Byrne, 1969). According to Clore & Byrne (in press), attraction is mediated by an implicit classically conditioned affective response: "It is assumed that any stimulus which is reinforcing also serves as an unconditioned stimulus for an implicit affective response. Although initially neutral, any discriminable stimulus (including a person) if consistently associated with reinforcement, becomes a conditioned stimulus evoking an implicit affective response." Clore and Byrne further

state that the strength of the conditioned affective response is affected by manipulations of the independent variables relevant to classical conditioning. In the model proposed by Byrne and Clore¹, reinforcements (agreements) act as unconditioned stimuli (UCS), which determine the implicit affective responses (UCR) and, therefore, the attraction to a CS person.

According to the reinforcement model, the strength of the implicit affective response (measured as an increase in attraction scores) should increase as the magnitude of reinforcement (UCS intensity) increases. This basic assumption of the classical conditioning model has been supported in several studies employing such various analogs of UCS intensity as item interest (Clore & Baldridge, 1968; Lombardo, Libkuman, & Weiss, 1970), personal evaluations vs impersonal opinions (Byrne & Rhamey, 1965), and type of agreement (Lombardo, Weiss, & Buchanan, in press). The present experiment varied magnitude of

reinforcement (UCS intensity) by varying the amount of information given in support of each of the S's opinions.

The typical procedure of presenting an S with a stranger's opinion questionnaire typically does not allow for the study of amount of information given in support of the S's opinions. However, the present study, by using a discrete-trials procedure in which Ss talked with a "live" confederate, lends itself to the study of amount of information as an analog of magnitude of reinforcement (UCS intensity).

Therefore, it was hypothesized that a group of Ss speaking to a stranger who gave three independent arguments in support of each of the S's opinions would be more attracted to that stranger than a group of Ss exposed to a stranger who gave only one argument in support of the S's opinions.

METHOD

There were two groups: high vs low information (UCS intensity), with 42 undergraduate Ss in each group ($N = 84$). In order to select 12 attitude statements that each S agreed with, each S was given a 30-item questionnaire as he reported for the experiment.

The "other person" to whom the Ss spoke was a tape recorder. For this reason, the "other person" was said to be in another room from the S, and the E was, in fact, in another room. The S was told that this would ensure confidentiality of his candid opinions on controversial issues. The S addressed the "other person" and the E over an intercom system and could also hear the E give instructions and occasional comments ("speak a little louder, SA") to the nonexistent "other person."

The S and the "other person" (addressed as "SB" and "SA") received the operating instructions over an intercom. It was explained that the "other person" had been provided with a list of topics. The "other person" would begin with the first topic on his list, stating the topic to the S and then offering his opinion on the topic. The S might then have an opportunity to comment on the "other person's" statement if he wished. The S and the "other person" were always of the same sex.

The S and the "other person" spoke on 12 topics selected from the S's opinion questionnaire. The "other person" (agreeing prerecorded tapes) always spoke first. In the large-magnitude-of-reinforcement group, the tape started out with a statement of the topic, followed by three independent arguments in support of the S's opinion (as stated on the questionnaire). In the

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