

# PREFERENCE FOR DELAYED REINFORCEMENT: AN EXPERIMENTAL STUDY OF A CULTURAL OBSERVATION<sup>1</sup>

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**T**HIS study is, in part, an attempt to validate, experimentally, an observation about cultural differences formulated during the course of a "culture and personality" field research in Trinidad, British West Indies. It may be of interest, therefore, not only for its specific findings but also as an example of experimentation in the cultural field.

On the basis of anthropological observation, a major personality difference between the Negro and East Indian ethnic groups of the island of Trinidad was suggested. This difference, as expressed by numerous informants, is that the Negroes are impulsive, indulge themselves, settle for next to nothing if they can get it right away, do not work or wait for bigger things in the future but, instead, prefer smaller gains immediately. In contrast to this, the Indian is said to deprive himself and to be willing and able to postpone immediate gain and pleasure for the sake of obtaining greater rewards and returns in the future. In effect, when given a choice, the Negro is said to be characterized by preference for relatively smaller, immediate reinforcements, whereas the Indian is said to prefer larger, delayed reinforcements.

Judgments centering about such a distinction of differential preference or tolerance for delayed reinforcement are, of course, also quite prevalent within our own culture. The widely observed preferences of children for immediate rewards has been commented on (2, 3, 5) and is reflected in some theoretical formulations, e.g., the "pleasure principle" and the "reality principle" (4, 6). In clinical applications, the inability to postpone immediate gratification for the sake of delayed rewards is often considered an important factor in immaturity, maladjustment, and "psychopathy." Mowrer

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and Ullman (10), for example, consider the delay of reinforcements to be a critical factor in the development of neurotic and criminal behavior.

Although the research on delay of reinforcement in human conditioning has been vast (Wolfe's studies [14, 15] are representative), there has been comparatively little experimentation with human subjects on variables other than the effect of the time interval itself on learning rate or object preference (e.g., 1, 7, 8, 11, 13) and outside the conditioning paradigm. A notable exception is Mahrer's (9) attempt to apply Rotter's expectancy construct (12). Mahrer was able to make successful predictions about children's choices for immediate versus delayed reinforcements as a function of differential expectancies for obtaining positive reinforcement following delay. That is, the expectancy that reinforcement would follow from the social agent even after time delay was shown to be an important variable. In common sense terms, this kind of behavior may be thought of as "trust" or the belief that the agent promising delayed reinforcement will actually supply it. The emphasis in Mahrer's study, and in the present research, is on the expectancy for reinforcement to follow as a function of making a particular choice with a particular social agent in a given situation, rather than on the time interval itself.

One may assume that expectancies for reinforcement to follow from certain social agents, in spite of time delay, are learned in a manner fundamentally similar to the learning of any social behaviors, and are governed by similar principles of generalization. It seems probable, then, that a child's expectancies that delayed reinforcement will issue from new adult social agents are related to his past experiences in which promised reinforcement followed delay from such major adult sources of learning as the parental figures within the home. In a situation in which a child is confronted with a new male social agent, we would anticipate that his expectancies for promised reinforce-

ment to follow from that social agent, in spite of time delay, are related to past experiences of this kind with the father or father figure in the home. Similarly, we would anticipate that the child's expectancies that promised reinforcement will follow, in spite of delay, from female social agents are related to past experiences of this kind with the mother or mother figure in the home. (Since in the present experiment the social agent (*E*) is male, our discussion and prediction center about expectancies for delayed reinforcement from male social agents.) We would further expect children who have had less of such experience with a male social agent in the home to show less "trust," or lower expectancy for reinforcement to follow in spite of time delay when promised by a new male social agent, than children who have had more of such experience. Presumably, a child whose father is absent in the home has had more limited experiences in which promised reinforcement follows in spite of time delay from a male social agent. We anticipate that such a child would have lower expectancy for delayed reinforcement from a male social agent than a child whose father is present within the home. Specifically, we would expect the "fatherless" child to show less preference for a larger but delayed reinforcement and more preference for a smaller but immediate reinforcement than the child whose father is present within the home.

The above prediction seemed, on the basis of tentative observation, to apply differentially to the two cultural groups we are considering; namely, examination of the family structures of the Negro and Indian groups within the particular culture and locale suggested that the Negro family seemed more frequently characterized by the absence of a temporally stable adult male figure in the home than was the Indian family. The presence or absence of a father within the family constellation was selected as a key variable influencing choice behavior with respect to delayed or immediate reinforcement and the aim of the experiment was: (*a*) to test the hypothesis of differential preference for larger, delayed as opposed to smaller, immediate reinforcement of the two ethnic groups, it being predicted that the Indian group would show greater preference for larger, delayed reinforcement than the Negro group; and (*b*) to test the hypothesis of

differential preference for larger, delayed as opposed to smaller, immediate reinforcement, issuing from a male social agent, of children whose fathers are present or absent within the home, it being predicted that children having a father or father figure present within the home would prefer the larger, delayed reinforcement more than children lacking such a figure. Further, since age and socioeconomic level seemed potentially relevant variables for this kind of choice behavior, this information was included in the data collected, with the intent of relating it to the choice.

## METHOD

### *Subjects*

The subjects (*Ss*) included 53 male and female children between the ages of 7 and 9 in the elementary section of a rural Trinidad school. The school was located in the southern part of the island and seemed representative of rural schools within the colony. Thirty-five of the children were Negro and eighteen East Indian. The sex ratio was 29 males to 24 females. The children of the two ethnic groups attended the same large section or class and it was thus possible to administer the experimental test to the members of both ethnic groups at the same time.

### *The Reinforcements*

Pre-experimental sessions were required to select two reinforcements of use for the experimental situation. Towards this end, 15 Negro and Indian boys and girls, representing the above ages, and selected from another rural Trinidad school, were seen in individual sessions and their preferences for various specific reinforcements were elicited. As a result, two reinforcements (both candy, but varying markedly in size, price, and packaging, i.e., a one-cent and a ten-cent candy) were selected. These met the desired requirements inasmuch as the larger reinforcement was uniformly preferred in a straight choice situation ("which *one* of these two would you like to take"), but when the choice was "you can have this one (the smaller) today or this one (the larger) in one week" approximately 50 per cent of the group chose the former and approximately 50 per cent the latter.

### *Task and Measures*

The *Ss'* task was to fill out a simple questionnaire. All the *Ss* were sufficiently literate for this. The questionnaire items of experimental interest were ethnic group, age, socioeconomic status, and presence or absence of the father within the household. Ethnic group was measured by *S's* checking either "Creole" or "Indian," and age by a "fill in" response. The measure of socioeconomic status was quite gross, and *S* merely checked "galvanized" (tin roof, comparatively expensive and generally a sign of relatively high socioeconomic status in the rural areas) or "carrat" (thatched leaf roof, inexpensive, and generally a sign of

low socioeconomic status), in response to an item concerning the kind of house he lives in. This measure provided a crude dichotomization into relatively "high" and relatively "low" socioeconomic status. "Presence" or "absence" of the father in the home was measured by the response "yes" or "no" to the questions "does your father live at home with you," and "do your mother and father live at home with you." One S reported that father lived at home, mother lived at home, but that mother and father did not live at home and was eliminated from the analysis for this inconsistency. All but three Ss reported "yes" to the question "does your mother live at home with you." These three exceptions lived with their grandmothers and because of this deviation were omitted from the statistical analyses.

An informal check on the accuracy of the children's responses was attempted with the headmaster who was familiar with the home situations of most of the Ss. This check was undertaken on a sample of twenty of the protocols and indicated that, to the headmaster's best knowledge, the responses corresponded with his own information about the children.

### Procedure

The experimenter (*E*) was introduced as an American interested in gathering information on children in the local schools of the island. To help with this the Ss were asked to fill out the questionnaire. When these were completed, *E* expressed his wish to thank the group for their cooperation. He displayed the two kinds of reinforcements and said: "I would like to give each of you a piece of candy but I don't have enough of these (indicating the larger, more preferred reinforcement) with me today. So you can either get this one (indicating the smaller, less preferred reinforcement) right now, today, or, if you want to, you can wait for this one (indicating which I will bring back next Wednesday (one week delay interval)." To insure clarity, these instructions were repeated in rephrased form and both reinforcements were carefully displayed. The fact that getting the (smaller) candy today precluded getting the (larger) one next week, and vice versa, was stressed. Ss were asked to indicate their choice by writing "today" (T) or "next week" (W) on their questionnaires. The response made here was the measure of choice of a larger (or more preferred) delayed reinforcement or a smaller (less preferred) immediate reinforcement. Ss were seated sufficiently far apart from each other to insure reasonably that their choices were made independently in this group setting.

### RESULTS AND DISCUSSION

The data from the present experiment were analyzed in terms of differential preference for smaller, immediate reinforcement versus larger, delayed reinforcement in relationship to ethnic group, presence or absence of the father within the home, age, and socioeconomic status. All statistical analyses were made with the chi-square test. The data used for relating

TABLE 1  
RELATIONSHIPS BETWEEN ETHNIC GROUP, PRESENCE OF THE FATHER, AND EXPERIMENTAL CHOICE

Group	<i>N</i> Choosing Immediate Reinforcement	<i>N</i> Choosing Delayed Reinforcement	$\chi^2$	<i>p</i>
Negro	22 (18.49) <sup>a</sup>	13 (16.51)	4.17	<.05
Indian	6 (9.51)	12 (8.49)		
Father present	17 (22.19)	25 (19.81)	10.13 <sup>b</sup>	<.01
Father absent	11 (5.81)	0 (5.19)		
Negroes with father present	12 (15.71)	13 (9.29)	6.19 <sup>b</sup>	<.02
Negroes with father absent	10 (6.29)	0 (3.71)		

<sup>a</sup> Figures in parentheses are expected frequencies.

<sup>b</sup> Chi square corrected with Yates correction, for continuity.

the experimental choice with ethnic group and presence or absence of the father within the home, are given in Table 1.

Comparison of the Negro and Indian groups on the experimental choice (Table 1) yielded a chi square of 4.17 (*p* between .05 and .02), a significantly larger proportion of the Negro Ss choosing immediate reinforcement. It should be noted, however, that if the Yates correction is applied (the expected frequencies within two of the cells are between eight and ten), the chi square is reduced to 3.06 having a *p* value of less than .10. Nevertheless, this difference between the ethnic groups on the experimental choice still seems sufficient to require caution in combining them on other analyses unless it can be shown that members of the two groups are in comparable proportions on the other relevant variables.

The comparison between ethnic groups with respect to presence or absence of the father does not indicate a difference at an acceptable probability level (chi square is 2.56 with *p* < .20 and > .10). Some ancillary evidence supporting the trend of differential fatherlessness within the two ethnic groups can be drawn from another source. Data, including the measure of presence or absence of the father within the home, were collected within the same school for older children, of both ethnic groups, who were not included in the present study. If the data from these children (*N* = 24) on presence or absence of the father for the two ethnic groups are combined with data from the Ss of the present study, a chi square of 5.57 is obtained which is significant

beyond the .02 level, and in the direction expected from cultural observation.

In view of these findings, the relationship between presence or absence of the father and the experimental choice was tested for each of the ethnic groups separately as well as for the total combined sample. As there is only one "fatherless" *S* in the Indian group, such a test is not meaningful for that group. For the Negro group alone, and for the total sample, the comparison between presence or absence of the father and the experimental choice (Table 1) yielded chi squares of 10.13 and 6.19 respectively, which are significant beyond the .01 and .02 levels, and indicate, as predicted, a greater proportion of choices for immediate reinforcement on the part of "fatherless" *Ss*.

Before this relationship between presence of the father and preference for delayed, larger reinforcement can be generalized, it will of course be necessary to test other cultural groups in a similar experimental situation. The present research emphasized the relationship only between the "physical" presence of *S*'s father in the home and preference for delayed reinforcement issuing from another male social agent. In view of the obtained significant finding, the relationship between the "psychological" presence of the father (e.g., degree of identification) and this kind of behavior merits further investigation. Such research would seem especially relevant for a further understanding of impulsive behavior and "psychopathy."

The presence or absence of the father may be significant not as, or just as, a causal factor in itself in relation to preference for delayed versus immediate reinforcement, but as an index of the extent to which the parents or the family participate in a delayed reward culture. That is, the presence of the father in the home (in contrast, for example, to a ready abandoning of the home) may, in turn, be related to the degree of family participation in a cultural pattern in which delayed, larger reinforcement is preferred or prized more than immediate, smaller reinforcement. Such participation may have many other impacts upon the child apart from, or in addition to, the paternal presence.

Neither the proportion of Negro and Indian *Ss*, nor the proportion of *Ss* with father present and absent, was significantly different for the

TABLE 2  
RELATIONSHIP BETWEEN AGE AND  
EXPERIMENTAL CHOICE

Experimental Choice	Age			$\chi^2$	<i>p</i>
	7	8	9		
<i>N</i> Choosing immediate reinforcement	13 (8.45) <sup>a</sup>	13 (14.27)	2 (5.28)		
<i>N</i> Choosing delayed reinforcement	3 (7.55)	14 (12.73)	8 (4.72)	7.10 <sup>b</sup>	<.05

<sup>a</sup> Figures in parentheses are expected frequencies.

<sup>b</sup> Chi square corrected with Yates correction, for continuity.

three age groups or for their socioeconomic status groups (both *p* levels greater than .20). Therefore, tests of the relationship between age and the experimental choice, and between socioeconomic status and the experimental choice, can be made with all *Ss* combined. Table 2 shows the number of *Ss* in each age group choosing immediate versus delayed reinforcement. The chi-square test applied to this table yields a corrected chi-square value of 7.10 which is significant beyond the .05 level and indicates an increasing proportion of *Ss* choosing delayed reinforcement at the older age levels.

This relationship between *Ss*' age and preference for delayed reinforcement is in accord with nonexperimental discussions of such a relationship to the effect that with increasing maturity comes the increasing ability to delay gratification. The finding is consistent with an interpretation of preference for delayed reinforcement as a learned behavior which is, in part, a function of the expectancy that the promised reinforcement will issue from the social agent in spite of time delay. With increasing age, the potentiality for developing a strong expectancy of this kind increases *if* the individual continues to gain reinforcing experiences within this area, thus building up the relevant expectancies, but not as a function of growing older or biological maturation per se.

Comparison of the "high" versus "low" socioeconomic groups on the experimental choice did not yield a significant difference (*p* value greater than .20). This lack of established relationship between socioeconomic level and the experimental choice cannot be considered definitive in view of the extreme crudeness of the measure of socioeconomic level employed.

## SUMMARY

This experiment tested an observation, made by anthropological field techniques, regarding personality differences between the East Indian and Negro populations of Trinidad, B.W.I. The primary results were significant differences between preference for immediate, smaller versus delayed, larger reinforcement and, first, the presence or absence of the father within the home, and second, age. The over-all findings appear to have implications not only for the two specific ethnic groups studied here but also for further research on relationships between personality variables of a less gross kind and this type of choice behavior within our own culture. If there are relationships between "maturity" or "adjustment" and tolerance, or preference, for larger, delayed as opposed to smaller, immediate reinforcement, then the isolation of major variables related to such preferences seems particularly important.

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