THE BEHAVIOR OF CHILDREN HIGH AND LOW IN NEED FOR SOCIAL APPROVAL ON A PROBABILITY LEARNING TASK UNDER THREE DIFFERENT CONDITIONS OF EXPECTANCY

by

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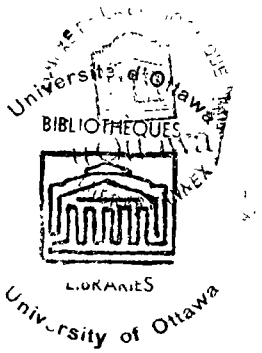

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CURRICULUM STUDIORUM

Patrick S. Morris was born February 10, 1935, in Quebec, Canada. He received the Bachelor of Philosophy degree from the University of Western Ontario, London, Ontario, in 1958, the Master of Arts degree in English Literature from St. Louis University, St. Louis, Missouri, in 1963, and the Master of Psychology degree from the University of Ottawa, Ottawa, Ontario, in 1970.

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INTRODUCTION

In the early 1900's the psychological testing movement was given particular impetus by interest in the humane treatment of the mentally retarded and the insane. Consequently, it was necessary to differentiate between these populations so that effective treatment could be prescribed. It also became mandatory, in the field of education, to distinguish between those who could profit from instruction and those who could not. Thus, although not explicitly expressed, the implication behind the first thirty years of testing in the twentieth century was on the heredity factor rather than on changes that can be brought about through manipulation of the environment. It was soon discovered, however, that even bright children were sometimes non-motivated and, in such cases, the general prescription of sparing the rod and spoiling the child became policy.

From the 1930's to the present learning theorists have studied the effects of the environment upon the individual and, more specifically and in greater detail, the effect of reinforcement on learning. More recently the contribution of the organism has again come into focus with the works of Gesell, the geneticists and physiological psychologists. Today it is generally conceded by psychologists that both organismic and environmental factors

interact to form behavior. However, there is still much to be learned about the specific modus operandi of the individual and environmental factors in the development of behavioral differences.

It has become evident that we must investigate how reinforcement or incentives are perceived by the individual and, as a result of his perception, how they affect his behavior. Additionally, since individual differences prevail, it becomes an exercise in studying the personality correlates of environmental interactions.

Following a review of the literature which attempted to account for individuation, the writer became convinced that the need for social approval, as a personality variable, must affect behavior. Since this was assumed to be the case, it became necessary only to choose a task which might reflect the interaction of different levels of need for approval with different types of expectancy.

The thesis is divided into four chapters. The review of the literature deals with previous research in three specific areas: namely, need for approval, probability learning and expectancy theory. The second chapter presents a description of the sample, the measuring tools, procedures and techniques for data analyses. The results of the experiment are presented in the third chapter. Finally, a discussion and interpretation of the children's responses on the

probability learning task are offered in chapter four. Conclusions are followed by suggestions for future research.

CHAPTER I

REVIEW OF THE LITERATURE

1. Research on Need for Social Approval.

As early as the 1920's, psychologists were aware that many test responses are not always accurate indicators of behavior. An effort to improve prediction led to the inevitable conclusion that responses on personality questionnaires are influenced by factors other than the manifest content of items and that people cannot and/or will not always report accurately how they behave.

The tendency to censor or dissimulate was not immediately recognized as a mode of behavior worthy of investigation; consequently, researchers began to look for ways to remove this error from test responses. The original approach was to build some mechanism of control into the test itself. For example, the constructors of the MMPI included the K scale as well as the ?, L, and F scales in an attempt to validate the profile. Edwards,[1] in the EPPS, to control the tendency of subjects making responses in a socially desirable light, presented items that research had found to be, on the average, equally desirable.

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[1]A.L. Edwards, The Social Desirability Variable in Personality Assessment and Research, New York, Holt, Rinehart and Winston, 1957, p. 59-71.

Crowne and Marlowe,[2] on the other hand, considered the disposition to respond in a socially desirable manner a significant variable influencing a subject's responses on personality questionnaires and a concept worthy of investigation in its own right. Operating within Rotter's social learning theory,[3] they conducted intensive research on this problem on the basis of two assumptions: (1) people describe themselves in favorable terms or socially desirable terms in order to get the approval of others; and (2) approval seeking is not an isolated test-taking phenomenon but is closely associated with approval seeking behavior in other situations.[4]

In an attempt to investigate these postulates, Crowne and Marlowe took as their first step construction of a scale to measure desirability responding. Consequently, thirty-three items were selected as the best to discriminate between high and low scorers. The items were free of psychopathological content because the authors wanted a pure measure of social desirability; a high score using items containing pathological content might reflect

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[2]D.P. Crowne and D. Marlowe, The Approval Motive, New York, John Wiley & Sons, 1964, p. 10.

[3]J.B. Rotter, J.E. Chance and E.J. Phares, Applications of a Social Learning Theory of Personality, New York, Holt, Rinehart & Winston, 1972, p. 1-43.

[4]Crowne and Marlowe, op. cit., p. 8-10.

freedom from such symptoms rather than a need to present oneself in a socially desirable light.[5] Eighteen of the items consist of statements which are culturally acceptable, but are likely to be untrue in terms of behavior, such as "I never hesitate to go out of my way to help someone in trouble." Fifteen items are keyed "false," which means that the statements are culturally undesirable but probably true, such as "I can remember playing sick to get out of something."[6] Using a sample of college undergraduates as subjects, the authors found that the internal consistency reliability coefficient was 0.88 and the test-retest correlation after a one-month interval was 0.89.[7]

Crowne and Marlowe used the scale to distinguish between those high and low in need for social approval and then proceeded to establish behavioral correlates for these different levels. The results of the pertinent research is summarized in the text The Approval Motive as follows:

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[5]D.P. Crowne and D. Marlowe, "A New Scale of Social Desirability Independent of Psychopathology," Journal of Consulting Psychology, Vol. 24, 1960, p. 349-350.

[6]Ibid., p. 351.

[7]Ibid., p. 350.

> The greater amenability to social influence of persons who characterize themselves in very desirable terms is seen in (a) the favorability of their attitudes toward an extremely dull and boring task; (b) their greater verbal conditionability, both directly and vicariously; (c) social conformity; (d) a tendency to give popular word associations; (e) the cautious setting of goals in a risk-taking situation; (f) their greater reactivity, depending on their expectancies about the evaluative consequences of their behavior, in a "dirty word" perceptual-defense task; and (g) susceptibility to persuasion. Moreover, among these individuals there is evidence to indicate a particular style of defense against hostility and self-protective, avoidant measures to avert anticipated threats to self-esteem. The latter eventuates in a "leaving the field" form of resistance to psychotherapy. Finally, approval-dependent persons seek affiliation but tend to be disliked. Awareness of how they are evaluated seems to emerge only on a fantasy measure.[8]

The research results listed above give considerable evidence for the construct validity of the scale and warrant the conclusion that the individual with a strong tendency to give socially desirable responses must be motivated by a need for approval.

Under the impetus of the work of Crowne and Marlowe, increasing attention has been focused on the question of the psychological meaning of the social desirability variable, but the great bulk of research has used college students as subjects. However, some investigators have begun to study the variable as a personality characteristic in children.

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[8]Crowne and Marlowe, The Approval Motive, p. 190.

Epstein[9] and Crandall et al.[10] have developed adaptations of the Marlowe-Crowne Social Desirability Scale which are suited for administration to school children. The scale developed by Crandall et al. has, in turn, led to further research which contributes to a beginning clarification of the meaning of social desirability responding as it develops in children of elementary and high school ages.

A number of studies using the scale provide evidence indicating differences between children who score high and low in need for approval. Females score consistently higher than males although a significant difference has not been reported for all samples. For example, in one study, a significant difference was found for grades one to six, but not for grade ten.[11] In another, significant differences were found for grades four, six and ten, but not for grade three.[12] In general, approval motivated males perform less

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[9]R. Epstein, "Need for Approval and the Conditioning of Verbal Hostility in Asthmatic Children," Journal of Abnormal and Social Psychology, Vol. 69, 1964, p. 105-109.

[10]V.C. Crandall, V.J. Crandall and W. Katkovsky, "A Children's Social Desirability Questionnaire," Journal of Consulting Psychology, Vol. 29, 1965, p. 27-36.

[11]V.C. Crandall, "Personality Characteristics and Social Achievement Behaviors Associated with Children's Social Desirability Response Tendencies," Journal of Personality and Social Psychology, Vol. 4, 1966, p. 478-480.

[12]Crandall et al., op. cit., p. 32.

well on standardized achievement tests, have lower expectancies of success in achievement situations and show less achievement fantasy and persistence and are less creative.[13] High social desirability for females, on the other hand, is not significantly associated with achievement scores or achievement expectancy but it is related to inhibition of social interaction and probably low expectancy of success in such situations.[14] Approval dependency is also associated with greater responsiveness to social reinforcement in verbal conditioning in children,[15] inhibition of approval seeking,[16] and failure-avoidant behavior on the Rotter Level of Aspiration Board.[17]

Generally, researchers have been cautious with regard to interpretations and have preferred to suggest areas of research as possible means of clarifying the developmental aspects of need for approval. The achievement deficit, inhibition, and avoidant behavior has been interpreted as

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[13]Crandall, op. cit., p. 477-486.

[14]Ibid.

[15]Epstein, op. cit., p. 105-109.

[16]Crandall et al., op. cit., p. 36.

[17]J.H. Kopfstein, "Social Desirability, Expectancy, and Success-Failure-Oriented Behavior in Children," Journal of Consulting and Clinical Psychology, Vol. 35, 1970, p.428.

the result of an anxiety effect.[18] This interpretation is feasible if it is assumed that the situations are perceived by the child as evaluative. For one high in need for approval, anxiety could be aroused over the potential occurrence of criticism and failure. Crandall, while stating in general that the personality of the high SD child is much like the high SD adult, suggests more specifically that CSD scores lend themselves to two interpretations which must be clarified by future research. First, high scores may reflect both high need and low expectancy of reward simul taneously,[19] even though the single CSD scores themselves do not allow separate measurement and quantification of each of the two components. That is, high CSD scores would reflect a particular combination from an expectancy-value interaction, if each dimension could be measured separately and were orthogonal. Second, CSD scores may reflect the need dimension alone.[20] This alternative presumes that need and expectancy are not orthogonal in nature, and that (unmeasured) expectancy generally though not invariably, coexists in inverse proportion to strength of need. Regardless

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[18]D.P. Crowne, C.H. Holland and L.K. Conn, "Personality Factors in Discrimination Learning in Children," Journal of Personality and Social Psychology, Vol. 10, 1968, p. 421.

[19]Crandall, op. cit., p. 486.

[20]Ibid.

of which alternative is chosen it is reasonable to assume that if different types of expectancy were utilized at different levels of need for approval, on a relatively stable and situation free task, some insight might be gained into the SD concept. The literature on probability learning has defined it as relatively stable and situation-free. Consequently, the next section will devote itself to a review of that literature.

2. Research on Probability Learning.

The simplest form of probability learning (see Appendix 1 for description) is a binary prediction situation where the subject is asked to predict which of two events will occur on each of a series of trials, by making one of two predictive responses each time a cue occurs. It is assumed that subjects begin the task believing that it has a solution and that 100% reinforcement is possible. Reinforcement, in such situations, plays the dual role of providing information regarding correct choices and rewarding. A number of variations of this form, for example, two, three or many choice tasks, different methods of presentation, contingent and non-contingent information feedback, and various reinforcement schedules have all been

employed in an attempt to isolate the effect of variables influencing probability learning.[21]

This review will be concerned only with two-choice tasks and some variables that have been investigated using this paradigm.

A. Probability Learning and the Variables of Age, Incentive and Social Reinforcement

Several authors, utilizing normal subjects, have investigated the relationship between age and response strategies. For example, Jones and Liverant,[22] V.J. Crandall et al.,[23] M. Lewis et al.,[24] W. Kessen and M.L. Kessen[25] and M. Lewis[26] have concluded that matching behavior (see

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[21]L.R. Goulet and K.S. Goodwin, "Development and Choice Behavior in Probabilistic and Problem-Solving Tasks," Advances in Child Development and Behavior, Vol. 5, 1970, p. 216-218.

[22]M.H. Jones and S. Liverant, "Effects of Age Differences on Choice Behavior," Child Development, Vol. 31, 1970, p. 673-680.

[23]V.J. Crandall, D. Solomon and R. Kellaway, "A Comparison of the Patterned and Nonpatterned Probability Learning of Adolescent and Early Grade School-age Children," Journal of Genetic Psychology, Vol. 99, 1961, p. 29-39.

[24]M. Lewis, A.M. Wall and J. Aronfreed, "Developmental Changes in the Relative Values of Social and Non-social Reinforcement," Journal of Experimental Psychology, Vol. 66, 1963, p. 133-137.

[25]W. Kessen and M.L. Kessen, "Behavior of Young Children in a Two-choice Guessing Problem," Child Development, Vol. 32, 1961, p. 779-788.

[26]M. Lewis, "Probability Learning in Young Children: The Binary Choice Paradigm," Journal of Genetic Psychology, Vol. 108, 1966, p. 43-48.

Appendix 1) first appears at approximately six years of age and is again replaced by maximizing (see Appendix 1) between the ages of thirteen and twenty-one.

Similar results have been found by other researchers using mental retardates and MA as an age index.[27,28,29] A study by Derks and Paclisanu[30] deserves special consideration because of the extensive age range used (3 to 25 years) and because of the number of binary events (200) employed. They found that 3 to 4 1/2 year olds were maximizers, 5 to 6 year olds were matchers, with the number of matchers increasing steadily with age, and the number of subjects demonstrating negative recency increased with age with the first appearance in the 12-year-old group. The group of mean age 21.3 years showed increased maximization with increased number of trials. Contrary to the general trends

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[27]L. R. Goulet and A. Barclay, "Guessing Behavior of Normal and Retarded Children under Two Random Reinforcement Conditions," Child Development, Vol. 38, 1967, p. 545-553.

[28]R.J. Schusterman, "Strategies of Normal and Mentally Retarded Children under Conditions of Uncertain Outcome," American Journal of Mental Deficiency, Vol. 69, 1964, p. 66-75.

[29]R. Metzger, "Probability Learning in Children and Aments," American Journal of Mental Deficiency, Vol. 64, 1964, p. 66-75.

[30]P.L. Derks and M. Paclisanu, "Simple Strategies in Binary Prediction by Children and Adults," Journal of Experimental Psychology, Vol. 73, 1967, p. 278-285.

in the literature, Messick and Solley[31] reported a tendency towards maximizing at all ages from three to eight years. This discrepant finding could be explained by the small sample utilized (N = 1 to 3 in each age group) and the testing of each child under all permutations of schedule and incentive.

To summarize, the literature on the relationship between age and response strategies on two-choice tasks does not specify the precise age at which matching behavior begins and ends. For example, alternating and matching behavior has been found as early as five years of age.[32,33] Studies with slightly different combinations of matchers and maximizers would have different group marginal statistics. Nevertheless, the literature does indicate that matching behavior first appears at approximately six years of age and is again replaced by maximizing between the ages of thirteen and twenty-one. Younger children show limited event dependency and strong response perseveration, a fact which makes their marginal responding appear optimal.

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[31]S.J. Messick and G.M. Solley, "Probability Learning in Children: Some Exploratory Studies," Journal of Genetic Psychology, Vol. 90, 1957, p. 23-32.

[32]G.J. Craig and J.L. Myers, "A Developmental Study of Sequential Two-choice Decision Making," Child Development, Vol. 34, 1963, p. 483-493.

[33]W.E. Jeffrey and L.B. Cohen, "Response Tendencies of Children in a Two-choice Situation," Journal of Experimental Child Psychology, Vol. 2, 1965, p. 248-254.

Children of intermediate ages show more complex strategies such as response alternation and this often results in lower terminal scores. Older children show greater sensi tivity to preceding events in a random sequence and evidence negative recency responding.

In addition to the age variable, the effect of incentives and social reinforcers on probability learning has also been investigated. From the point of view of incentive literature, two particular problems have been a source of perplexity. The first is one of individual differences; some rewards can be an incentive for one child but not for another. The second involves the changing incentive value of material or social rewards over time. Witryol's[34] solution to these problems is a paired-comparison technique. Two authors,[35] working in the area of probability learning, utilized the same technique and tested children aged 6 to 7 and 10 to 11 years under low and high incentive conditions. Performance under the high incentive condition was superior to that of the low incentive condition. However, the results of the study are difficult to interpret

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[34]S.L. Witryol, "Incentives and Learning in Children," Advances in Child Development and Behavior, Vol. 6, 1971, p. 4.

[35]B. Bisett and M. Rieber, "The Effects of Age and Incentive Value on Discrimination Learning," Journal of Experimental Child Psychology, Vol. 3, 1966, p. 199-206.

since it is impossible to determine if what is referred to as incentive is actually functioning as such or as reinforcement. In a controlled study by Brackbill et al.,[36] the amount of the material incentive did not produce any significant difference. However, incentive combined with information feedback led to higher terminal performance than information feedback alone.

Social reinforcement has not been used as an incentive in probability learning studies but merely as reinforcement. In general, the effectiveness of social reinforcement seems to depend upon the age group being studied. McCullers and Stevenson[37] observed that verbal reinforcement had an effect upon three- and four-year old children but not on eight- and nine-year old children. Lewis et al.[38] found that positive social reinforcers were more effective for first grade children than information feedback alone. However, for sixth grade children there was no apparent difference in the effect of social and nonsocial reinforcement. The effect of social versus nonsocial reinforcement

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[36]Y. Brackbill, M.S. Kappy and R.H. Starr, "Magnitude of Reward and Probability Learning," Journal of Experimental Psychology, Vol. 63, 1962, p. 32-35.

[37]J.C. McCullers and H.W. Stevenson, "Effects of Verbal Reinforcement in a Probability Learning Situation," Psychological Reports, Vol. 7, 1960, p 439-445.

[38]Lewis et al., op. cit., p. 133-137.

is not clear in the literature. It seems that no difference has been observed when the child has had a negative encounter with the experimenter[39] or has been left alone for a short period of time,[40] or when the experimenter has remained aloof from the child.[41]

In summary, few studies have focused on the effect of incentives and social reinforcement on probability learning; consequently, it is difficult to speculate in this area. It would appear that material incentives must be combined with information feedback before they become effective in elevating terminal level of performance. Lack of precision in the literature undoubtedly springs from the fact that experimenters have, for the most part, arbitrarily decided on incentive value of objects for the subjects under study. Regarding the effect of social reinforcement on probability learning, the findings are not clear. Social reinforcement

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[39]M. Lewis and A. Richman, "Social Encounters and Their Effect on Subsequent Social Reinforcement," Journal of Abnormal and Social Psychology, Vol. 69, 1964, p. 253-257.

[40]M. Lewis, "Social Isolation: A Parametric Study of Its Effect on Social Reinforcement," Journal of Experimental Child Psychology, Vol. 2, 1965, p. 205-218.

[41]W. Dorwart, R. Ezerman, M. Lewis and D. Rosenhan, "The Effect of Brief Social Deprivation on Social and Non-social Reinforcement," Journal of Personality and Social Psychology, Vol. 2, 1965, p. 111-115.

appears to decrease in value with age. This is understandable since older children generally do not have as high a need for social approval as younger children.[42] However, the effect of social reinforcement on high need for social approval children has not been investigated except in the previously referred to Epstein study and it is questionable if its effectiveness decreases with age where high need for approval subjects are concerned.

Despite the large number of studies and the many variables investigated in the area of probability learning, few researchers have attempted explanations of their findings in terms of the cognitive development of the child. M. W. Weir has been an exception and his interpretation together with a general criticism of the literature on probability learning will be given in the next section.

B. Interpretation of the Literature on Probability Learning

Much of Weir's[43] review and analysis applies to the three-choice situation in which a child is reinforced a certain percentage of the time (e.g., 33%, 66%) on one of

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[42]Crandall et al., op. cit., p. 31.

[43]M. W. Weir, "Developmental Changes in Problem-solving Strategies," Psychological Review, Vol. 71, 1964, p. 473-490.

three knobs and never on the remaining two. However, there is also evidence in the literature on random two-choice schedules to support Weir's hypothesis that children's behavior can be viewed as a combination of ability to process external cues and ability to generate complex hypotheses. This information-processing approach ties in with developments in thinking about sequential learning in adults.[44]

According to Weir, young children below the age of five years fixate on a single response. The disproportionate difficulty of random schedules so tax the child's limited cognitive capacity that, in a probability learning situation, he is unable to identify or process reliable cues or to revise initial expectancies. Since one event occurs most of the time, he expects it will occur on the next trial and so he adopts a maximizing strategy. In this context, Bogartz's[45] concept of "inward-attending" is relevant. The young child is not inwardly attending to or alert to environmental cues.

Weir[46] claims that children above the age of five years can generate complex hypotheses, even though they may

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[44]J.L. Myers, "Sequential Choice Behavior," The Psychology of Learning and Motivation: Advances in Research and Theory, Vol. 4, 1970, p. 109-170.

[45]R.S. Bogartz, "Short-term Memory in Binary Prediction: Some Stochastic Information Processing Models," The Psychology of Learning and Motivation: Advances and Theory, Vol. 3, 1969, p. 299-391.

[46]Weir, op. cit., p. 473-490.

be unable to reject these or generate alternate hypotheses, when original hypotheses are found to be unsuitable for solving the problem. These middle-age children can organize response output more complexly than younger children, but are not always able to attend to or process environmental events so that response patterns can be synchronized with sequence patterns. They are less sensitive to errors as cognitive signals than adults and therefore their characteristic behavior is an attempt at matching. Adolescents and college-age subjects can both generate and reject hypotheses and eventually decide on maximizing presumably because they are more cognitively capable of processing feedback information in a probability learning situation.

Weir's explanations are the most satisfactory to date but the literature does not provide a precise answer to the question of how people learn probabilities at different age levels. Research has, for the most part, described the various strategies adopted by different age groups and has focused on the variables that influence these strategies. Some of these variables have received minimal treatment. For example, the literature is not conclusive concerning the influence of social reinforcement and different types of expectancy on probability learning. The question of the influence of different types of expectancy on problem solving has been and is currently under investigation, but needs

further exploration.

One reason for investigating the influence of expectancy produced by instructional set lies in the fact that the learning of basic skills and social values, in and outside the classroom, is strongly influenced by the arousal of expectancy on the part of authority figures in the child's environment.

With such views in mind, an attempt will be made to review the relevant research on expectancy theory in the next section.

3. Current Research on Expectancy Theory

Rotter's theory emphasizes certain basic principles that stem from previous learning theorists. The first is that behavior is goal-directed (Tolman) and secondly, the unit of analysis in the study of personality is the individual interacting with his environment or the individual's life space (Levin).[47] If behavior is goal-directed, then the study of expectancy becomes increasingly important and, if an individual's life space is the unit for personality study, then knowledge of the interaction between internal and external stimuli is necessary to understand the individual.

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[47]Rotter et al., op. cit., p. 4-8.

"Behavior potential" in any situation is a function of "expectancy of reinforcement" and "value of reinforcement."[48] It, therefore, becomes necessary to understand the individual's history of reinforcement and the reinforcement present in the immediate situation. Rotter further generalizes and states that "need potential" (general term for behavior potential) is a function of "freedom of movement" (general term for expectancy) and "need value" (general term for reinforcement value).[49] If an individual has received reinforcement in the past in certain situations, he generalizes to similar situations, and consequently a whole group of functionally related expectancies are established. Likewise, the individual generalizes the value of a reinforcement from its association with other reinforcements.

If the foregoing discussion merits consideration, it could be hypothesized that the value of different types of expectancy should be reflected differentially in responses on a probability learning task. The responses should also reflect initial individual need for material or social enhancement and level of expectancy of receiving it.

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[48] Ibid., p. 14.

[49] Ibid.

CHAPTER II

EXPERIMENTAL DESIGN

This chapter will present a description of the method employed in subject selection, experimental procedure, definition of the independent variables and the hypotheses to be tested.

1. The Sample.

One hundred and eighty-two children, ranging in age from 8-0 through 9-11 inclusive, served as subjects. These children comprised the total enrolment (excluding children with learning disability or below average intelligence) from three elementary schools of the Carleton Separate School Board. The data were gathered between February 19, 1971, and May 18, 1971. The total sample was administered Crandall's CSD scale[1] which dichotomized the subjects into high and low need for social approval groups.

From the ninety-one subjects scoring below the median, ten males and ten females were randomly assigned to one of three conditions of expectancy, namely, control, social and material. The same procedure was followed for those who

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[1]V.C. Crandall, V.J. Crandall and W. Katkovsky, "A Children's Social Desirability Questionnaire," Journal of Consulting Psychology, Vol. 29, 1965, p. 27-36.

scored above the median. Table I summarizes the description of the subjects.

2. Administration of the CSD scale.

Subjects in groups of twenty or less were accompanied by the examiner and an assistant from their classroom to a special testing room assigned by the principal. The forty-seven item "direct form" of the scale (shown in Appendix 2) was administered. The introduction and instructions were as follows:

"On your desk, you will find some questions on a sheet. Take your pencil and do as I tell you. Where it says name on your sheet, print your name. A similar procedure was followed for the additional personal information.

Here are some questions about things that happen to all children your age. All the questions have been put on the recorder. When the person on the record asks you a question, follow along on your sheet. If you don't understand any of the questions, be sure to tell me and I'll have the record say it again. Circle Y if your answer is yes and circle N if your answer is no. No one, except me, will find out how you answer. Ready? Begin."

Immediately after each item was heard by the subject, the record sheets were examined to determine if one

Table I.-

Sex, Age and CSD Scale Characteristics of the Subject Sample

		Age		CSD Scale		
Sex	N	Mean (months)	S.D.	Mean	S.D.	Median
Male	60	109.48	6.14	23.10	8.43	26.5
Female	60	108.75	6.37	24.09	9.66	26.2
Male and Female	120	109.14	6.24	23.32	9.33	26.4

and only one answer was circled. If any subject circled both Y and N, the recorder was stopped and he was asked to make a choice of either yes or no.

The time required for completion of the scale varied between thirty and thirty-five minutes. All items were completed by each subject on every test form. The interest value of items seemed high for children of the ages examined and sufficient rapport was established between the examiner and subjects to ensure their cooperation.

3. Administration of the Probability Learning Task.

For the experimental situation, subjects were accompanied by the examiner from their classrooms in groups of five to a special testing room. The desks used by the subjects were placed in a circle with backs to each other. Three feet by four and one-half feet partitions were placed between the desks so that the subjects could not view each other's responses. The examiner stood in the center so that he could ascertain with a glance that the procedure was being adhered to as required. Before the subjects arrived, the following materials were placed on each desk: a record blank (shown in Appendix 3), a desk stylus, a pencil and two hundred punched tickets (100 orange and 100 green) randomly mixed in a bundle.

The instructions were as follows:

Control Condition. "Today, we will play a game of simple choices. Show me a green ticket. Show me an orange ticket (to check for color-blind children). Try to guess what color the person on the recorder will say before he tells you. If you choose green, pick up the green ticket, put it on the peg, and mark G beside number one. If you choose orange, pick up the orange ticket, put it on the peg and mark O beside number one. Do that for every number on your sheet. Ready? Let's begin."

Social Expectancy Condition. The instructions were the same as above, except the following statement was added: "Most of your friends do very well in this game and you will be liked and praised if you do well."

Material Expectancy Condition. The instructions were the same as for the control condition, except the following statement was added: "You will have a chance to win a very good prize after this game is over."

After the instructions the subjects heard "number one" and after an interval -- "the answer was green (or orange)." During the interval, the choices were made and recorded. If any child hesitated, the recorder was stopped and he was asked to choose. There were five practice trials followed by one hundred trials distributed into 10 x 10 trial blocks. On each block of ten trials, the colors green (seven times) and orange (three times) were randomly

presented with the exception that green was not allowed to occur more than four times in succession.

The three conditions and two levels of need for approval were randomly assigned in each school. The time required to complete the one hundred trial learning task varied from thirty-five to forty minutes.

4. Analysis of the Learning Task.

After the experiment was completed, all green responses for the different conditions and two levels of need for approval were tabulated into 10 x 10 trial blocks. Since maximizing was the expected behavior, the number of green responses in each of the ten blocks was the measure of the dependent variable.

5. Statistical Design and Hypotheses.

The format of this study comprises a 2 (Levels of Need for Approval) x 2 (Sex of Subject) x 3 (Conditions) x 10 (Trial Blocks) fixed analysis of variance with repeated measures on the trials factor.[2] The post-analysis of variance procedure consists of Duncan's New Multiple Range Test.[3]

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[2]The program for this analysis was obtained from Professor R. Porebski, Ph.D., Faculty of Psychology, University of Ottawa.

[3]A.L. Edwards, Experimental Design in Psychological Research, New York, Holt, Rinehart & Winston, 1968, p. 130-135.

A second analysis of variance investigating preselection bias is that of a 2 (Levels of Need for Approval) x 2 (Sex of Subject) x 3 (Conditions).[4] A trend analysis was also performed to investigate the changes in responding over ten trial blocks of subjects at high and low levels of need for approval and under the three expectancy conditions.[5]

The main hypotheses that follow directly from the experimental design are stated in the null form as follows:

1. There is no significant difference between the performance of subjects at high and low levels of need for social approval on the probability learning task.

2. There are no significant differences between the performances of subjects under the three expectancy conditions.

3. There is no significant difference between the responses of male and female subjects on the learning task.

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[4]The program for this latter analysis was obtained from Professor R. Gardner, Ph.D., Department of Psychology, University of Western Ontario.

[5]Edwards, op. cit., p. 271-300.

CHAPTER III

PRESENTATION OF RESULTS

This chapter presents the statistical results of the analyses referred to in the previous chapter. The possibility of selection bias presented itself. The experimental design called for the random assignment of ten males and ten females to each of the three conditions at both levels of need for approval and the subjects were dichotomized at the median. A 2 (Levels of Need for Approval) x 2 (Sex of Subject) x 3 (Expectancy Conditions) analysis was performed.

The significant finding of this analysis was the levels main effect ($F = 521.63$; $df = 1, 108$; $p < .01$). The remaining main effects and interactions did not reach statistical significance ($p > .25$). The selection of subjects is therefore presumed to be random.

1. The Statistical Findings of the Experimental Task.

Since the experimental design called for a four-way analysis of responses to the more frequently occurring stimulus (green), the over-all analysis of variance consists of the following factors: levels of need for social approval (L), sex (S), expectancy conditions (C), and trial blocks (T). The summary of the analysis of variance for the response

data is presented in Table II. For the sake of clarity, the null hypotheses will be repeated and the results will be presented after each.

Since the levels main effect is highly significant ($F = 33.66$; $df = 1, 108$; $p < .01$), the first null hypothesis, that there is no significant difference between the levels of need for social approval on the learning task, is rejected. The levels main effect (illustrated in Figure 1) demonstrates that high need for social approval subjects ($\overline{X} = 6.20$) gave significantly more green responses than those with a low need for social approval ($\overline{X} = 5.33$). This finding is further clarified by the significant L x T interaction ($F = 3.74$; $df = 9, 072$; $p < .01$) also illustrated in Figure 1. Application of Duncan's New Multiple Range Test indicates that high need for social approval subjects give significantly more green responses ($p < .01$) than low need subjects at all trial blocks except T_1 and T_3.[1] When the high need for social approval curve is examined, there is a noticeable increase in green responses across trial blocks reaching asymptote at T_8; whereas, the low need for social approval group respond to the more frequent event at a slower rate reaching asymptote at T_4. Additionally, a trend analysis revealed

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[1]Trial blocks 1 through 10 will be referred to as T_1 .... T_{10}.

Table II.-

Analysis of Variance of 10 x 10 Trial Blocks of Responses to the More Frequently Occurring Stimulus (Green).

Source	Sums of Squares	df	Mean Squares	F	p
Between					
L	227.94	1	227.94	33.66	<.01
C	173.28	2	86.64	12.79	<.01
S	6.30	1	6.30	0.93	n.s.
LS	33.00	1	33.00	4.87	<.05
LC	124.12	2	62.06	9.16	<.01
SC	25.53	2	12.76	1.88	n.s.
LSC	28.55	2	14.27	2.10	n.s.
Error	731.24	108	6.77		
Within					
T	479.46	9	53.27	36.49	<.01
TL	49.23	9	5.47	3.74	<.01
TS	14.86	9	1.65	1.13	n.s.
TC	142.96	18	7.94	5.44	<.01
TLS	14.90	9	1.65	1.13	n.s.
TLC	166.62	18	9.25	6.34	<.01
TSC	51.61	18	2.86	1.96	<.05
TLSC	30.36	18	1.68	1.15	n.s.
Error	1418.80	972	1.45		

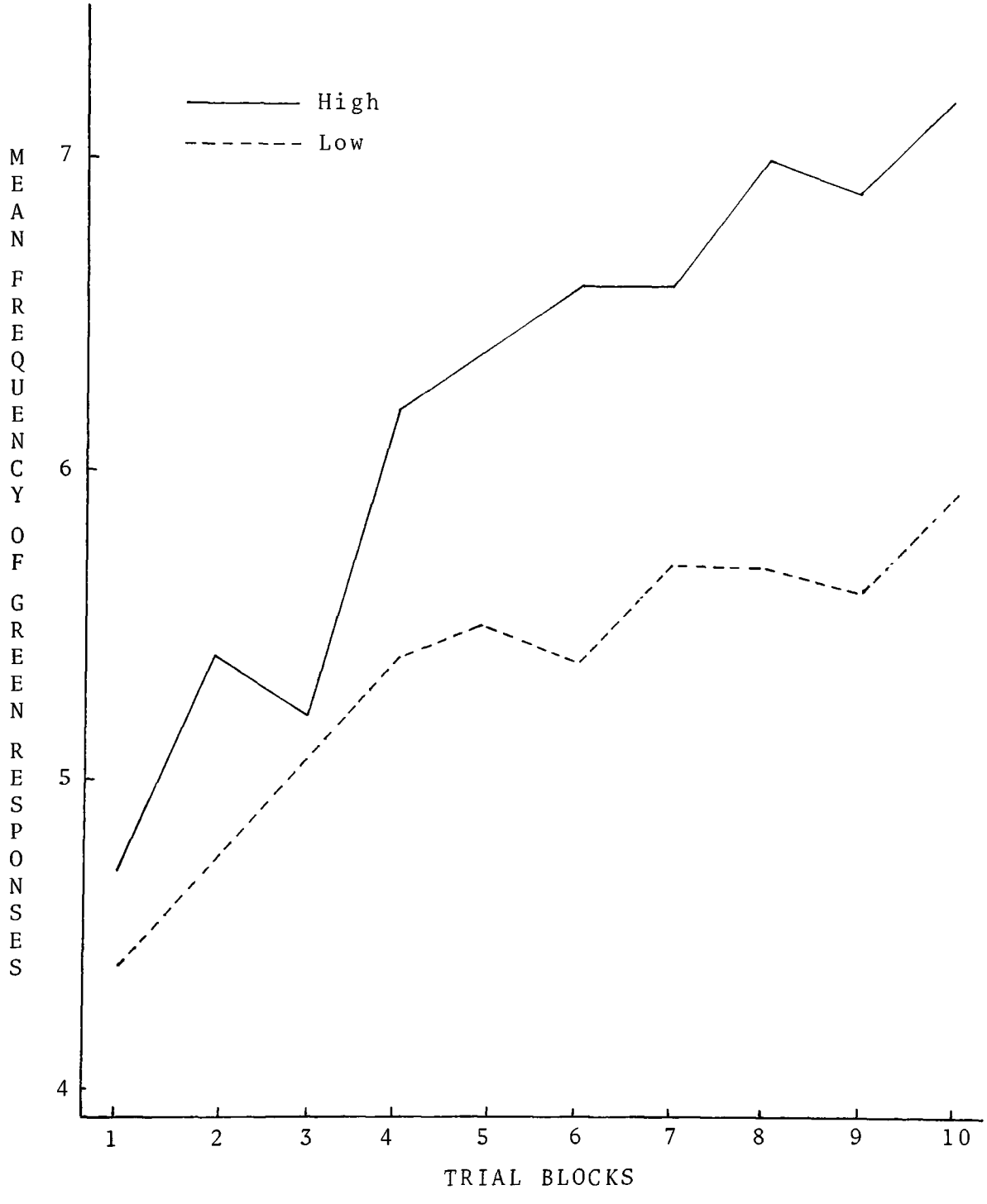

Figure 1. Mean Frequency of Responses to the More Frequently Occurring Stimulus (Green) for Subjects High and Low in Need for Social Approval.

the overall tendency of the means to increase significantly over trial blocks ($F = 6.73$; $df = 1, 972$; $p < .01$) at the high need for social approval level. However, at the low need for social approval the means did not increase significantly over trial blocks ($p > .10$).

The L x C interaction found to be significant ($F = 9\ 16$; $df = 2, 108$; $p < .01$) also clarifies the levels main effect. As Figure 2 shows, high need for social approval subjects tend to give more green responses under all conditions than low need subjects. However, analysis of the interaction by means of Duncan's New Multiple Range Test revealed that there is a reliable difference ($p < .01$) only between the responses of subjects at the high need level ($\overline{X} = 7.15$) and at the low need level ($\overline{X} = 5.37$) under the social condition and that the differences between the two levels under the material condition ($\overline{X} = 5.57$ and $\overline{X} = 5.11$) and the control condition ($\overline{X} - 5.90$ and $\overline{X}$ 5.52) are not statistically different ($p > .10$).

On the basis of the significant conditions main effect ($F = 12.79$; $df = 2, 108$; $p < .01$) the second null hypothesis, that there is no significant difference between expectancy conditions on the learning task, is rejected. The Duncan's New Multiple Range Test reveals a reliable difference ($p < .01$) between the social ($\overline{X} = 6.26$) and the control ($\overline{X} = 5.71$) groups and between the social and the

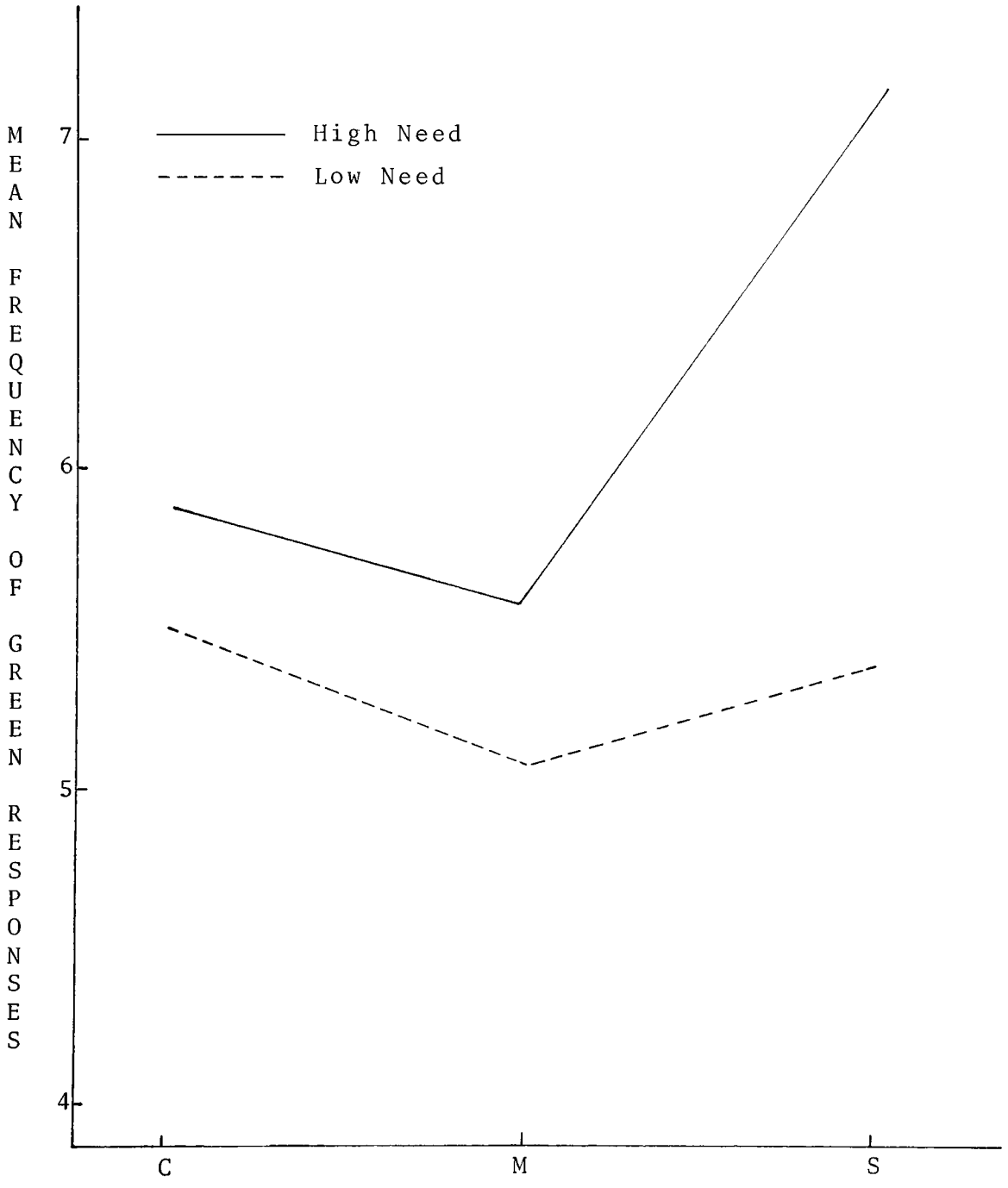

Figure 2.- Mean Frequency of Responses to the More Frequently Occurring Stimulus (Green) for Subjects under Control (C), Material (M) and Social (S) Expectancy Conditions at High and Low Need for Social Approval Levels.

material ($\overline{X}$ = 5.34) groups; whereas, the difference between the material and control conditions does not reach statistical significance. The reliable L x C interaction, illustrated in Figure 2, elucidates the conditions main effect as well as the levels main effect.

When the high need for social approval level is considered, the Duncan's New Multiple Range Test yields a significant difference ($p < .01$) between the social ($\overline{X}$ = 7.15) and the material expectancy condition ($\overline{X}$ = 5.57) and between the social and control condition ($\overline{X}$ = 5.90). However, at this level the material expectancy condition does not differ significantly ($p > .10$) from the control condition. When the low level of need for approval is examined, there are not significant differences ($p > .10$) between social ($\overline{X}$ = 5.37), material ($\overline{X}$ = 5.11) and control ($\overline{X}$ = 5.52) conditions. Comparison between the responses of subjects at the high need level and at the low need level within each condition (i.e., social, material, and control conditions) was made when the levels main effect was considered. This comparison revealing a significant difference only under the social condition also clarifies the conditions main effect.

In discussing the conditions main effect, results from the Duncan's New Multiple Range Test applied to the

T x C and T x L x C interactions are informative. From the T x C interaction ($F = 5.44$; $df = 18, 972$; $p < .01$) illustrated in Figure 3, subjects under the social expectancy condition give significantly more green responses ($p < .01$) than either the material expectancy or control subjects from T_5 to T_{10}; whereas, these latter two groups do not differ significantly from each other except at T_6; in this instance, the control subjects scored significantly higher ($p < .05$) than material expectancy subjects.

Additionally, a trend analysis of all three curves revealed an over-all tendency of the means to increase significantly ($F = 18.14$; $df = 1, 972$; $p < .01$) over trial blocks only under the social condition. From the T x L x C interaction ($F = 6.34$; $df = 18, 972$; $p < .01$) illustrated in Figure 4, when the high need for social approval level is considered, the subjects under the social expectancy condi tion give significantly more green responses ($p < .01$) from T_5 to T_{10} than either material expectancy or control subjects. These latter two groups do not differ from each other on any trial block. When the low need level is analyzed, the subjects under the social expectancy condition give significantly more green responses ($p < .05$) than material expectancy subjects at T_4 and control subjects give significantly more green responses ($p < .05$) than material expectancy subjects at T_8.

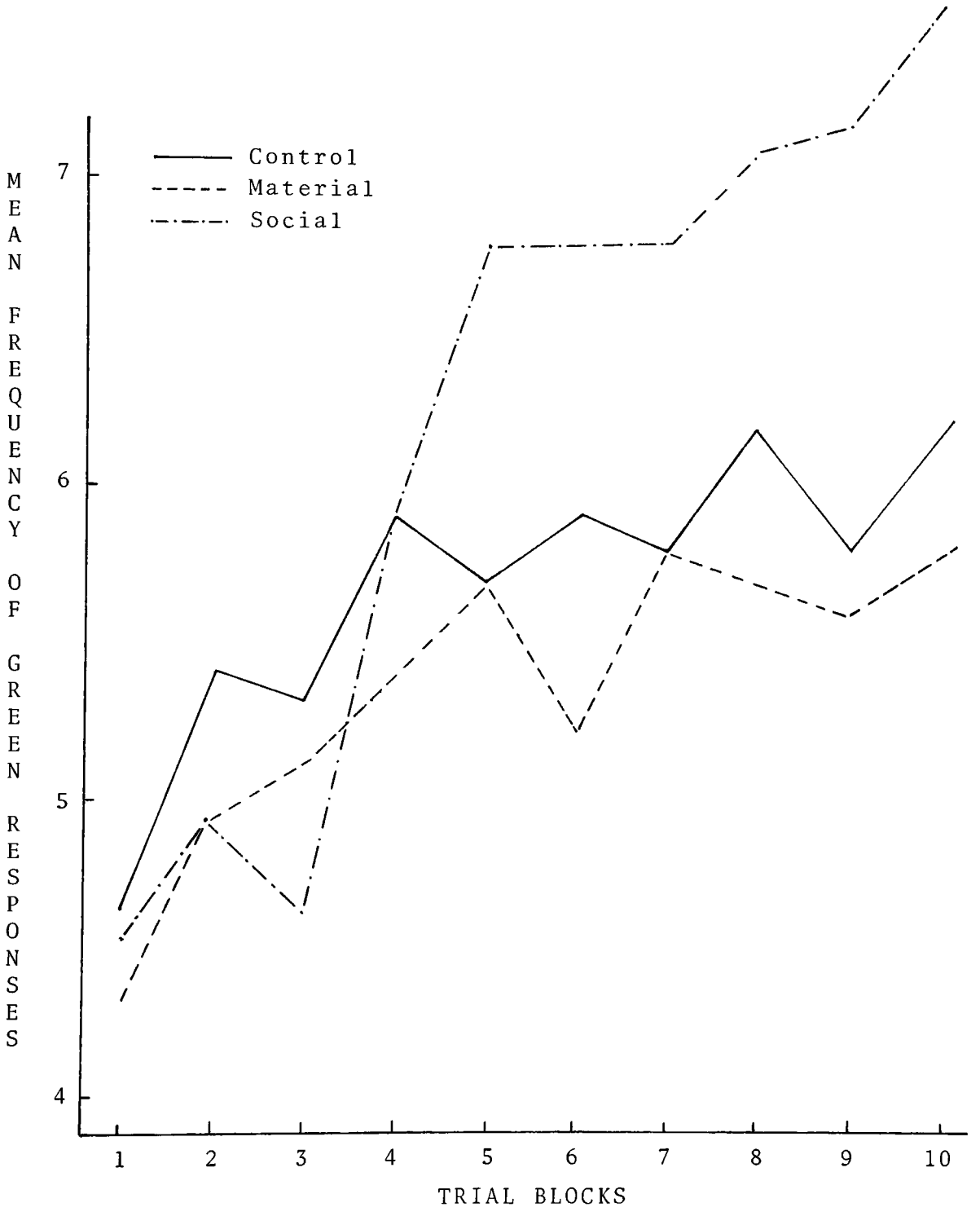

Figure 3.- Mean Frequency of Responses to the More Frequently Occurring Stimulus (Green) for Subjects in the Control, Material and Social Expectancy Conditions.

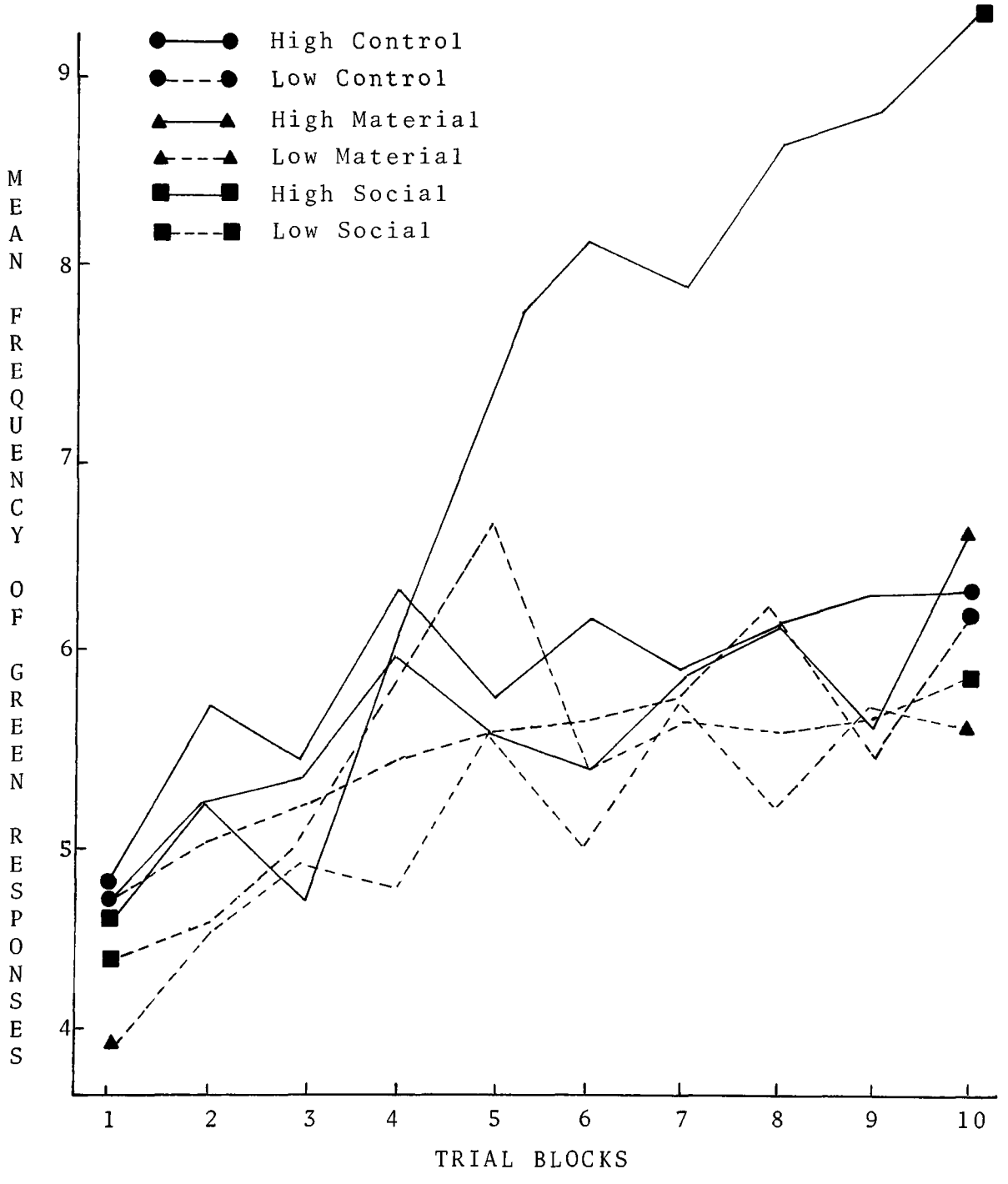

Figure 4.- Mean Frequency of Responses to the More Frequently Occurring Stimulus (Green) for Subjects High and Low in Need for Social Approval under Control, Material and Social Expectancy Conditions.

The third null hypothesis stating that there is no significant difference between male and female subjects on the learning task is not rejected ($F = 0.93$; $df = 1, 108$; $p > .10$). However, the L x S interaction, illustrated in Figure 5, is statistically significant. The Duncan's New Multiple Range Test demonstrates that, at the high need for social approval level, females ($\bar{X} = 6.45$) give significantly more ($p < .05$) green responses than males ($\bar{X} = 5.97$). No such difference exists at the low need level. A further comparison of the two levels shows that high need females ($\bar{X} = 6.45$) score significantly higher ($p < .01$) than low need females ($\bar{X} = 5.24$) and high need males ($\bar{X} = 5.97$) significantly higher ($p < .05$) than low need males ($\bar{X} = 5.44$). In addition, the significant T x S x C interaction ($F = 1.96$; $df = 18, 972$; $p < .05$), illustrated in Figure 6, reveals relevant information concerning the sex factor. Results of the Duncan's New Multiple Range Test indicate that males do not respond differentially under either control or material conditions; whereas, females tend to give more green responses under the control condition as compared to the material expectancy condition. When a comparison is made between all three conditions both males and females score higher under the social condition than either under the material or control conditions.

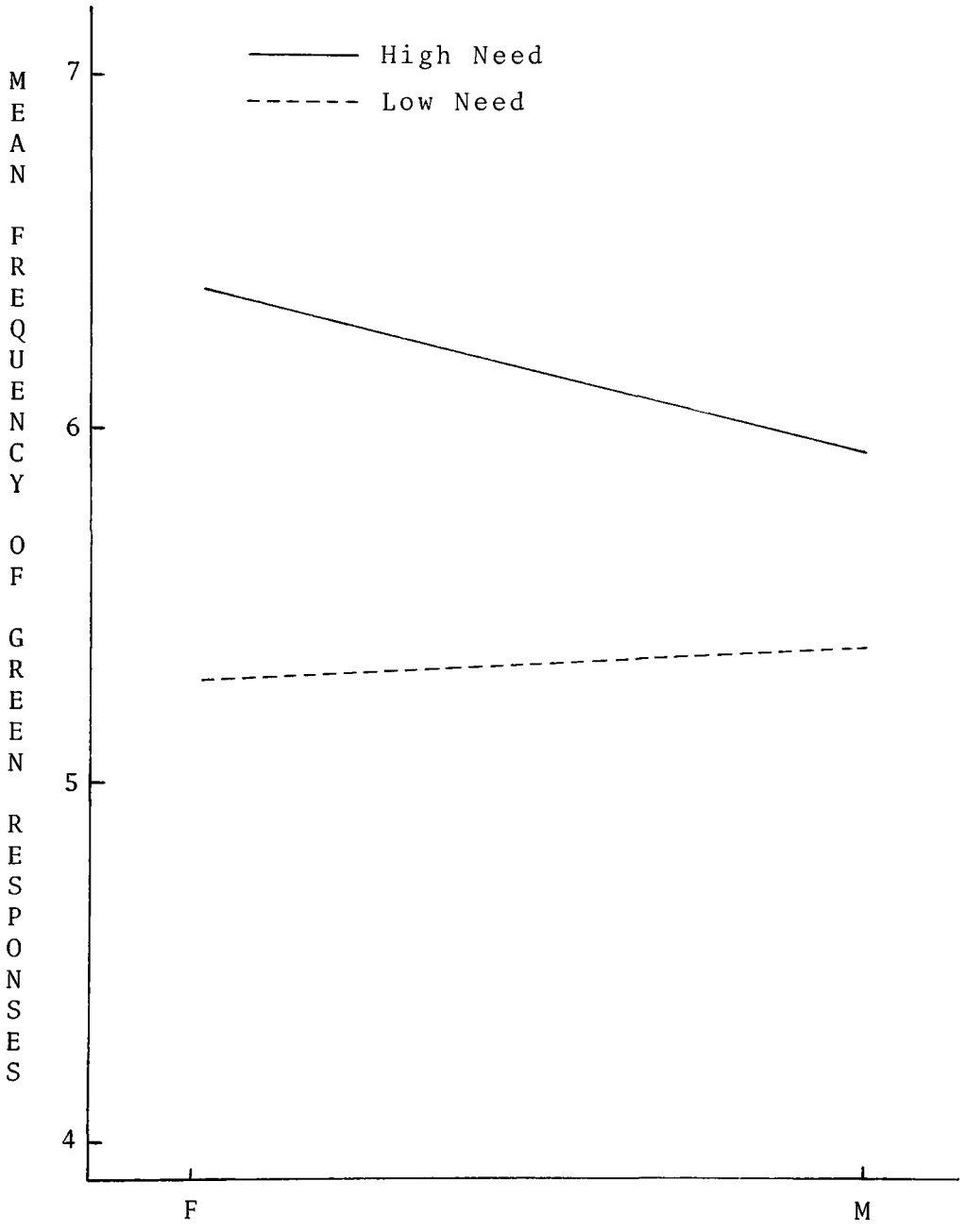

Figure 5.- Mean Frequency of Responses to the More Frequently Occurring Stimulus (Green) for Females and Males at High and Low Need for Social Approval Levels.

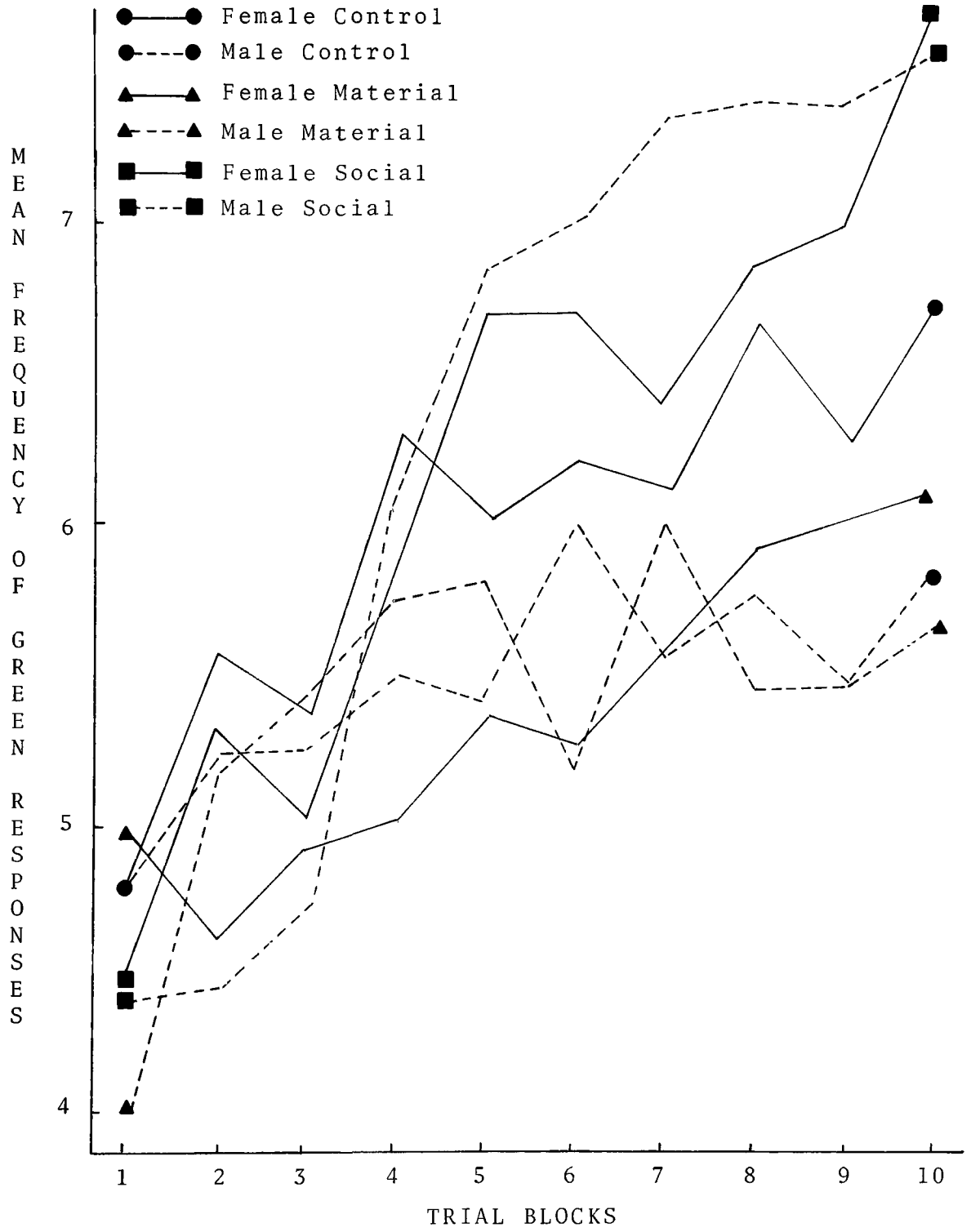

Figure 6.- Mean Frequency of Responses to the More Frequently Occurring Stimulus (Green) for Female and Male Subjects under Control, Material and Social Expectancy Conditions.

The results presented above are used in the interpretation and discussion which is the subject matter for the next chapter.

CHAPTER IV

DISCUSSION AND INTERPRETATION OF RESULTS

This chapter will present a discussion and interpretation of the results presented in the previous chapter. For the sake of clarity, the main hypotheses will precede each interpretation. Immediately following, a summary of the relevant findings will be given. Since the primary interest of this study is the comparison of the subjects' responses on the probability learning task at two levels of need for social approval under three expectancy condi tions, the discussion will emphasize these aspects. In order to render the interpretation more meaningful, an attempt will be made to integrate previous research with the present experimental findings.

1. Discussion of the Main Effect of Levels of Need for Social Approval.

In addition to the levels main effect being significant, high need for social approval subjects gave more green responses under trial blocks and conditions than low need for social approval subjects. This difference reached the conventional level of significance under the social expectancy condition.

The process of matching, characteristic of the age group under study, has been interpreted as reflecting the ability to formulate hypotheses without the concomitant ability of processing information that becomes available through responding.[1] Also matching appears to represent a persistent effort to solve the problem and eventually receive 100% reinforcement.[2] Children in the adolescent range systematically formulate and reject hypotheses on early trials but eventually decide to maximize as a solution to the problem.[3] In the present study, a significantly greater number of green responses were given by high need subjects than by low need subjects and, therefore, it can be argued that factors not affecting low need subjects were influencing the responses of high need subjects.

The high need for social approval adult has been described as being quick to respond to what he perceives to be the demands of authority and wanting to please his peers by behaving like them. If it is assumed that high SD children are similar in personality and behavior to high SD adults, then the data of this experiment assume particular

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[1]M.W. Weir, "Developmental Changes in Problem-solving Strategies," Psychological Review, Vol. 71, 1964, p. 479.

[2]Ibid.

[3]Ibid.

meaning. It can be argued that high need subjects under all three conditions in the present study interpreted the more frequently occurring stimulus as a demand on the part of the experimenter to choose that event; whereas, low need subjects were less sensitive to the experimenter's demands and continued to make an effort to achieve 100% reinforcement. More specifically, high need subjects under the social expectancy condition could not only have been trying to fulfill the wishes of authority but could also have been motivated by the instructions given under this condition. These instructions aimed at arousing conformity to peer wishes and the expectancy of receiving reward for so conforming. High SD subjects also characteristically avoid evaluative situations out of fear of disapproval and one solution to such a conflict is to emulate the modal responses of their peers.

Thus, this added incentive for high need subjects under the social expectancy condition seems to have resulted in significantly more responses to the more frequent event; whereas, control and material expectancy high need subjects gave more, but not significantly more, such responses than their low need counterparts.

It is reasonable to assume that subjects who have a high need for social approval will place a high value on

social reinforcement. However, presumably because of their reinforcement history, such subjects have a low expectancy of receiving it and lack confidence in their ability to attain it. Rotter et al.[4] have stated that behavior is a function of both the expectancy of receiving reinforcement and the value of the reinforcement for the individual. Furthermore, they have claimed that value and expectancy can be systematically independent and hence reinforcement value can be high and effect the production of specific behaviors while expectancy remains low. It is conceivable that the high need for social approval subjects under all conditions, in the present study, placed a high value on reinforcement obtained through feedback. This had the effect of raising the number of responses to the more frequently occurring stimulus above that of the low need for social approval subjects. The high need for social approval subjects under the social expectancy condition received the additional instructional set which presumably raised the reinforcement value of feedback during the task.

To summarize, high need subjects gave more responses to the more frequent stimulus across trials, under all conditions and particularly under the social expectancy

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[4]J.B. Rotter, J.E. Chance and E.J. Phares, Applications of a Social Learning Theory of Personality, New York, Holt, Rinehart & Winston, 1972, p. 13-14.

condition. Subjects with high SD scores seemed to be more sensitive to the demands of authority and peers; and therefore responded to situational cues by choosing the green response. This was particularly the case under the social expectancy condition, where expectancy of reinforcement was added to the already high need for reinforcement.

If the above discussion deserves consideration, it would seem that instructional set can be used to effect the enhancement of the reinforcement value of feedback and thereby affect performance on a learning task,or, in fact, the instructional set may have changed the expectancy of the occurrence of reinforcement. It is presumed that expectancies are learned in situ and transfer or generalize to the task or situation at hand. However, this does not exclude the possibility that low expectancy can be elevated through the use of instructional set in the developing child. Additionally, as Rotter suggests, value of reinforcement is not the only determinant of behavior. Expectancy that a given behavior will lead to the valued reinforcement is also important. Furthermore, behaviors that have been considered to be relatively stable and situation-free (such as matching and maximizing on probability learning tasks at particular ages) may be largely determined by situational contingencies.

2. Discussion of the Conditions Main Effect.

It was stated in the presentation of results that the conditions main effect hypothesis was rejected. In addition, high need for social approval subjects under the social expectancy condition gave significantly more responses to the more frequent event than either control or material subjects at that level. Conditions were not significant for low need subjects.

As Figure 3 illustrates, the subjects under the material expectancy condition actually gave fewer (though not significantly fewer) responses to the more frequent event than subjects under the control condition, who were apparently unhampered by the desire to win a prize and therefore only under the influence of the reinforcement which was part of the probability learning task itself. Subjects under the material expectancy condition, on the other hand, were not only under the influence of the task reinforcement, but were also trying to solve the problem in order to win a prize. The expectancy of winning this prize apparently provided additional motivation and thereby resulted in fewer green responses. The persistent striving for a solution to the task would automatically result in fewer responses to the more frequent event, since the changing of strategies militates against choosing that event

consistently. The rise and fall of both the control and material expectancy curves (see Figure 3) could well be a reflection of the different strategies adopted by subjects in their effort to arrive at a solution to the problem. In terms of Rotter's theory, the behavior of control subjects was only a function of reinforcement value and whatever expectancy there was of receiving verbal reinforcement through feedback as the task proceeded, the behavior of material expectancy subjects was a function of both reinforcement value and expectancy of reward. In this context, it can be stated that for intrinsically motivated subjects feeback alone may be more effective than feedback plus incentive. Incentive has been shown to have a decremental effect upon the rate of lever pressing with intrinsically motivated adults.[5] So likewise, the subjects in the present study under the material expectancy condition were striving to solve the problem in order to win the prize resulting in fewer responses to the more frequent event.

In contrast, the curve for social expectancy subjects (see Figure 3) rises sharply and almost continuously from the third trial. An examination of the raw data and

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[5]P.G. Swingle, H. Coady and D. Moors, "The Effects of Performance Feedback, Social and Monetary Incentive upon Human Lever Pressing Rate," Psychonomic Science, Vol. 4, 1966, p. 209-210.

Figure 2 indicates that this is largely due to the response of subjects at the high need for social approval level under the social expectancy condition.

Witryol[6] has found that the expectancy of receiving a verbal reward, increases in value from age 5 to 11. The results of the present study, employing subjects of ages 8 and 9, indicate agreement with Witryol, particularly for high need for social approval subjects. Their reinforcement history has presumably conditioned them to place a high value on social reinforcement and they are sensitive to environmental cues which portend the fulfillment of their need for social approval. Even though they may have a low expectancy of receiving such rewards, the instructional set in the present study was directed at raising expectancy and thereby enhancing the influence of reinforcement due to performance feedback. In line with the previous interpretation of the differences between levels, high need subjects place greater value on the approval of authority figures and peers. Consequently, they are more vulnerable to what they interpret as being the wishes of authority and peers for them and they feel that a way to gain approval is to conform to what both authority and peers desire of them. In the present study,

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[6]S.L. Witryol, "Incentives and Learning in Children," Advances in Child Development and Behavior, Vol. 6, 1971, p. 6-7.

this vulnerability to reinforcement from authority and expectancy of social reinforcement from peers seems to have resulted in a greater number of choices of the more frequent event.

It was stated above that conditions were not statistically significant for low need for social approval subjects. This is understandable if it is assumed that low need subjects were not motivated by the desire to please adults and to conform to the norms of peers. Hence, verbal feedback from the experimenter and expectancy of receiving material gain or social reinforcement from peers would probably have some effect but not sufficient enough to elevate their scores to the level of high need subjects.

Furthermore, if a high score on the CSD scale reflects a high need for approval, together with a low expectancy of receiving social reinforcement, a low score may reflect a low need and high expectancy. Subjects at the low need level in the present study would not be significantly affected by the verbal reinforcement which was part of the task for all conditions. Similarly, subjects under the social expectancy condition would not be motivated by the expectancy of receiving social reinforcement since their expectancy would already be sufficiently high.

In summary, the significant conditions main effect

was interpreted in terms of the expectancies to which the various subject groups were exposed. This main effect indicates primarily that the level of expectancy of high need subjects of ages 8 and 9 is amenable to instructional set in the immediate situation and is not due to a stable personality characteristic immune from situational contingencies.

3. Discussion of the Sex Main Effect.

The sex factor of this study was included since Crandall found significant sex differences in some samples and not in others[7] and since the incentive literature has reported differential incentive value for males and females.[8]

The sex main effect did not reach the required level of statistical significance. However, females scored significantly higher than males at the high need for social approval level and males gave reliably more responses to the more frequent event under the social condition than under either material or control conditions.

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[7]V.C. Crandall, "Personality Characteristics and Social Achievement Behaviors Associated with Children's Social Desirability Response Tendencies," Journal of Personality and Social Psychology, Vol. 4, 1966, p. 486.

[8]Witryol, op. cit., p. 2-55.

Crandall has found that males who score high on the CSD scale expect to be unsuccessful on achievement tasks and therefore do not make an effort to achieve.[9] The expectancy of not being able to achieve on the part of high need males could be responsible for the fact that males gave fewer responses to the more frequent event than females. The value of social reinforcement would remain high for them but their expectancy could not be as easily manipulated as with females. Hence, the effect of performance feedback could not be enhanced. The approach taken in this study is that behavior is a function of both reward value and expectancy of reinforcement, hence, fewer green responses due to lower expectancy. This point of view can be further substantiated by Witryol, who found that the expectancy of receiving verbal reinforcement increases in value with age for both boys and girls,[10] it has greater value for girls than for boys and the expectancy of receiving material reinforcement increases in value with age for boys.[11] The expectancy of verbal reinforcement from peers would therefore be more easily elevated in females and would raise the reinforcement value of feedback; consequently, the results would be more responses to the more frequent event.

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[9]Crandall, op. cit., p. 482.

[10]Witryol, op. cit., p. 6.

[11]Ibid., p. 17.

As depicted in Figure 6, females scored higher than males on every trial block except T_1 under the control condition. It can be noted from the experimental procedure that feedback can become a verbal incentive as the task proceeds if green responses are given. Since females have a higher need for social approval in general and since they are more sensitive to the expectancy of receiving verbal reinforcement, one would expect more green responses. Figure 6 also shows that males, on the other hand, score higher on most trial blocks under the material condition. This is expected since the expectancy of receiving material reinforcement increases with age for boys. Regarding the social condition, the curves are so similar that no differential interpretation is given.

In summary, the sex main effect was not significant but female subjects gave more green responses to the more frequent event at the high need for social approval level. Additionally, female subjects scored significantly higher under the control condition, while males scored higher generally under the material condition. These findings could be predicted from Crandall's and Witryol's work and lend empirical support to Rotter's theory.

This chapter has been concerned with a discussion and interpretation of the results presented in Chapter III. The findings of this study are in some respects contrary

to what can be predicted from other studies in the area of probability learning.[12] The fact that significantly different responses can be elicited from children of ages 8 and 9 provided they have a high need for social approval, and provided they are given the expectancy of receiving social reinforcement, indicates that variables other than those hitherto studied in probability learning must be considered. Furthermore, the results of the present study lend empirical support to Rotter's theory and reflect upon the validity of Crandall's scale.

The study also indicates that level of expectancy of social reinforcement is amenable to instructional set. The expectancy of receiving social reinforcement would seem, therefore, to be important for learning and in shaping the behavior and personality of high need for social approval subjects.

Attention will now be turned to the summary and conclusions where the more important findings will be briefly presented and where suggestions will be made for future research.

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[12] L.R. Goulet and K.S. Goodwin, "Development and Choice Behavior in Probabilistic and Problem-solving Tasks," Advances in Child Development and Behavior, Vol. 5, p. 213-253.

The review of the literature indicates that early studies in need for social approval, using adults as subjects, were based on the assumption that this need is a personality variable operating both in and outside test situations. The review also suggests that the same variable develops early in childhood and has certain behavioral correlates. Anticipating the possible use of a probability learning task to measure the differential susceptibility of children high and low in need for approval, to different types of expectancies, the areas of probability learning and expectancy theory were reviewed.

The next chapter dealt with the sample, the administration of the CSD scale, the administration of the probability learning task, analysis of the learning behavior and statistical design and hypotheses.

Since the main concern of the present study was to investigate the behavior of 8 and 9 year-old children at the high and low levels of need for approval under three expectancy conditions, the analysis of data and interpretation focused on the factors of levels and conditions.

The first null hypothesis, that there is no signi ficant difference between levels of need for approval, was rejected. It was found that the high need for social

approval subjects gave significantly more responses to the more frequent event than low need subjects. This finding was further clarified by the significant T x L and L x C interactions indicating that high need subjects gave more responses to the more frequent event across trials and under all conditions. This tendency was particularly evident under the social expectancy condition.

The second null hypothesis, stating that there is no significant difference between conditions, is rejected. When the significant L x C, T x C and T x L x C interactions were analyzed, it was discovered that subjects at the high need for social approval level under the social expectancy condition, gave a significantly greater number of green responses to the more frequent event than either their control or material expectancy groups, respectively.

The third and final null hypothesis indicating no significant difference between male and female subjects on the learning task could not be rejected. The significant L x S interaction revealed that females responded with greater frequency to the more frequent event than males at the high need for social approval level.

In terms of future research, many suggestions can be offered since at least two areas investigated in this dissertation, namely, need for approval in children and

expectancy theory, are still relatively unexplored. Therefore, a few variables considered to be important will be outlined.

First, research could be aimed at further extending the construct validity of the CSD scale. That is, establishing other behavioral correlates for the different age groups to which the scale can be applied. Since either form of the scale can be used from approximately age seven to age seventeen, the behavioral correlates undoubtedly change during those years.

A second approach is to investigate the antecedents of social desirability responding. It is possible that as a history of rejection and negative evaluation by parents accrues, the child develops a concern over the evaluation of others and a low expectancy that these evaluations will be positive. However, there may be particular characteristics for which the child has been positively reinforced and for which he acquires a high expectancy of being reinforced. Therefore, more accurate predictions would be expected if the particular expectancy were considered in the area being studied. Also, an individual may have several reference groups to which he orients himself differentially and therefore taking into account the norms of the reference groups should result in greater predictive validity for the need for approval construct.

Third, since the present study indicates that level of expectancy of high need subjects can be manipulated with instructional set and thereby affect behavior, the relationship between instructional set and level of expectancy should be further studied. This area of research would seem to have important implications for education and personality development. Previous studies which claim to demonstrate differences in cognitive ability may actually be demonstrating the effectiveness of the different expectancies employed.

Finally, it is a matter of considerable interest that a few sex differences were found throughout this analysis. It would be interesting in this context, then, to study in greater detail the ramifications of these findings, since the question of the sex effect is still largely unsolved.

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A paired comparison procedure was used to determine the incentive value of objects for children in two age groups. Children under high incentives made significantly more correct responses than children under low incentives on a two-choice learning task.

Crandall, V.C., "Personality Characteristics and Social and Achievement Behaviors Associated with Children's Social Desirability Response Tendencies," Journal of Personality and Social Psychology, Vol. 4, 1966, p. 477-486.

This report examines some behavioral correlates of social desirability responding in children. High SD children were found to be concerned about the evaluation of others, lacking in self confidence and of low self esteem. In addition, their behavior seems to be inhibited, controlled and conventional. Suggestions are made for the interpretation of the scale and future research that might clarify the behavior of high SD subjects.

Crandall, V.C., V.S. Crandall and J. Katkovsky, "Children's Social Desirability Questionnaire," Journal of Consulting Psychology, Vol. 29, 1965, p. 27-36.

The construction of the CSD scale is explained. It was found that social desirability responses were more frequently given by Negro children than by white children, by girls than by boys, by younger children than by older children, and by dull subjects rather than by bright subjects. Interpretations are given for the various findings obtained with the scale.

Crowne, D.P., C.H. Holland and L.K. Conn, "Personality Factors in Discrimination Learning in Children," Journal of Personality and Social Psychology, Vol. 10, 1968, p. 420-430.

The heart rate and impulsivity of children high and low in need for social approval were studied. High social desirability children showed a higher heart rate and were more impulsive. They also performed less well on a stimulus discrimination task. This latter finding was interpreted as a function of the effect of elevated anxiety on attention.

Crowne, D.P. and D. Marlowe, "A New Scale of Social Desirability Independent of Psychopathology," Journal of Consulting Psychology, Vol. 24, 1960, p. 344-354.

This article contains the thirty-three item keyed Marlowe-Crowne Social Desirability Scale. The authors suggest that the high correlation between Edwards' scale and the MMPI casts doubt on Edwards' scale as a measure of social desirability. They claim that their scale measures more accurately the need of individuals to respond in a culturally acceptable manner.

--------, The Approval Motive, New York, Wiley & Sons, 1964, vii-233 p.

The authors trace the historical development of the concept of need for social approval. The construction of the M-C SD Scale is explained and experimental evidence substantiating the construct validity of the concept is reviewed. Finally, the concept is placed within the context of J.B. Rotter's Social Learning Theory and suggestions are made for further research.

Derks, P.L. and M. Paclisanu, "Simple Strategies in Binary Prediction by Children and Adults," Journal of Experimental Psychology, Vol. 73, 1967, p. 278-285.

Eight groups ranging in age from three to twenty-five were presented with two hundred events in a 75:25 schedule probability learning task. Three-year-olds, four-and-one-half-year-olds, and adults maximized. Five- and six-year-olds tended to match and matching increased with age until the adolescent period. These results are interpreted in terms of M.W. Weir's theorizing.

Edwards, A.L., The Social Desirability Variable in Personality Assessment and Research, New York, Holt, Rinehart & Winston, 1957, v-108 p.

The implications of the social desirability concept for the accurate assessment of personality is the main concern of this text. The MMPI, Edwards' SD scale, the EPPS, and the Taylor Manifest Anxiety Scale are given special consideration. The different scaling techniques which have been used for determining the social desirability of test items are evaluated.

Epstein, R., "Need for Approval and the Conditioning of Verbal Hostility in Asthmatic Children," Journal of Abnormal and Social Psychology, Vol. 69, 1964, p. 105-109.

The author constructed a Children's Need for Approval (CNA) scale based on the Marlowe-Crowne Social Desirability Scale. The scale was administered to one hundred asthmatic boys of mean age nine years and six months. Children who scored high on the scale were more effectively conditioned to hostile than to neutral verbalizations.

Goulet, L.R. and K.S. Goodwin, "Development and Choice Behavior in Probabilistic and Problem-solving Tasks," Advances in Child Development and Behavior, Vol. 5, 1970, p. 213-254.

This paper provides a critical review of research on probability learning, using children as subjects. It is structured according to the variables that have been investigated. It is suggested that researchers begin to investigate the processes that covary with developmental changes in probability learning.

Kopfstein, J.H., "Social Desirability, Expectancy and Success-Failure-oriented Behavior in Children," Journal of Consulting and Clinical Psychology, Vol. 35, 1970, p. 428.

This study tested the hypotheses that high social desirability normal and emotionally disturbed boys would have a low expectancy of success, and would adopt a failure-avoiding pattern on Rotter's level of aspiration task. The results support the hypotheses.

Messick, S.J. and G.M. Solley, "Probability Learning in Children: Some Exploratory Studies," Journal of Genetic Psychology, Vol. 90, 1957, p. 23-32.

The authors report that children at all ages from three to eight years tend to maximize. This finding is contrary to the results of the majority of authors and is probably due to the extremely small sample used and to the error of testing each child under all permutations of schedule and incentive.

Rotter, J.B., J.E. Chance and E.J. Phares, Applications of a Social Learning Theory of Personality, New York, Holt, Rinehart & Winston, 1972, v-624 p.

This book is divided into seven sections. The first section concerns itself with an explanation of Rotter's theory. The following sections report the empirical evidence supporting this theory. Emphasis is focused on the application of the theory to such diverse areas as: Learning Theory, Personality Development, Personality Theory and Personality Measurement, Social Psychology and the Social Sciences, Psychopathology, Psychotherapy and Complex Behavioral Change.

Weir, M.W., "Developmental Changes in Problem-solving Strategies," Psychological Review, Vol. 71, 1964, p. 473-490.

The behavior of subjects on a probability learning task is examined at various age levels. An attempt is made to integrate the findings of the present report with the

results of other experiments. The vast majority of researchers agree that young children and adults maximize, while middle-age children tend to match. This is interpreted in terms of the ability to process information.

Witryol, S.L., "Incentives and Learning in Children," Advances in Child Development and Behavior, Vol. 6, 1971, p. 2-61.

The author focuses on his own experimental work and that of his co-workers. Their empirical findings are integrated with the results of previous studies. The paired-comparison scaling technique is used by the author in all studies to determine the incentive value of material objects and verbalisms. These incentives are then used in learning situations to study their effect upon learning. Sex differences and age differences in the value of incentives are investigated from approximately age six to age eleven.

APPENDIX 1

A DESCRIPTION OF A TWO-CHOICE PROBABILITY LEARNING TASK

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A DESCRIPTION OF A TWO-CHOICE PROBABILITY LEARNING TASK

When one is faced with a series of choices between two alternatives, each of which involves probable rather than certain outcomes, one usually will split the choices between the two alternatives or will concentrate on one of them. Take, for example, a situation in which one has to predict, on each trial, which of two possible events will occur when the series of trials has been randomized and so arranged that the probability of event A occurring is 0.7 and of event B occurring is 0.3. Choices in such situations have consistently been found to be split between these alternatives. In terms of the example, one learns to predict event A on roughly seventy per cent of the trials and event B on roughly thirty per cent of them. For the sake of convenience, this form of choice distribution can be called matching or agreement between choices and event-probabilities. The conviction remains, however, that 100:0 distribution of one's choices, referred to as maximizing or always predicting the event more likely to occur, is a highly reasonable form of behavior. Research dealing with choice situations must either explain why maximizing does not occur or else state the experimental conditions under which it would occur.

APPENDIX 2

THE CHILDREN'S SOCIAL DESIRABILITY SCALE UTILIZED TO MEASURE NEED FOR SOCIAL APPROVAL

APPENDIX 2

THE CHILDREN'S SOCIAL DESIRABILITY SCALE UTILIZED TO MEASURE NEED FOR SOCIAL APPROVAL

Name _____ Sex _____

School _____

Grade _____ Telephone _____

Present date _____

When is your birthday? _____

How old are you? _____

	YES	NO
1. Do you ever get angry if you have to stop in the middle of something you're doing to eat dinner or go to school?	Y	N
2. Does it sometimes bother you to share your things with your friends?	Y	N
3. Do you always enjoy yourself at a party?	Y	N
4. Are you always polite to older people?	Y	N
5. Do you sometimes tell a little lie?	Y	N
6. Do you ever hit a boy or girl who is smaller than you?	Y	N
7. Sometimes do you feel like doing other things instead of what your teacher wants you to do?	Y	N
8. Do you ever act "fresh" or "talk back" to your mother or father?	Y	N
9. When you make a mistake, do you always admit you are wrong?	Y	N
10. Do you feel that your parents always show good judgment; that is, do they always make good choices?	Y	N
11. Have you ever felt like saying unkind things to a person?	Y	N

	YES	NO
12. Have you sometimes felt like throwing or breaking things?	Y	N
13. Do you ever let someone else get blamed for what you do wrong?	Y	N
14. Do you sometimes brag to your friends about what you can do?	Y	N
15. Are you always careful about keeping your clothing neat and your room picked up?	Y	N
16. Do you ever shout when you feel angry?	Y	N
17. Do you sometimes feel like staying home from school even if you're not sick?	Y	N
18. Sometimes, do you wish your parents didn't check up on you so closely?	Y	N
19. Do you always help people who need help?	Y	N
20. Do you sometimes argue with your mother to let you do something she doesn't want you to do?	Y	N
21. Do you ever say anything that makes somebody else feel bad?	Y	N
22. Do you think your teachers know more about everything than you do?	Y	N
23. Are you always polite, even to people who are not very nice?	Y	N
24. Sometimes, do you do things you've been told not to do?	Y	N
25. Do you ever get angry?	Y	N
26. Do you sometimes want to own things just because your friends have them?	Y	N
27. Do you always listen to your parents?	Y	N
28. Do you ever forget to say "please" and "thank you"?	Y	N
29. Do you sometimes wish you could just play around instead of having to go to school?	Y	N

	YES	NO
30. Do you always wash your hands before every meal?	Y	N
31. Do you sometimes dislike helping your parents even though you know they need your help around the house?	Y	N
32. Do you ever find it hard to make friends?	Y	N
33. Have you ever broken a rule?	Y	N
34. Sometimes, do you try to get even when someone does something to you that you don't like?	Y	N
35. Do you sometimes feel angry when you don't get your way?	Y	N
36. Do you always help a hurt animal?	Y	N
37. Do you sometimes want to do things your parents think you are too young to do?	Y	N
38. Do you sometimes feel like making fun of other people?	Y	N
39. Have you ever borrowed anything without asking permission first?	Y	N
40. Do you sometimes get mad when someone disturbs something you've been working on?	Y	N
41. Are you always glad to cooperate with others?	Y	N
42. Do you ever get angry when your best friend wants to do something you don't want to do?	Y	N
43. Do you sometimes wish that the other kinds would pay more attention to what you say?	Y	N
44. Do you always do the right thing?	Y	N
45. Are there some times when you don't like to do what your parents tell you (mind your parents)?	Y	N
46. Are there times that you don't like it if somebody asks you to do something for him?	Y	N
47. Do you sometimes get mad when people don't do what you want them to do?	Y	N

APPENDIX 3

RECORD BLANK USED FOR THE PROBABILITY LEARNING TASK

APPENDIX 3

RECORD BLANK USED FOR THE PROBABILITY LEARNING TASK

Name _____ Sex _____

Grade _____ Telephone _____

Present Date _____ Birth Date _____

Age _____ Group _____

Choice	Choice	Choice	Choice
1	27	53	79
2	28	54	80
3	29	55	81
4	30	56	82
5	31	57	83
6	32	58	84
7	33	59	85
8	34	60	86
9	35	61	87
10	36	62	88
11	37	63	89
12	38	64	90
13	39	65	91
14	40	66	92
15	41	67	93
16	42	68	94
17	43	69	95
18	44	70	96
19	45	71	97
20	46	72	98
21	47	73	99
22	48	74	100
23	49	75	101
24	50	76	102
25	51	77	103
26	52	78	104
			105

APPENDIX 4

ABSTRACT OF

The Behavior of Children High and Low in Need for Social Approval on a Probability Learning Task Under Three Different Conditions of Expectancy

APPENDIX 4

ABSTRACT OF

The Behavior of Children High and Low in Need for Social Approval on a Probability Learning Task Under Three Different Conditions of Expectancy[1]

The main concern of the study was to investigate the differential influence of material and social expectancy on children of ages eight and nine, high and low in need for social approval. Need for social approval was measured through the application of V.C. Crandall's Social Desirability Scale. Of the sixty males and sixty females studied, ten males and ten females occupied each of the following six categories: High Control, Low Control, High Material Expectancy, Low Material Expectancy, High Social Expectancy, Low Social Expectancy. A two-choice probability learning task was utilized to obtain the behavioral data.

The null hypotheses were: (1) There is no significant difference between high and low levels of need for social approval on the probability learning task. (2) There is no significant difference between expectancy conditions on the learning task. (3) There is no significant difference between the responses of male and female

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[1]Patrick S. Morris, doctoral thesis presented to the School of Graduate Studies of the University of Ottawa, Ontario, March 1973, x-72 p.

subjects on the learning task. The first two null hypotheses were rejected.

The results of the study were interpreted in view of J.B. Rotter's Social Learning Theory. The experimental findings of V.C. Crandall and S.L. Witryol were also influential.