THE RELATIONSHIP OF EXPECTANCY OF SUCCESS TO OBJECTIVE PROBABILITY AND CONSEQUENCES OF PERFORMANCE

APPROVED:

Mel E. Bonney
Major Professor

Jack R. Hayner
Minor Professor

Duane Gregory
Dean of the School of Education

Robert B. Toulouse
Dean of the Graduate School

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George Douglas Stephens, B. A.
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CHAPTER I

INTRODUCTION

In 1959, N. T. Feather published an article in which he reviewed five approaches which relate to the analysis of behavior in a choice situation where a decision is made between alternatives having different subjective probabilities of attainment (5). He noted the similarity of the five approaches with respect to the concepts employed and equations advanced. Through his theoretical integration, Feather uncovered the fundamental conceptual equivalence behind the use of different verbal labels for the concept expectancy in what appeared to be widely divergent fields of research. These five approaches were (a) the Lewinian conception of the determinants of approach and avoidance, particularly in the treatment of level of aspiration (8); (b) Tolman's (11) conception of the factors which together influence the purposive performance vector of rats; (c) Rotter's (10) conception of behavioral potential as a function of expectancy and reinforcement value in analysis of behavioral problems in the field of personality and clinical psychology; (d) the conception of subjectively expected utility (SEU) as a function of subjective probability and utility in the mathematical models of decision considered by Edwards (3);

and (e) Atkinson's (1) conception of achievement motivation and anxiety about failure in risk-taking decisions.

The Lewin et al. (8) analysis of level of aspiration behavior involves the concepts of force, valence and subjective probability. Lewin et al. distinguish between the positive valence of future success Va(Suc A^n) at a particular task or event, Level n, as it appears to the subject when he sets his goal and the corresponding negative valence of future failure Va(Fai A^n). The first is positively related to the expected difficulty of attaining that level of success, while the second is inversely related to the expected difficulty. Further, Lewin et al. distinguish between the subjective probabilities of occurrence of these events. Two such probabilities are distinguished: (a) the subjective probability of success, Prob.(Suc A^n) at Level n; and (b) the subjective probability of failure, Prob.(Fai A^n) at Level n. The subjective probability of success is inversely related to difficulty, while the relationship of subjective probability of failure to difficulty level is direct. Thus, in this model the positive valence of future success decreases with an increase in subjective probability of success, while the negative valence of future failure decreases with increase in the subjective probability of failure.

The choice of a particular task or event is then assumed to be determined by a combination of these valences and subjective probabilities. Drawing from the work of Escalona,

they then postulate a weighted valence of success $^{o}Va(Suc\ A^{n})$ at Level n as a multiplicative function of the valence and subjective probability of success at that level:

$$^{o}Va(Suc\ A^{n}) = Va(Suc\ A^{n}) \times Prob.(Suc\ A^{n})$$

Similarly, the weighted valence of failure $^{o}Va(Fai\ A^{n})$ at Level n is given by:

$$^{o}Va(Fai\ A^{n}) = Va(Fai\ A^{n}) \times Prob.(Fai\ A^{n})$$

Driving forces are coordinated to each of these weighted valences and it is assumed that Level n will be selected if the resultant weighted valence at that level is a maximum.

Tolman (11) discussed the question of how his assumed cognitive and motivational variables issue into actual behavior. He stated principles which are concerned with molar acts identifiable by observing responses in more than one concrete test situation. Specifically, he discussed a rat's performance of lever pressing in a Skinner box, in terms of the following variables: the need-push for food (n_f), the positive valence of expected food (v_f), the expectation of food (exp_f), the need-push against work (n_{-w}), the negative valence of the expected work (v_{-w}), and the expectation of work (exp_w).

These variables are related to the performance vector (Pv) in the following equation:

$$Pv = f_x\ (n_f,\ v_f,\ exp_f) - f_y\ (n_{-w},\ v_{-w},\ exp_w)$$

The functions f_x and f_y are left unspecified, but Tolman suggested that it was possible that they might be

multiplicative. Tolman did not consider in this paper the possibility that, in some situations, there may be relationships between valences and expectations.

In a social learning theory framework, Rotter (10) developed an operational expectancy construct which was used, along with reinforcement value, in the prediction of goal-directed behavior. He also included the concept of behavior potential in his molar approach.

Behavior potential is determined from the behavior actually occurring when the individual makes a choice, and measures are relative so that in any situation in which alternatives are present, it is possible to order behavior potentials according to their strength.

According to this theory, expectancy is defined as "a probability or contingency held by the subject that any specific reinforcement or groups of reinforcements will occur in any given situation or situations"(10, p. 165). Furthermore, any given expectancy (E) is composed of (a) expectancies generalized (GE) from related situations or tasks, and (b) expectancy (E') which is specific to the situation at hand. Thus, with increasing experience at a task the role of E' increases while that of GE decreases in the determination of a given expectancy. Generally speaking, expectancies are learned, modified, or extinguished on the basis of reinforcement. Reinforcement value is determined from a choice

situation in which expectancy is held constant for the alternatives present.

The three concepts are related in Rotter's fundamental equation:

$$B.P._{x}, s_1, r_a = f(E_x, r_a, s_1, \text{and } R.V_a)$$

which is read as follows: "The potential for behavior x to occur in situation 1 in relation to reinforcement a is a function of the occurrence of reinforcement a following behavior x in situation 1 and the value of reinforcement a" (10, p. 180). Rotter was careful to avoid any precise mathematical formulation, but it was clear from his discussion (10, pp. 108-109) that he favors a multiplicative relationship. He extended his fundamental equation to cover sets of reinforcements, behaviors, and situations, but the essential relationship was maintained. He holds that reinforcement value and expectancy are, in general, to be independent and may be related only under specific conditions. This is in contrast to the inverse relationship between valence and subjective probability in the Lewin et al, analysis.

The SEU model (4) states that under conditions of uncertainty individuals behave as if they were attempting to maximize expected utility. According to this model, an individual's decisions underlying his choices among alternatives involving uncertain outcomes (outcomes with stated probabilities of attainment) are based on the utilities of the

entities (objects, actions, goals, etc.) and on the probabilities (subjective probabilities for most decision theorists) associated with the attainment of the entities. The decisions are a function of these two variables (utility and subjective probability) in that the individual seeks by his choices to maximize the sum of the products of probability and utility, i.e., he acts so as to maximize SEU = $\sum_i p_i^* u_i$ where p_i^* refers to the subjective probability corresponding to the objective probability of the ith outcome, and u_i is the utility or subjective value.

It should be noted that utility and subjective probability are generally considered to be independent in the SEU model. Thus Edwards wrote:

> If utilities and subjective probabilities are not independent, then there is no hope of predicting risky decisions unless their law of combination is known, and it seems difficult to design an experiment to discover that law of combination (3, p. 400).

In this respect this model appears to be closer to Rotter's approach, which provides a similar independence assumption concerning reinforcement value and expectancy.

Atkinson (1) brought in the roles of motive to achieve success and motive to avoid failure as biasing subjective probability in his model for risk-taking decisions. The impetus for Atkinson's model came from the relationships that McClelland (9) found between need for achievement and preference for moderate probabilities of success in ring toss

games, level of aspiration tasks, and vocation choice. The model involves six variables: the subjective probability, i.e., expectancy of success (P_s), the subjective probability of failure (P_f), the incentive value of success (I_s), the negative incentive value of failure (I_f), the motive to achieve success (M_s), and the motive to avoid failure (M_f). The subjective probabilities refer to situationally aroused expectancies in the individual concerning the probability of the consequences of instrumental acts. Positive incentives refer to potential rewards and goals, negative incentives to potential punishment and/or threat. Motives are conceived as dispositions within the person to approach certain classes of negative incentives. The general method of inferring strength of motive is through content analysis of thematic apperception. The incentive value of success (I_s) is taken as the complementary of the subjective probability of success (P_s), i.e., $I_s=1-P_s$. The negative incentive value of failure (I_f) is taken as $-P_s$. The variables are combined multiplicatively in the form of the following equation:

$$\text{Resultant Motivation} = (M_s \times P_s \times I_s) + (M_f \times P_f \times -I_f)$$

The resultant motivation function has a maximum at $P_s = .5$ if M_s is greater than M_f, and a minimum at $P_s = .5$ if M_f is greater than M_s. Thus, Atkinson predicts that individuals in whom M_f is greater than M_s will prefer tasks in which P_s is extremely high or low.

Note that this model differs from the Lewin et al. theory in giving motives and incentive values independent status. However, Atkinson suggests that the valence or utility of an incentive may be considered as a function of strength of motive and incentive value (1, pp. 363-364).

Statement of the Problem

It is apparent that the above five approaches are generally similar in the concepts they employ and the equations which they advance. In each, a resultant force is related to a maximized combination of valence and subjective probability factors.

However, there appears to be a discrepancy in the way they handle subjective probability. The basis of this discrepancy is whether or not it is independent of valences, reinforcement values, and utilities. Both Lewin et al. and Atkinson assume an inverse relationship between valence and subjective probability. Tolman does not consider the question. Rotter argues that the concepts of reinforcement value and expectancy are in general independent. Correspondingly, Edwards assumes independence between utility and subjective probability. In their experiments, decision theorists attempt to deal with situations and activities where this assumption of independence may be justified.

Feather (6), working toward a more comprehensive theory of decision, posited that the independence between utility

and subjective probability might be confined to particular types of situations and activities. He investigated the effects of varying subjective probability of attainment in a decision situation involving different goal objects. In his experiment, he hypothesized that the attainment attractiveness of a goal object would vary inversely with the associated success probability and that this assumed covariation is more apparent in ego-related than in chance-related situations, and more apparent in achievement-oriented than in relaxed situations. He also hypothesized that the choice potential associated with a goal object varies directly with the associated success probability, with this assumed covariation being less apparent in ego-related than in chance-related situations and less apparent in achievement-oriented than in relaxed conditions.

Thus, according to his first hypothesis, a person wishes to attain a goal object more as success becomes less likely for him if he is in a situation free from commitment. According to his second hypothesis, a person should be less inclined to desire the attainment of a goal object as success becomes less likely for him when he is committed to his choice or action.

Assumptions made in the first hypothesis consider the increase in value placed on achievement with increase in difficulty level and the relationship of this achievement value to different situations. The assumption here is that

success is valued more in an ego-related situation than in a chance-related situation, and more in an achievement-oriented situation than in a relaxed situation. For the second hypothesis, it is assumed that past experiences in commitment situations where there is the possibility of loss may lead to a tendency to choose the easy rather than the difficult, i.e., success probability should tend to have a constraining effect on choice. However, the value placed upon the difficult achievement is also assumed to be an important factor in a committed choice. Thus, it may happen that this value becomes the focal element in decision in ego-related and achievement-oriented situations even though the choice involves commitment.

The results Feather obtained generally supported the hypotheses. Subjects exhibited a greater tendency to wish to attain a goal object as its attainment became subjectively less likely in a situation where commitment was absent, and a greater tendency to wish to attain a goal object as its attainment became subjectively more likely in a situation where commitment was present.

The inverse relationship of the first hypothesis is consistent with the inverse relationship between positive valence of successful attainment and subjective probability in the analysis of level of aspiration behavior by Lewin et al. and the inverse relationship between incentive value of achievement and subjective probability in Atkinson's model.

However, it is contrary to the position of Rotter and Edwards, that reinforcement value and expectancy are independent.

The direct relationship of the second hypothesis is in line with the assumed constraining effect of subjective probability in the Lewin et al., Atkinson, Tolman, Rotter, and Edwards models.

Thus, it is apparent that the relationship is complex, since choice potential is also assumed to be related to achievement values which are taken as a function of the success probability associated with the goal objects and situational context. Hence, the relationship between choice potential and success probability is affected by the type of situation in which the choice is made.

Whereas Feather's study examined motive to succeed as a function of success probability, Atkinson, Bastian, Earl, and Litwin (2) examined decisions as a function of individual motives to succeed and to avoid failure. They offered as support for Atkinson's model (1) the fact that subjects with high motive for success preferred to shoot from moderately difficult distances in a shuffleboard game while high fear-of-failure persons preferred the extremely easy or difficult shots. They also obtained probability preferences among bets in a make-believe gambling situation where the value was low (30 cents) for one group and high (300 dollars) for another. In the betting preferences, the high need achievement group

preferred the intermediate (2/6, 3/6, 4/6) versus extreme (1/6, 5/6) risk bets significantly more often than the low need achievement group when the expected monetary value was only 30 cents. For the large expected value bets (300 dollars) the difference between the two motivation groups in tendency to prefer intermediate versus extreme risk was in the predicted direction but was not statistically significant.

In a later study, Feather (7) examined the way in which variation in reported probability of success and the structure of a task affects a person's expectation of success on the task. By structure of the task, he refers to the way in which the task is composed, i.e., its apparent length and complexity. The task the subjects were concerned with was an anagrams puzzle to be completed within two minutes. Subjects were presented with three reported probabilities of success (.20, .50, .80) and these were combined with tasks of different length (8, 11, or 14 anagrams) which gave nine experimental conditions. The subject estimated his chance of success after viewing his puzzle for ten seconds and being given a fictitious probability score from past performance of subjects of his own reference group.

Results obtained confirmed that mean probability estimates increase as the reported probability of success varied from .20 to .80, implying a strong relationship between expectation of success and reported probability. Interestingly, there was a systematic tendency for subjects to overestimate

their chances with low stated probabilities of success and to underestimate their expectation of success with high reported probabilities of success. Feather commented that this could be interpreted as reflecting the effect of values on expectations. Recalling the previous work of Atkinson on risk-taking models and his own beliefs, Feather offered the following:

> It may be that the high positive value of achievement when the odds are long biases subjective probability of success upwards. Correspondingly, when reported probability of success is high, the positive incentive value of success should be low and the negative incentive value of failure should be high. In this instance the high negative value of failure when the odds are short may bias subjective probability of success downwards. If this interpretation is valid we would expect the systematic departures of estimated probabilities from reported probabilities to become even more pronounced as a situation becomes more achievement oriented and success and failure become more important to the person (7, p. 235).

Feather's interpretation for the departures from reported probability can be examined by introducing a more ego-involving situation for the individual. With the addition of a positive incentive, e.g., by offering a substantial monetary reward for successful performance, the results suggest that higher expectancies will occur than under the neutral condition. Also, by introducing a negative involvement to the subject, e.g., threat of a strong electric shock for failure to succeed on the task, the results suggest that subjects will tend to give lower expectancies for successful

performance. In other words, under the condition of a monetary reward for successful performance, the motive to succeed should increase, thus tending to elevate the expectancies for success upwards from that of a smaller degree of positive involvement with the task. In this case the motive to achieve should be stronger than the motive to avoid and, therefore, the subject will tend to heighten his expectations. On the other hand, under the condition of threat of electric shock, the subject will be more cautious of the possible negative outcome of the task or event and, therefore, will tend to give lower expectation of success than occurred under less involved conditions. In this case the motive to avoid should increase in saliency and will take precedence over the motive to achieve. Therefore, it is expected that probabilities of success will decrease under such conditions.

Hypotheses

Thus, the following hypotheses are posited: (a) a situation of high objective probability of success depresses expectancy of success (subjects will underestimate the probability of success), while a situation of low objective probability of success enhances expectancy of success (subjects will overestimate their probability of success); (b) under the condition of threat of electric shock, subjects underestimate, to a greater extent, their chances of success in a situation of high objective probability of success than

they overestimate it in a situation of low objective probability of success; (c) under the condition of reward for success, the reverse is true, i.e., subjects underestimate, to a lesser extent, their chances of success in a situation of high objective probability of success than they overestimate it in a situation of low objective probability of success.

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CHAPTER II

METHOD

Subjects

The ninety subjects were forty-eight male and forty-two female high school students enrolled in six classes of a required course. Each class was randomly assigned to one of the six experimental conditions shown in Table I. From each class fifteen subjects were alternately selected to partici-

TABLE I

EXPERIMENTAL CONDITIONS

Reported Probability of Success	Motive to Succeed	Neutral	Motive to Avoid Failure
80%-Objective-Expectancy	(1)* 80%-succeed	(3) 80%-neutral	(5) 80%-failure
20%-Objective-Expectancy	(2) 20%-succeed	(4) 20%-neutral	(6) 20%-failure

*Denotes group.

pate in the experiment. The three 20-per cent-objective-expectancy groups represent subjects who were told that 20 per cent of those who had attempted the task in the past were successful, while the three 80 per cent-objective-expectancy

groups represent subjects who were told that 80 per cent of those who had attempted the task in the past were successful. The two motive-to-succeed groups represent subjects who were told that they would receive a monetary reward for success on the task (designed to make the motive to succeed more prominent). The two motive-to-avoid-failure groups represent subjects who were told that they would receive an electric shock for failure on the task (designed to make the motive to avoid failure more prominent). The two neutral groups were neither offered reward nor threatened with shock as a consequence of their performance.

Material

The materials consisted of two separate sheets of paper for each subject. On one was typed the following statement:

> An analysis of past results shows that students similar to you have 20 (80 for half of the groups) chances in 100 of successfully completing the task in the allowed time. Estimate what you feel are your chances (_____ chances in 100) of successfully completing the task in the allowed time. (Try to estimate your chances as accurately as possible.)

On the other was typed the following statement:

> After hearing the above statements about the task and seeing the statement of how others similar to you have performed on the task, which of the following statements seems to best describe your feelings about the upcoming task? (1) Do you feel ready to do the task and think you may be successful? (2) Or are you more concerned about possibly not having enough time and are fearful of not successfully completing the task? (Check your answer here....1_____ or 2_____.)

Procedure

The operation of an actual task was unnecessary in this experiment. The important factor was that the subjects *believed* a task (under the stated conditions) was upcoming. The following procedure was utilized.

The experimenter introduced himself to each group of subjects and said:

> We are going to conduct an experiment. It is essential that no one speak until we are finished. In the adjoining room I have set up the necessary equipment. You will be taken individually into the room and asked to perform a task which will be equally difficult for each of you.

At this point the experimenter introjected the following statement for the thirty subjects who were employed in the *motive-to-succeed* condition.

> If you are able to successfully complete the task within the allowed time, you will receive five dollars for your performance.

At the same point the experimenter introjected the following statement for the subjects employed in the *motive-to-avoid-failure* condition:

> If you do not successfully complete the task within the allowed time, you will receive a strong electrical shock. The amount of shock you will receive has been predetermined by prior experimentation. The shock will not physically harm you, but will be somewhat painful. If you are wearing a watch, please remove it before going into the next room for the task.

Both of the preceding statements were omitted for subjects employed in the *neutral* condition.

The experimenter then told all subjects:

"There is some information which I need to collect from each of you before we begin the experiment. I will pass you a sheet of paper. Read and answer it carefully!"

Each subject was then presented a sheet of paper with his name typed at the top and the following statement typed below:

> An analysis of past results shows that students similar to you have 20 (80 for half of the groups) chances in 100 of successfully completing the task in the allowed time. Estimate what you feel are your chances (_____ chances in 100) of successfully completing the task in the allowed time. Try to estimate your chances as accurately as possible.

The scores obtained from this statement are referred to as subjective-expectancy scores.

After collecting the statements, the experimenter gave the subjects a sheet of paper with the following statement and instructed them to answer it as accurately as possible:

> After hearing the above statements about the task and seeing the statement of how others similar to you have performed on the task, which of the following seems to best describe your feelings about the upcoming task? (1) Do you feel ready to do the task and think you may be successful? (2) Or are you more concerned about possibly not having enough time and are fearful of not successfully completing the task? (Check your answer here....1_____ or 2_____.)

The answers to this statement were used to ascertain that the subjects of each group were actually operating under the desired experimental conditions, i.e., motive-to-succeed or motive-to-avoid-failure. The motive classification of the

subject by this statement is referred to as the self-perceived motive.

After collecting these statements, the experimenter excused himself to "check" on the equipment in the adjoining room and returned momentarily to report that due to a malfunction in the equipment, the experiment would have to be continued the following day. This was done to insure that subjects in the following groups would be naive to the nature of the experiment. The following day the experimenter returned, explained the objectives of the experiment to the subjects, apologized for deceiving them, and awarded each with a token of appreciation for his participation.

CHAPTER III

RESULTS

The objective-expectancy score (the reported probability of success--20 or 80 per cent) under which the subject was operating was subtracted from each subjective-expectancy score. The resulting scores are referred to as the difference scores. Each subject's subjective expectancy score, difference score, and self-perceived motive are listed in Appendix A. Average difference scores for each condition are shown in Table II.

TABLE II

AVERAGE DIFFERENCE SCORES FOR EACH OF THE SIX CONDITIONS

Reported Probability of Success	Motive-to-Succeed	Neutral	Motive-to-Avoid-Failure	Mean
80%-Objective-Expectancy	- 1.33	- 5.33	-10.67	- 5.78
20%-Objective-Expectancy	20.33	10.20	- .33	10.29
Mean	9.50	2.44	- 5.50	

Subjects in the 80 per cent-objective-expectancy groups underestimated their own chances of success (-5.78), while subjects in the 20 per cent-objective-expectancy groups overestimated their own chances of success (10.09). An analysis of variance (Table III) revealed that the difference between these estimates was not attributable to chance ($F = 37.83$, $p < .001$). This result is consistent with the results presented by Feather (1). These results suggest that

TABLE III

ANALYSIS OF VARIANCE FOR THE DATA

Source of Variation	SS	df	MS	F	P
A: (Objective Expectancies)	5,276.24	1	5,276.24	37.83	<.001
B: (Motives)	3,006.45	2	1,503.23	10.78	<.001
AB: (Interaction)	855.00	2	427.50	3.16	<.05
Within (Error)	11,715.13	84	139.46		
Total	20,852.82	89			

when people begin a task with high objective probability of success, they tend to underestimate their chances; but when they begin a task with low objective probability of success, they tend to overestimate their chances.

Further analysis of the data also revealed a significant difference ($F = 10.78$, $p < .001$) between the average difference

scores of motive-to-succeed subjects (9.50), neutral subjects (2.44), and motive-to-avoid-failure subjects (-5.50). Motive-to-succeed subjects overestimated their chances of success significantly more than neutral subjects whose estimates were significantly different from motive-to-avoid-failure subjects. Thus, the results indicate that when people begin a task with a motive-to-succeed, they tend to overestimate their chances of success; and when they begin a task with a motive-to-avoid-failure, they tend to underestimate their chances of success.

The interaction between the objective-expectancy and motive dimensions was also significant ($F = 3.16$, $p < .05$). That is, subjects in the 80 per cent-objective-expectancy condition underestimated their chances of success more in the motive-to-avoid-failure condition (-10.67) than in the motive-to-succeed condition (-1.33); while subjects in the 20 per cent-objective-expectancy group overestimated their chances more in the motive-to-succeed condition (20.33) than in the motive-to-avoid-failure condition (-0.33). In other words, the data of this study suggest that people who begin a task with high objective probability of success tend to underestimate their chances of success more when they are motivated to avoid failure than when they are motivated to succeed; conversely, people who begin a task with low objective probability of success tend to greatly overestimate

their chances when they are motivated to succeed and possibly even underestimate slightly when they are motivated to avoid failure.

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CHAPTER IV

DISCUSSION

The results of this study clearly indicate the effects of objective probability (past success of other people) on an individual's expectancy of success at a task. With a high reported probability, an individual tends to underestimate his expectancy of success; with a low reported probability he tends to overestimate his expectancy of success.

Also clearly indicated is the effect of motive state on an individual's expectancy of success. An individual motivated to succeed tends to overestimate his expectancy of success; while an individual motivated to avoid failure tends to underestimate his expectations of success.

Another indication of the results of the present study is that a person in a situation of high objective probability of success, underestimates his probability of success more when he is motivated to avoid failure than when he is motivated to succeed. Conversely, when he is in a situation of low objective probability of success, he overestimates his probability of success more when motivated to succeed than when motivated to avoid failure.

The results of this study are consistent with the formulation of Lewin, Dembo, Festinger, and Sears (4). Recall that in the level of aspiration formulation of Lewin *et al.*, an inverse relationship between the negative valence of failure and subjective probability are assumed. Thus, with a high objective probability of success, the positive valence of the task would decrease while the negative valence of failure on the task would increase; this would tend to depress one's expectancy of success. On the other hand, with a low objective probability of success, the positive valence of the task would increase while the negative valence of failure would tend to remain low and might, therefore, bias one's expectancy of success upwards.

This study's results are also consistent with the model for risk-taking decisions developed by Atkinson (1957), which is similar to the Lewin *et al.* resultant valence theory of level of aspiration. Recall from Chapter I Atkinson's suggestion that the motive to succeed and the motive to avoid failure might be considered jointly, even though they were given independent status in his formulation. He was, however, in agreement with the Lewin *et al.* model in assuming an inverse relationship between valence and subjective probability. In discussing the interaction, Atkinson stated

> The assumption to be made seems a reasonable one: the relative strength of a motive influences the subjective probability of the consequences consistent with that motive--i.e., biases it upwards. In other words, the stronger the

> achievement motive relative to the motive to avoid failure, the higher the subjective probability of success, given stated odds. The stronger the motive to avoid failure relative to the achievement motive, the higher the subjective probability of failure, given stated odds or any other objective basis for inferring the strength of expectancy (1, p. 367).

The results of the present study are most directly consistent with the formulation of Feather (3, p. 235) who predicts, ". . . we would expect the systematic departures of estimated probabilities to become even more pronounced as a situation becomes more achievement oriented and success and failure become even more important to the person."

The results are also consistent with the basic formulation of Tolman (6). However, Tolman did not extend his formula to the extent of considering the relationship between valence and expectancy, except to suggest that it might possibly be multiplicative.

As stated in Chapter I, Rotter argues that his concepts of reinforcement value and expectancy are independent and correspondingly, Edwards assumes independence between his utility concept and subjective probability. Therefore, the results of the present study are inconsistent with these two formulations.

Further research in this area should be done to determine whether or not an individual's expectancy affects the way he approaches, perceives and handles a wide variety of tasks, events, or situations. Also of value would be the

determination of the effects on performance of variations in objective probability and consequences of performance.

Zipf (7) investigated the change in performance on a card-sorting task as a result of variations in motivation conditions. She manipulated three levels of success probability (.05, .30, .95); amount of reward offered (ten cents or one dollar); probability of reward being given if successful at the task (.50 or .90); and amount of increase in performance required to obtain the reward (1.1 or 2.0 times). She hypothesized better performance at the higher level of success probability. An analysis of variance revealed that the lower the reported probability of success, the greater was the increase in the subject's speed of performance. Further experimentation in this area could reveal valuable information regarding the relationships of these variables.

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CHAPTER V

SUMMARY

The experiment reported in this thesis was concerned with the effects of objective probability (reported past success of other people) and the consequences of performance (monetary reward, threat of shock, or neutral) on individuals' expectancy of success. Recent work has indicated that people generally tend to underestimate their expectancy when reported probability is low. Various theoretical formulations have suggested that positive and negative value intrinsically associated with the perceived difficulty of a task, together with individual motives, exert a biasing influence on desirability of the task and, thus, expectancy of success. Feather (1) predicted that departures of estimated probability would increase even further as a situation becomes more achievement oriented and success and failure become even more important. The present thesis attempted to demonstrate that prediction.

Ninety male and female high school students enrolled in six classes of a required course served as subjects for the experiment. Two levels of reported probability of success (.20 and .80) were factorially combined with three levels of consequences for performance (monetary reward for success as an attempt to escalate the motive to succeed on the task,

threat of electric shock to increase the negative consequences of failure, and a neutral condition in which neither a monetary reward nor threat of shock was introduced). Each group of subjects was randomly assigned to one of the six experimental conditions.

The subjects were told the consequence of their performance and were given the appropriate report of the success of past students. They then estimated their chances of successfully completing the task in the allotted time. A self-report was used to ascertain that the subjects were actually operating under the desired motive condition, i.e., motive to succeed or motive to avoid failure.

An analysis of variance performed on the difference scores (subject's expectancy minus objective probability) indicated significant effects on expectancy of both the reported probability of success and the motive conditions as well as a significant interaction between these factors. The results were (1) subjects given a high reported probability of success (.80) underestimated their expectancies of success while subjects given a low reported probability of success (.20) overestimated their expectancies of success; (2) subjects who were motivated to succeed overestimated their expectancies of success, while subjects motivated to avoid failure underestimated their expectancies of success; and (3) subjects given a high reported probability of success (.80) underestimated their chances of success more when motivated

to succeed, while subjects given a low reported probability of success (.20) overestimated their chances of success more when motivated to succeed than when motivated to avoid failure.

These results were consistent with previous theoretical formulations.

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APPENDIX

RAW DATA

Subject	Rew			Neut			Th.S.		
	80% Subj. Exp	Obj D	Exp S-P Mot	80% Subj. Exp	Obj D	Exp S-P Mot	80% Subj. Exp	Obj D	Exp S-P Mot
1	90	+10	MS	80	0	MAF	75	- 5	MAF
2	70	-10	MS	75	- 5	MS	90	10	MS
3	85	+ 5	MS	85	5	MS	75	- 5	MAF
4	70	-10	MS	80	0	MS	70	-10	MAF
5	80	0	MS	70	-10	MAF	80	0	MAF
6	80	0	MS	75	- 5	MS	70	-10	MAF
7	65	-15	MAF	70	-10	MAF	75	- 5	MAF
8	80	0	MS	70	-10	MAF	60	-20	MAF
9	85	+5	MS	50	-30	MAF	70	-10	MAF
10	70	-10	MS	80	0	MS	65	-15	MAF
11	75	- 5	MS	70	-10	MS	50	-30	MAF
12	80	0	MS	75	- 5	MAF	70	-10	MAF
13	85	5	MS	80	0	MAF	60	-20	MAF
14	75	- 5	MS	90	10	MS	65	-15	MAF
15	90	10	MS	70	-10	MAF	65	-15	MAF

Monetary Reward=Rew
Threat of Shock=Th.S.
Neutral=Neut
Self-Perceived Motive=S-P Mot
Motive to Succeed=MS
Motive to Avoid Failure=MAF
Objective-Expectancy=Obj Exp
Subjective Expectancy=Subj. Exp
Difference Score=D

Subject	Rew			Neut			Th.S.		
	20% Subj. Exp	Obj D	Exp S-P Mot	20% Subj. Exp	Obj D	Exp S-P Mot	20% Subj. Exp	Obj D	Exp S-P Mot
1	50	30	MS	35	15	MS	50	30	MS
2	75	55	MS	30	10	MS	10	-10	MAF
3	30	10	MS	20	0	MAF	20	0	MAF
4	50	30	MS	25	5	MS	25	5	MAF
5	50	30	MS	33	13	MS	10	-10	MAF
6	25	5	MS	10	-10	MAF	15	- 5	MAF
7	30	10	MS	50	30	MS	30	10	MAF
8	50	30	MS	30	10	MS	40	20	MS
9	15	- 5	MAF	40	20	MS	10	-10	MAF
10	80	60	MS	20	0	MS	10	-10	MAF
11	30	10	MS	35	15	MS	20	0	MAF
12	25	5	MS	30	10	MS	10	-10	MAF
13	40	20	MS	25	5	MS	15	- 5	MAF
14	35	15	MS	40	20	MS	10	-10	MAF
15	20	0	MS	30	10	MS	10	-10	MAF

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