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Devaluation of a Desired Object as a Function of Expectancy: A Refutation of Dissonance

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Devaluation of a Desired Object
As a Function of Expectancy:
A Refutation of Dissonance

by

Richard R. Izzett



A Thesis Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree of
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Life

Richard R. Izzett was born in Peoria, Illinois,
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Abstract

This study was designed to investigate the determinants of choice in a low investment situation prior to and after failure at a task. One hundred forty-seven subjects were randomly placed in one of four experimental groups-- subjects know they have a high probability of solving a task; subjects know they have a low probability of solving a task; subjects don't know their probability of solving a task but for one group it is high and for another it is low. Failure at solving a chosen task was induced in all subjects to determine the effect of failure on the determinants of choice. Subjects were questioned as to their need for experimental points--high need operationally defined as needing four points or more and low need as needing three points or less. On the basis of subjects' need for experimental points each of the four major treatment categories was divided into high and low need subjects per treatment category. Four-celled chi-square tests on the number of high need subjects choosing a task worth 5 points and low need subjects choosing a task worth 1 or 2 points per treatment category yielded high significant differences in that high need subjects chose tasks worth 5 points and low need subjects chose tasks worth 1 or 2 points, i.e., need is a significant determinant of choice in a low investment situation. Differences with respect to the knowledge of probability and no knowledge of probability treatments yielded marginal significance in that need is a greater determinant of choice when probability of success is not known, i.e., need was the sole determinant of choice when probability was given. Chi-square differences between high and low probability of success treatments did not yield any difference with respect to the number of high need subjects choosing a task worth 5 points.

After failure in solving tasks, chi-square tests again yielded significant differences between the number of high and low need subjects choosing a task worth 5 points. There was no difference in the probability not given treatment with respect to the number of high need subjects choosing task 5 between the high and low probability condition. However, in the probability given treatment condition there was a trend in the direction of fewer high need subjects choosing 5 in the low probability condition after failure.

The conclusions are that need is a significant determinant of choice in a low investment situation and that knowledge of the probability of success will also be a determinant of choice. Also, the results suggest a trend in the direction of failure at a task to increase the weight given to probability as a determinant of choice. Results of this study are in essential agreement with those of previous studies.

Devaluation of a Desired Object

As a Function of Expectancy:

A Refutation of Dissonance

Richard R. Izzett

Loyola University

Concerning theories of motivation there are two questions which must be answered. One is to account for an individual's choice of one alternative among a set of alternatives and the second is to account for the intensity or striving for the goal once it is initiated.

The present study is concerned primarily with the first question and represents an attempt to isolate the effects of differences in strength of expectancy and incentive on choice behavior. Also, an expectancy model (Tolman, 1959; Rotter, 1955; Edwards, 1954; MacCorquodale and Meehl, 1953; and Vroom, 1964) and Festinger's (1957) theory of cognitive dissonance are used to generate predictions of choice behavior following the experimental manipulation of probability of success, valence and failure at a task in a low investment situation.

Atkinson (1957, p. 360) defines expectancy as... "a cognitive anticipation usually aroused by cues in a situation, that performance of some act will be followed by a particular consequence." He also defines incentive (in the case of this paper valence) "as the relative attractiveness of a specific goal that is offered in a situation or the relative unattractiveness of an event that might occur as a consequence of some act."

In his theory of the motivational determinants of risk taking behavior, Atkinson (1958) defines the strength of the motivation to perform an act

to be a multiplicative function of the strength of the Motive (a disposition to strive for a certain kind of satisfaction), the expectancy that the act will have as a consequence the attainment of an incentive, and the value of the incentive (valence). However, Atkinson posits expectancy and incentive to be inversely related to one another, i.e., incentive (I) = 1-P (expectancy). In this case the more difficult the task the more attractive it is.

Alternatively, Rosen (1961a) states that it is unclear what predictions can be generated by Atkinson's theory when determinants other than difficulty contribute to the incentive value of success. The question therefore, arises as to what predictions can be made about choice behavior when there are already well established incentive values prior to obtaining information on which expectancies are based.

Rosen (1961b) states that occupational preferences are influenced by cultural values in addition to the perceived difficulty of the occupation and he demonstrated that valence and probability of success are directly related rather than inversely related as described by Atkinson, i.e., if the probability of attaining a goal is decreased the attractiveness of the goal is also decreased.

Rosen had subjects list in order of preference a number of occupations based not on what the subject wanted in terms of his interests but upon considerations such as salary and social standing or prestige value of each occupation. Following this Rosen had his subjects take a Differential Aptitude Test (DAT) to determine the probability that the subject would be able to achieve his most preferred occupation. He then gave the subjects falsified DAT results which either indicated that the subject would have a

good or poor chance of achieving this occupation. He then had his subjects again order in terms of preference which occupations he preferred the most. Rosen found that when Ss are given probability ratings for goals with high valence, those given low probability of success ratings were most likely to lower the valence of the goal. When Ss were given probability of success ratings for neutral valenced goals, those given high probability of success ratings were most likely to change the valence of the goal. In other words, there was an anchoring of attitudes only with high probability of success cognitions and highly valued goals or with low probability of success ratings and neutral goals.

Rosen considers the choice among goals to be a joint function of the valence of the goal and the probability of attaining it. For a given valence, the strength of the motivation to achieve the goal is a function of the probability and for a given probability of success the strength of the motivation is a function of the valence.

This is also in accordance with Vroom (1964) who states that "the force on a person to perform an act is a monotonically increasing function of the algebraic sum of the products of the valences of all outcomes and the strength of his expectancies that the act will be followed by the attainment of these outcomes (p. 18).

Thus, it is apparent that an individual who chooses among alternatives which involve uncertain outcomes, his behavior will be affected not only by his preferences among the alternatives but also by the degree to which he believes the outcomes to be probable (Tolman, Rotter, Edwards, Vroom, Rosen, MacCorquodale and Meehl).

Atkinson in a series of experiments has demonstrated that a subject is more willing to perform on a task when the incentive is \$2.50 than when it is \$1.25 no matter what the probability of winning providing the probabilities are kept constant across both conditions.

Edwards (1953, 1954) has demonstrated that two factors are most important in determining choices: general preferences or dislikes for risk-taking and specific preferences among probabilities. Subjects preferred low probabilities of losing large amounts of money to large probabilities of losing small amounts of money. He also found out that on positive expected value bets, subjects were more willing to accept long shots when playing for real money than when just playing for worthless chips. In other words, when a subject can really use the incentive they are more willing to take a chance and try for it than when they do not need it and cannot utilize it for any purpose. This finding was just the reverse for negative expected value bets.

In the above experiments the incentive was money--an object which most people do not have a surplus of. In both situations, (excluding the negative expected value situation), the subjects had nothing to lose--there was little investment.

A question can now be raised as to what would happen in a low involvement situation involving an incentive based not on money but on an object in which there may be "consumer's surplus" (a phrase coined by Marshall, 1948), i.e., what will be the determinants of choice in a situation where there are subjects with high need and also those with low need. Will subjects' need be the predominating factor governing choice? Will valence of goal

and probability of success affect high and low need subjects differently?

Based upon the findings of Atkinson and Edwards and Rosen, it is hypothesized that in a low investment situation: 1) choice of a task is based primarily on need; and 2) need will be more prominent in governing choice behavior in the absence of knowledge concerning probability of success than in its presence.

There is also an interest in what effect failure to obtain a goal will have upon the desirability of the goal.

Atkinson states that failure to obtain an easy goal will increase the desirability to obtain the goal for those subjects whose motive to achieve success (measured by the TAT) is greater than their motivation to avoid failure; and that failure to obtain a difficult goal will decrease the attractiveness of the goal for these same subjects.

On the other hand for those subjects whose motivation to avoid failure is greater than their motivation to achieve success, failure at an easy task will cause the individual to seek an easier task and if he fails at the most difficult task he should stay with it.

Such a theory, however, has no usefulness in generating predictions concerning those Ss whose motivation to approach success is equal to their motivation to avoid failure; nor is it of any use in generating predictions concerning randomly selected groups of Ss upon whom there are no TAT scores. Therefore, Vroom's expectancy theory and balance theories will be contrasted (Heider, 1944; Newcomb, 1953, Festinger, 1957).

Balance theories predict that a discrepancy between two cognitions produces discomfort which results in a motivation to utilize dissonance reducing mechanisms. The degree to which dissonance-reducing mechanisms

are utilized is assumed to be a direct function of the discrepancy between the two cognitions.

If a subject with high need fails to obtain an attractive goal more dissonance should result if the probability of obtaining the goal was high than if it was low. As a result more high need subjects should decrease the attractiveness of the desired goal when the probability of obtaining it was high than when it was low.

Expectancy theory on the other hand would predict just the opposite in that there will be a "salvage the process effect." Upon failing to attain a desired goal, probability will play a greater part in determining choice behavior than it did prior to failure, i.e., an S with a high need will stick with an easy task but shift for a difficult. However, an S with a low need is more flexible and will switch only if the alternative task is easy and not when it is difficult.

Method

Subjects and Design.--One hundred forty-seven Introductory Psychology students attending Loyola University served as subjects in this study. The general design was a 2 x 2 x 2 design in which subjects were given a choice of solving one of three tasks. Each task had a different value--the subjects could receive 5, 2 or 1 laboratory points (they need 5 per semester) for successful completion of the task.

Independent variables were: a) high or low probability of solving the 5 point task; b) the experimenter reporting the probability of solving each task before or after the subject had made his choice and c) the subject's "need" for laboratory points, operationally defined high (needing 4 or 5

points) or low (needing 1, 2, or 3 points).

Dependent variables were: a) subject's initial choice of task, and b) subject's choice of task after failing to solve the initial task in the allotted time.

Materials.--Three problem solving tasks were used in this study. The tasks were a) "wiggle blocks" which consisted of nine almost identical looking sub-blocks which if joined together in the appropriate way would form a cube; b) the Wais Object Block Design which consisted of nine separate cubes each of which had its sides painted either all red, all white, or half red and half white; and c) a sequence peg board with ten holes and nine pegs.

Accompanying each problem solving task was one of three 4 x 6 inch index cards upon which was printed one of the three numbers 1, 2, or 5. The index cards indicating the worth of the task (in terms of experimental points) were randomly placed with one of the three tasks prior to the S entering the experimental room.

A stop-watch was used to indicate when the S's two minute problem solving period was up.

Procedure.--All S's upon entering the experimental booth were seated at a table. Before each subject were the three problem solving tasks each with an accompanying number representing its worth to the subject in terms of experimental points. Expectancy of solving the most positively valent task (#5) was manipulated by stating to the S that his chances were .9, i.e., nine out of ten (high probability of success) of solving the task; or .2, i.e., two out of ten (low probability of success) of solving the

task; (see Appendix I for complete transcript of the instructions for each condition). The probability of solving the tasks worth 1 and 2 points was held constant throughout the experiment at 1.00.

All three tasks were capable of being solved but were sufficiently difficult that they could not be completed within a two minute time limit.

Knowledge of the probabilities of solving the task was manipulated by either stating to the S the objective probabilities of solving the tasks before he made his decision (Choice condition) as to which task he wanted to solve or after he made his decision (Preference condition).

After each S made his decision as to which task he wanted to work with (most and least) and after the probabilities of solving each task were explained to each S, all Ss were given a two minute time interval to solve their task.

Since all tasks were sufficiently difficult that they would not be completed within the two minutes, at the end of the problem solving period the Ss were told that they would be given one more chance to solve the problem or one of the other problems. They were again allowed to make a decision as to which task they wanted to work with. In this way an objective rating could be taken on the number of Ss who changed their tasks.

Upon failing to solve a task the second time the subjects were questioned about their thoughts and feelings of the experiment. Following this the Ss were briefed about the true nature of the experiment.

Results

At the conclusion of the experimental session, subjects were questioned regarding their need for experimental points in order to determine the number

of high and low need subjects in each of the four experimental treatments of C-C.9, C-C.2, P-C.9, and P-C.2.

Table 1 reports the number of high and low need subjects in each of the four experimental treatments.

Table 1
Number of High and Low Need Subjects
per Treatment Category

<u>Treatment Category</u>	<u>High Need Subjects</u>	<u>Low Need Subjects</u>
C-C.2 Probability Given .2	10	23
C-C.9 Probability Given .9	14	19
P-C.2 Probability Not Given.2	6	31
P-C.9 Probability Not Given .9	20	21

Four-celled chi-square tests indicate that there are no differences between the C-C.2 and C-C.9 treatments in regards to the number of high need and low need subjects falling into each treatment on the basis of need for experimental points ($X^2 = 1.05$, $df.=1$, N.S.). However, differences between the P-C.2 and P-C.9 treatments were tested by four-celled chi-square tests and results indicate that significantly more high need subjects fell into the P-C.9 condition ($X^2 = 8.78$, $df.=1$, $p < .01$).

There were no differences between C-C and P-C treatments in regards to the number of high and low need subjects falling into these overall treatment categories ($X^2 = .1448$, $df=1$, N.S.).

This difference between the P-C.9 and P-C.2 treatment categories with respect to the number of high need subjects should be kept in mind when reading the following results.

Is need a greater determinant of choice than probability in a low investment situation? The hypotheses predict that in a low investment situation, choice of a task is based primarily on need. Table 2 reports the initial choice of tasks as a function of probability.

Table 2
Initial Choice of Task as a Function of
Need and Probability

Treatment Category	High Need Condition		Low Need Condition	
	Task Choice 5	1 or 2	Task Choice 5	1 or 2
C-C.2 Probability Given .2	70% (7)	30% (3)	26% (6)	74% (17)
C-C.9 Probability Given .9	79% (11)	21% (3)	42% (8)	58% (11)
P-C.2 Probability Not Given .2	83% (5)	17% (1)	19% (6)	81% (25)
P-C.9 Probability Not Given .9	95% (20)	5% (1)	14% (2)	86% (19)

Note: Number in parentheses is N per cell.

Differences within treatment categories with respect to the number of high need subjects initially choosing 5 and low need subjects initially choosing 1 or 2 were tested by four-celled chi-square tests.

High need subjects who had the probability of success given to them prior to their choice of task initially chose the task worth 5 points

significantly more than low need subjects; also low need subjects who had their probability of success given to them prior to their choice of task initially chose a task worth 1 or 2 points instead of 5 points significantly more than the high need subjects ($\chi^2 = 10.615$, $df=1$, $p \approx .001$).

With respect to those treatment categories where the probability of success was not given prior to making an initial choice, high need subjects chose the task worth 5 points significantly more times than the tasks worth 1 or 2 points and low need subjects initially chose a task worth 1 or 2 points significantly more times than the task worth 5 points ($\chi^2 = 40.691$, $df=1$, $p < .001$). Thus, it appears that need is a significant determinant of choice in a low investment situation.

To determine if need is a greater determinant of choice than probability, differences with respect to the number of high need subjects initially choosing 5 or 1 and 2 in the probability given (.9) treatment and the probability given (.2) treatment were tested by means of four-celled chi-square tests. Also, differences with respect to the number of low need subjects initially choosing 5 or 1 and 2 in the probability given (.9) treatment and the probability given (.2) treatment were tested by means of four-celled chi-square tests. The same tests were made for the probability not given (.9) and probability not given (.2) treatments.

This method of utilizing four-chi-square tests (one for high need, and one for low need subjects for each of the two major treatment categories) was chosen over utilizing two chi-square tests to determine differences with respect to the overall number of subjects initially choosing 5 or 1 and 2 in the probability given (.9) and the probability given (.2) treatment, as well as with respect to the overall number of subjects initially choosing

5 or 1 and 2 in the probability not given (.9) and (.2) treatments because of the problem involved in combining treatments having significantly different N's with regards to high need subjects.

For the case where the probability of success is given, there is no difference between the .9 and .2 conditions with respect to the number of high need subjects initially choosing 5 or 1 and 2 ($\chi^2 = .2285$, $df.=1$, N.S.). Also, there is no difference between the .9 and .2 conditions with respect to the number of low need subjects initially choosing 5 or 1 and 2 ($\chi^2 = 1.114$, $df.=1$, N.S.). Thus, it is apparent that need is a greater determinant of choice than probability in a low investment situation.

For the case where the probability of success is not given, there is no difference between the .9 and .2 conditions with respect to the number of high need subjects initially choosing 5 or 1 and 2 ($\chi^2 = .728$, $df.=1$, N.S.) nor with respect to the number of low need subjects initially choosing 5 or 1 and 2 ($\chi^2 = .2984$, $df.=1$, N.S.).

Is need more of a determinant of choice when the probability of success is not given than when it is given? The hypotheses predict that need will be more prominent in governing choice behavior in the absence of knowledge concerning probability of success than in its presence. This is due to the fact that choice is based on need (valence) and probability (expectancy of attaining a goal). Data from table 2 are also utilized to test this hypothesis.

Two separate analyses were performed--one for high need subjects and one for low need subjects. Again utilizing four-celled chi-square tests the number of high need subjects in both C-C treatments initially

choosing 5 or 1 and 2 was compared to the number of high need subjects in both P-C treatments initially choosing 5 or 1 and 2. Results show that significantly more high need subjects initially choose 5 in the P-C conditions ($\chi^2 = 2.78$, $df.=1$, $p. < .10$).

Also, the number of low need subjects in both C-C treatments initially choosing 1 or 2 was compared to the number of low need subjects in both P-C treatments initially choosing 1 or 2. In this case, significantly more low need subjects initially chose 1 or 2 in the P-C treatments ($\chi^2 = 3.414$, $df.=1$, $p < .10$). Thus, it appears that need is more a determinant of choice when probabilities are not known than when probabilities are given. However, the difference is only marginally significant.

What effect does failure at a task have upon the determinants of choice? Upon failure, is need a greater determinant of choice than probability or does probability have more weight in governing choice?

The hypotheses predict that upon failure, probability will play a greater part as a determinant of choice than it had prior to failure (need will not be as powerful a determinant of choice) however, the specific predictions generated from dissonance theory and expectancy theory differ in regards to the effect of failure.

Dissonance theory predicts that if a high need subject fails to obtain an attractive goal more dissonance should result if the probability of obtaining the goal was high (.9) than if it was low (.2), and as a result more high need subjects should decrease the attractiveness of the desired goal when the probability of obtaining it was high than when it was low.

On the basis of dissonance theory, then, fewer high need subjects should choose 5 on the second trial within the .9 treatment conditions; within the .2 treatment conditions there should not be an occurrence of dissonance upon failure to attain the goal and just as many high need subjects should choose 5 on the second trial in the .2 treatment conditions. In other words, subjective probability of success should decrease in the .9 conditions and stay the same in the .2 conditions such that there should be no difference between the number of high need subjects choosing 5 in the .9 and .2 treatment categories.

Decision theory or expectancy theory would predict that the effect of failure would result in more emphasis being put on probability per se for the high need subjects, i.e., upon failure fewer high need subjects should pick 5 on the second trial in the .2 treatment categories than in the .9 treatment categories. The subjective probability of subjects should decrease in the .2 treatment such that the subject has a subjective probability or expectancy of success of less than .2. This should result in a "salvage the process" effect such that on the second trial there should be a greater number of high need subjects choosing 1 or 2 in the .2 treatment categories. Table 3 reports the second choice of task by subjects as a function of need, probability and failure.

To determine what effect failure had upon the determinants of choice, the number of high need subjects choosing 5 and 1 or 2 was compared to the number of low need subjects choosing 5 and 1 or 2 for the combined treatment categories in which the probability was initially given, i.e., for the combined C-C (.2) and C-C (.9) groups. This was also done for the combined P-C (.2) and P-C (.9) groups.

Table 3
 Second Choice of Task as a Function of
 Need, Probability and Failure

Treatment Category	High Need Condition Task Choice		Low Need Condition Task Choice	
	5	1 or 2	5	1 or 2
C-C .2 Probability given .2	(3) 30%	(7) 70%	(4) 17%	(19) 83%
C-C .9 Probability given .9	(10) 71%	(4) 29%	(8) 42%	(11) 58%
P-C .2 Probability Not Given .2	(3) 50%	(3) 50%	(3) 10%	(28) 90%
P-C .9 Probability Not Given .9	(12) 57%	(9) 43%	(5) 24%	(16) 76%

Note: Number in parentheses is N per cell.

Results indicate that for the C-C groups, significantly more high need subjects choose the task worth 5 points than low need subjects and that low need subjects choose the tasks worth 1 or 2 points ($X^2 = 4.25$, $df.=1$, $p < .05$). Also for the P-C groups significantly more high need subjects choose the task worth 5 points and significantly more low need subjects choose the tasks worth 1 or 2 points ($X^2 = 12.018$, $df.=1$, $p < .001$). Thus, it appears that need still determines choice but not to the extent that it had before failure was induced.

To determine if need is a greater determinant of choice than probability on second choice, differences with respect to the number of high need subjects choosing 5 or 1 and 2 on the second trial in the

probability given (.9) treatment and the probability given (.2) treatment were tested by means of four-celled chi-square tests. Also, differences with respect to the number of low need subjects choosing 5 or 1 and 2 in the probability given (.9) treatment and the probability given (.2) treatment were tested by means of four-celled chi-square tests. The same tests were made for the probability not given (.9) and probability not given (.2) treatments.

For the case where the probability of success is given, the difference between the .9 and .2 condition with respect to the number of high need subjects choosing 5 or 1 and 2 results in a chi-square of 2.536 ($X^2 = 2.536$, $df.=1$, $p<.2$). Also, the difference between the .9 and .2 conditions with respect to the number of low need subjects choosing 5 or 1 and 2 results in a chi-square of 2.021 ($X^2 = 2.021$, $df.=1$, $p<.2$). Thus, although there is not a significant difference between the high and low probability conditions, there is a trend for probability to play a more important part in choice behavior after failure for those subjects who initially were given probabilities of success.

For the case where the probability of success is not given, there is clearly no difference between the .9 and .2 conditions with respect to the number of high need subjects choosing 5 or 1 and 2 ($X^2 = .0241$, $df.=1$, N.S.) nor with respect to the number of low need subjects choosing 5 or 1 and 2 on the second trial ($X^2 = .988$, $df.=1$, N.S.).

Discussion

Perhaps the most general statement that can be made about this

study is that in a low investment situation need will be the primary determinant of choice of a goal among a set of alternative goals but that knowledge of the probability of success in obtaining the goal will decrease the weight of need in governing choice behavior.

According to decision making paradigms which state that choice of a goal among a set of alternatives is a multiplicative function of the valence of the goal and the probability of success in obtaining the goal it was predicted that in a low investment situation need would be a significant determinant of choice. Results indicate that high need subjects do in fact choose a goal which will meet their need (choosing a task worth 5 points over a task worth 1 or 2 points) and that low need subjects choose a goal among a set of goals which will meet their need (choosing a task worth 1 or 2 points over a task worth 5 points). The differences between the number of high and low need subjects picking a task worth 5 points or 1 and 2 points was significant at the .001 level, thus supporting the hypothesis. A finding worthy to point out here is that in a situation in which there may be a "consumer surplus", the subject does not seek the surplus but bases his choice primarily on need. This is evidenced by the fact that low need subjects choose tasks worth 1 or 2 points significantly more times than they did a task worth 5 points in the experimental treatment category where the subject did not know the probabilities of success prior to making his choice ($\chi^2 = 40.691$, $df.=1$, $p < .001$).

Concerning whether need is a greater determinant of choice than probability of success in a low investment situation, results indicate that in the treatment categories where the probability of success was given

prior to the subject making a choice there was no significant difference between the .9 probability of success condition and the .2 probability of success condition with respect to the number of high need subjects choosing a task worth 5 points and the number of low need subjects choosing a task worth 1 or 2 points, thus supporting the hypothesis that in a low investment situation need will be greater determinant of choice than probability of success.

Since most theories of individual decision making emphasize a multiplicative function of valence of goal (based on subject's need in the case of this experiment) and probability of success in attaining the goal, it follows that if the valence of all goals among a set of alternative goals are equal, choice of one goal among the set of alternatives will be based on the probability of success of attaining each of the alternatives. Also, if the probabilities of success for each goal are kept constant, choice of one goal among a set of alternatives should be based on the valence of each respective goal. Such was the case as stated above when high need subjects choose 5 and low need subjects choose 1 or 2 in the probability not given treatments.

Following from this finding, however, it was predicted that there should be a difference between the probability of success given treatment and probability of success not given treatment, i.e., the subjects in the probability not given treatment should base their decision on need and the subjects in the probability given treatment should base their decision on both valence of the goals and the probability of success of each goal such that more high need subjects should choose 5 in the probability of success not given treatment than in the probability of success given

treatment and more low need subjects should choose 1 or 2 in the probability of success not given treatment than in the probability of success given treatment. Marginal support in the predicted direction was given to these two hypotheses in that the differences between the two treatment categories with respect to high need subjects choosing 5 resulted in a chi-square of 2.78 ($\chi^2 = 2.78$, $df.=1$, $p<.10$), and the difference between the two treatment categories with respect to low need subjects resulted in a chi-square of 3.414 ($\chi^2 = 3.414$, $df.=1$, $p<.10$).

The fact that only marginal significance was obtained may be explained by the fact that the subjects were in a low investment situation. The subjects are required to obtain 5 experimental points by participating in psychology experiments through the course of a semester. Usually, a subject will get only 1 experimental point for 1 hour of participation. However, it had been made known to all subjects that the length of this particular experiment was only 15 minutes and that it was possible to obtain all the necessary experimental points for a semester in the course of 15 minutes.

Knowing this it is feasible to assume that the subjects in the probability given treatment would be willing to gamble 15 minutes time in order to obtain his required number of experimental points and thereby disregard somewhat the probability of success attached to each task.

The effect of experimentally induced failure upon the determinants of choice is not totally clear. Need is still a powerful determinant of choice as evidenced by the fact that in the probability given treatment, high need subjects choose the task worth 5 points significantly more times

than the low need subjects ($\chi^2 = 4.25$, $df.=1$, $p<.05$). This same finding holds true for the probability not given treatment ($\chi^2 = 12.018$, $df.=1$, $p<.001$). It is to be noted, however, that the obtained chi-square values for both major treatment categories are much smaller than the same chi-square obtained prior to failure ($\chi^2 = 10.615$, $p\approx.001$ and $\chi^2 = 40.691$, $df.=1$, $p<.001$ respectively).

Does this mean that need is not as great a determinant of choice after failure and that more recognition and weight is given to the probabilities involved? The hypotheses predict both in the case of dissonance theory and expectancy theory that probability will play a greater part as a determinant of choice after failure than it had prior to failure, however, the specific predictions generated from dissonance and expectancy theories differ.

According to dissonance theory, it was predicted that fewer high need subjects should choose 5 after failure in the .9 treatments due to the dissonance resulting between the two incompatible cognitions of "I need the 5 points," and "I failed to obtain the 5 points even though I had a high probability of obtaining them." however, with regard to the .2 treatment conditions, dissonance should not result because the two cognitions of "I failed to get the needed points" and "the probability of getting the needed points was low" are consonant. As a result just as many subjects should pick the same alternative in the .2 condition.

Therefore, dissonance theory predicts more recognition will be given to the probability of success after failure but due to the prediction of a decrease of subjects choosing 5 in the .9 condition after failure

and no difference in the number of subjects choosing 5 in the .2 condition, the effect of probability will be obscured in determining whether probability was given more weight in the decision after failure. However, mere inspection of the number of high need subjects choosing 5 in the .9 and .2 conditions before and after failure indicates that this prediction is not supported.

Decision theory predicted that upon failure those subjects with high need picking 5 in the .2 conditions would try and "salvage" what they can from the experiment when given a second chance and therefore would place more weight on the probabilities such that there would be a difference between the .9 and .2 conditions with respect to the number of high need subjects picking 5 after failure and the number of low need subjects picking 1 or 2. Although this hypothesis was not supported with respect to either of the major treatment categories, there was a trend in the probability given treatment category for more weight or emphasis being put on probability in determining choice. The difference between the number of high need subjects picking 5 in the .9 and .2 probability given treatment resulted in $X^2 = 2.536$, $df.=1$, $p<.2$ and for low need subjects was $X^2 = 2.021$, $df.=1$, $p<.2$.

This trend was not found in the probability not given treatment category. The fact that the trend was found in the probability given treatment but not in the probability not given treatment cannot be explained at this point and is one of the limitations of this study.

The fact that the trend was found in the probability given condition but was not significant can again be explained by the fact that the subject

was in a low investment situation and had so to speak "nothing to loose" by disregarding probability of success.

Finally, it should be noted that the findings of this study are in essential agreement with those found in other studies.

The finding that need is a determinant of choice of a goal among a set of alternatives as well as knowledge concerning probability of success in attaining alternative goals is in accord with the theoretical work of Tolman (1959), Rotter (1955), Edwards (1954) and Vroom (1964) and imparts a certain amount of empirical support to their contention that there are two determinants of choice in a situation involving alternative sets of goals--namely, the valence of each goal as well as the probability of attaining it. The findings also provide a basis for determining which factor, valence of goal or probability of attaining it, should be given most emphasis in a low investment situation. Finally, the findings concerning the effects of failure on the determinants of choice suggest that more emphasis is given to the probability of success factor after failure to attain a goal, but due to the inconclusive evidence at this point, this finding is highly tentative.

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Appendix I

Background of Experiment Explained to the Subject

and

Instructions Read to the Subject

Did you take the questionnaire administered on the first day of Class? (Every semester on the first day of class all Introductory Psychology students take the Walker-Nicolay Personal Reaction Schedule). The students were then told, the reason I ask is that this experiment is concerned with two of the four scales built into the questionnaire and each scale respectively measures if the student is high, medium or low anxious and high, medium or low motivated.

The interest in these two particular scales is as follows: the graduate department in psychology here at Loyola as well as at Northwestern and the University of Chicago often times have their graduate students serve internships or clerkships at the Research Veteran's Hospital on the south side of the city or at Kines V.A. in Maywood.

Often times the men on the staff of these institutions ask us in turn to run a study for them in our respective universities. The purpose of our running the studies is to establish a base rate of performance for a task on a "normal" population so that these men may in turn use this base rate of performance to compare with it the performance level of the men within their respective institutions.

Currently there are a large number of young men (19-22 years old) being placed within one of these two hospitals.

These men are there as a result of their war experiences in Viet Nam and they have been disabled in some manner or form; for example loss of limb. As a result of their war experiences or as a result of their injuries these men are either very high anxious or very low motivated.

What the hospital staff wants to know is if there is any relationship or correlation between anxiety and motivation and ability to perform on tasks involving spatial orientation or manipulative ability or manual dexterity.

The hospital staff has not made any predictions or hypotheses but are currently interested in establishing a base rate of performance. They have therefore, given me a standardized set of instructions to read to you. I cannot deviate from these instructions and I cannot answer any questions so you will have to listen very closely.

Since the instructions for this experiment are standardized, there will be no questions. The purpose of this experiment is to determine if there are any correlations between two scales on the PRS questionnaire and the Wais Object Assembly test which is designed basically as a manipulatory test.

You see before you three Wais Object Assembly tasks each of which has a number beside it. This number represents the number of points you will receive for this experiment if you pick that particular task. For example, if you choose task 1 you will receive one point for the experiment and if you choose task 2 you will get two points for the experiment and if you choose task 5 you will get 5 points for the experiment.

Usually Loyola only gives one point for one hour of participation

in an experiment or for a fraction of an hour. Sometimes a student will get two points but this will depend on the length of the experiment-- usually it is two hours long.

The length of this experiment is only about twenty minutes, however, we have permission to give up to five points for the experiment, but this will depend upon the individual subject.

Choice-Condition.--Before you make your choice as to which puzzle you want to work with I must first tell you that task 1 and 2 have an absolute certainty of being solved, however, the probability of obtaining the solution to task 5 is .9 (.2 in the low expectancy condition), that is, 9 out of 10 people usually solve task 5 (or only 2 out of 10 usually solve task 5).

One other thing I must tell you before you make your choice is that no matter which task you choose, should you fail to solve your task within a two minute time limit you will not receive any points for the experiment. The reason for this is two-fold: (1) we have set up our design in such a way that in order for us to make our correlations we need a completed task within two minutes or less--anything over two minutes we will not be able to use and you would be wasting your time as well as ours. (2) Secondly, we are interested in motivation and we hope that this in turn will motivate you to complete your task within a given two minute time limit.

Now out of the three tasks which would you prefer most to work with? Least?

At the end of the two minute task period the subject was told,

_____ (first name of subject), you did not complete your task. We cannot use the information because we need a completed task from beginning to end. If I were to ask you to leave now, you will not get any points and we won't be able to use your data. As an absolute, I will give you one more two minute time limit to give us a completed task. If you fail to solve a task then, I will have to ask you to leave for sure. Within the next two minutes you may continue to work on your same task or you may pick one of the other two. If you choose to keep working on your same task, I will have to take apart anything you may have done because we need a completed task from start to end. Now again, which task would you prefer most to work with and which least?

Preference Condition.--The introduction and background given to the subjects in this condition were the same as above with the exception of the time in the instructions in which the probabilities of solving each task were given to the subject. Following the introduction to the experiment, the subjects in this condition were told, one other thing I must tell you before you make your choice is that no matter which task you choose, should you fail to solve your task within a two minute time limit you will not receive any points for the experiment. The reason for this is two-fold: (1) we have set up our design in such a way that in order for us to make our correlations we need a completed task within two minutes or less--anything over two minutes we will not be able to use and you would be wasting your time as well as ours. (2) Secondly, we are interested in motivation and we hope that this in turn will motivate you to complete your tasks with a given given two minute time limit.

Now out of the three tasks which would you prefer most to work with? Least?

After the subject made his decision as to which task he wanted to work with he was then told, I can now tell you that task 5 has a .9 (.2 in the low expectancy condition) probability of being solved, that is 9 out of 10 people (2 out of 10 people in the low expectancy condition) usually solve this task within the given two minute time limit. Task 1 and 2 respectively have an absolute certainty of being solved.

The instructions following the failure to solve the task within the two minute time limit were the same as in the Choice condition.

Approval Sheet

This thesis submitted by Richard R. Izzett has been read and approved by one member of the Department of Psychology.

The final copies have been examined by the director of the thesis, and the signature which appears below verifies the fact that any necessary changes have incorporated, and that the thesis is now given final approval with reference to context, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

Date

Signature of Advisor