Performance at a difficult task in relation to initial expectation of success, test anxiety, and need achievement[1]

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The present investigation is based upon a recent study by Sarason (1961) which was concerned with the effects of anxiety and threat on the solution of a difficult task Sarason used two different sets of instructions in his study All Ss were first told that their task was to solve a set of anagrams Ss in one experimental condition (which we will call the Moderately Difficult condition) were then informed that the anagrams were harder than most, that they may not be able to finish all of them, and that they were not to worry if they were not able to complete the task Ss in the other experimental condition (which we will call the Easy condition) were told that high school students of above average intelligence and most college students should be able to complete the task successfully, and that they had 18 minutes in which to complete it All Ss then worked at the same set of 13 difficult anagrams

Sarason assumed that the Easy condition would involve "personal threat" since Ss in this condition would quickly discover that they could not solve all the anagrams. In this situation of "personal threat," high-anxious Ss would tend to respond with more personalized anxiety responses Hence it was predicted that low-anxious Ss would tend to obtain higher scores than high-anxious Ss In contrast, the Moderately Difficult situation should be relatively free of "personal threat" since instructions reassured Ss that the anagrams were difficult and that they may not be able to complete them all successfully in the time allowed Sarason argued that under these conditions low-anxious Ss would

1 Earlier versions of this paper were presented at the Annual Conference of the Australian Branch of the B P S (Melbourne, 1963) and at the Annual Convention of the A P A (Philadelphia, 1963)

not tend to perform better than high-anxious Ss His results showed that Ss classified as high in Test Anxiety, as assessed by the Test Anxiety Scale, obtained relatively low performance scores in the Easy situation as predicted, and relatively high performance scores in the Moderately Difficult situation

The present investigation is essentially a replication of Sarason's procedure. The main procedural difference is that measures of expectation of success at the task and *n*Ach are obtained in the present study, as well as measures of Test Anxiety The theoretical rationale of the present study also differs from Sarason's in that it involves a "motive-expectancy-value" model described in recent publications (Feather, 1961, 1963c, 1963d). In this approach motivation is conceived as the multiplicative product of a motive, an expectation, and an incentive value. The motive is assumed to be a relatively stable personality disposition, the expectation and the incentive value are assumed to be more easily modified and determined by the present situation As applied to the achievement context the theory asserts that motivation to achieve success is the multiplicative product of motive to achieve success (M_s), subjective probability of success (P_s), and positive incentive value of success (I_s). Similarly it is assumed that motivation to avoid failure is the multiplicative product of motive to avoid failure (M_{af}), subjective probability of failure (P_f), and negative incentive value of failure (I_f) Dependencies are assumed between incentive values and subjective probabilities Specifically it is assumed that $I_s = 1 - P_s$ and that $I_f = (1 - P_f) = -P_s$ These assumptions imply that both motivation to achieve success and motivation to avoid failure will be at a maximum value when $P_s = 50$ (Atkinson, 1957)

Total motivation to perform the task is assumed to comprise the following component motivations (*a*) achievement-related motivation to perform the task, and (*b*) extrinsic motivation to perform the task Achievement-related motivation to perform the task is defined as the resultant of motivation to achieve success at the task and motivation to avoid failure at the task[2] and is positive (approach) for the Ss in whom $M_s > M_{af}$ and negative

2 Achievement-related motivation for given values of M_s, M_{af}, and P_s may be calculated from the expression $(M_s - M_{af})\ P_s\ (1 - P_s)$

(avoidance) for Ss in whom $M_{af} > M_s$ Achievement-related motivation, whether positive or negative, has its maximum value at $P_s = 50$ Extrinsic motivation refers to sources of motivation to perform the task other than achievement-related motivation Extrinsic motivation (e g, desire to please E) is obviously necessary if an S in whom $M_{af} > M_s$ is to perform the task at all (Feather, 1961), since his achievement-related motivation is negative In the present investigation we assume that extrinsic motivation to perform the task is constant across experimental conditions

If we assume that instructions in the Moderately Difficult situation determine initial expectations of success below but relatively close to $P_s = 50$ and that instructions in the Easy situation determine initial expectations of success well above $P_s = 50$, then it follows from the above theoretical statement that total motivation to perform the task among Ss in whom $M_s > M_{af}$ should at the outset be stronger in the Moderately Difficult situation than in the Easy situation. Among Ss in whom $M_{af} > M_s$, however, total motivation to perform the task should at the outset be weaker in the Moderately Difficult situation than in the Easy situation

Predictions about performance differences between the two situations depend upon whether or not we assume that P_s remains relatively stable or changes as S performs the task If we assume that the P_s determined by instructions tends to remain at much the same level throughout task performance then it follows that total motivation to perform the task should also remain relatively stable, since change in P_s is assumed to be the basic dynamic principle mediating a change in motivation (Feather, 1961, p 554) In this case we would predict that Ss in whom $M_s > M_{af}$ should tend to perform better in the Moderately Difficult situation than in the Easy situation, and, conversely, that Ss in whom $M_{af} > M_s$ should tend to perform better in the Easy situation than in the Moderately Difficult situation These predictions assume that higher total motivation to perform the task determines higher performance scores.

If, on the other hand, we assume that P_s will tend to decrease as S performs the difficult task and undergoes failure, predictions

about performance differences between the two situations would be just the reverse A decrease in P_s among Ss in whom $M_s > M_{af}$ would determine a decrease in total motivation to perform the task in the Moderately Difficult situation, and an increase followed by a decrease in total motivation in the Easy situation (Feather, 1961, p 555, Table 1) Hence for these Ss we would predict superior performance in the Easy situation A decrease in P_s among Ss in whom $M_{af} > M_s$ would determine an increase in total motivation to perform the task in the Moderately Difficult situation, and a decrease followed by an increase in total motivation in the Easy situation (Feather 1961, p 555, Table 1) Hence for these Ss we would predict superior performance in the Moderately Difficult situation These predictions also assume that higher total motivation to perform the task will be reflected in higher performance scores

The question arises as to which of the above contrasting predictions we intend to test Our decision will be governed by evidence about whether it is reasonable to assume a systematic decrease in P_s during task performance If the evidence suggests that this is a reasonable assumption then the latter predictions are tested in the present study If instead the evidence suggests that P_s tends to remain stable during task performance then the present investigation tests the former predictions

Method

Ss were 168 male part-time students attending a vacation school in introductory psychology at the University of New England in 1962 For purposes of testing, the total group was split into two separate groups of approximately equal size Ss first completed the Test Anxiety Questionnaire (Mandler & Sarason, 1952) which was scored as in previous investigations (e g, Feather, 1961, 1963b) One week later they were tested for *n*Ach under neutral conditions using the standard procedure (McClelland, Atkinson, Clark, & Lowell, 1953) The following four pictures were presented 2, 48, 1, and 7 (using numbers assigned by Atkinson [1958]) Interscorer reliability[3] for scoring the TAT *n*Ach was $r = 89$

Following the test of *n*Ach, Ss completed the Anagrams Test The different sets of instructions for the Moderately Difficult condi-

3 The author wishes to thank Graeme Halford for his assistance with the reliability check

tion and for the Easy condition were randomly distributed among Ss Eighty-two Ss received the instructions for the Moderately Difficult condition, and 86 Ss received the instructions for the Easy condition The substance of these instructions has been indicated above The detailed instructions may be found in Sarason's (1961) original report which also contains the list of 13 difficult anagrams employed in the present study All Ss worked for 18 minutes at this set of anagrams

Prior to working at the anagrams and following their reading of the instructions, Ss were required to rate their chances of successfully completing all the anagrams This rating provided a measure of initial P_s at the task for each S The rating was made on a 5″ scale numbered from 0 to 100 in equal steps of 20, with the statement "No chance at all" at one extreme of the scale, the statement "An even chance" at the middle of the scale, and the statement "Completely certain" at the other extreme of the scale In a post-performance questionnaire Ss also rated what they thought their chances were of successfully solving all the anagrams when they had worked for 9-10 minutes at the test (about half the total time allowed), and just before they were asked to stop working at the test These ratings were also made on a 5″ scale of the type described above, and they provided measures of "middle" and "terminal" expectations of success

In the post-performance questionnaire Ss estimated the degree to which they felt anxious or worried about their performance, and the degree to which they felt disappointed about their performance, as they worked at the Anagrams Test Ss checked the appropriate response on Likert-type scales with five categories ranging from "Not worried or anxious at all" or "Not disappointed at all" to "Extremely worried or anxious" or "Extremely disappointed" These responses were scored from one to five in the direction of increasing strength of the feeling

The mean *n*Ach and Test Anxiety scores for Ss in the two experimental conditions were as follows for the Moderately Difficult condition, mean *n*Ach = 4 49, SD = 4 04, mean Test Anxiety = 95 82, SD = 25 59, for the Easy condition, mean *n*Ach = 2 92, SD = 4 37, mean Test Anxiety = 96 21, SD = 28 78

Results

Analysis of Probability Estimates

Table 1 presents mean initial, middle, and terminal probability estimates for the Moderately Difficult situation and for the Easy situation.

As expected the mean initial probability estimate is sig-

Table 1 Mean initial, middle, and terminal probability estimates for Moderately Difficult ($N = 82$) and Easy ($N = 86$) experimental conditions.

Probability estimate	Moderately Difficult		Easy	
	M	SD	M	SD
Initial	41	22	59	21
Middle	27	22	.25	25
Terminal	25	30	23	30

nificantly greater in the Easy situation ($F = 27\ 77$, $df = 1/166$, $p < 001$), i e, Ss in the Easy situation initially report that they are fairly confident of being able to solve all the anagrams successfully The probability estimates decrease with experience at the task for both the Moderately Difficult condition and the Easy condition These differences are statistically significant when tested by analysis of variance[4] (Collier, 1958) For differences between initial, middle, and terminal estimates, $F = 73\ 94$, $df = 2/312$, $p < 001$ For the interaction of estimates and situation, $F = 11\ 37$, $df = 2/312$, $p < 001$ These results are consistent with an assumption of a decrease in expectation of success (P_s) as S experiences failure at the difficult anagrams, the decrease being more rapid in the Easy situation where S knows that he has a limited time to work at the task

Analysis of Performance Differences

Since the preceding evidence suggests that decreases in P_s occurred as Ss performed the difficult anagrams, in line with the above theoretical analysis it is predicted that Ss in whom $M_s > M_{af}$ should tend to obtain higher performance scores in the Easy than in the Moderately Difficult situation, and that Ss in whom $M_{af} > M_s$ should tend to obtain higher performance scores in the Moderately Difficult than in the Easy situation Table 2 presents mean performance scores (number of anagrams correctly answered) for Ss classified as High *n*Ach–Low Test Anxiety and

4 To achieve equal *N*s one S was randomly excluded from the Moderately Difficult condition and five Ss were randomly excluded from the Easy condition Three levels of Test Anxiety were also included in the analysis

Table 2 Mean performance scores in Moderately Difficult and Easy experimental conditions for groups contrasted with respect to *n*Ach and Test Anxiety.

Experimental condition	*n*Ach	Test Anxiety	Assumed motive relationship	Number of correct anagrams		
				N	M	SD
Moderately Difficult	High	Low	$M_s > M_{af}$	20	6 90	3 16
Easy	High	Low	$M_s > M_{af}$	15	4 73	2 35
Moderately Difficult	Low	High	$M_{af} > M_s$	20	4 55	2 71
Easy	Low	High	$M_{af} > M_s$	15	5 53	3 81

for Ss classified as Low *n*Ach–High Test Anxiety (in terms of median splits). In Ss classified as High *n*Ach–Low Test Anxiety it is assumed that $M_s > M_{af}$, in Ss classified as Low *n*Ach–High Test Anxiety it is assumed that $M_{af} > M_s$ (Atkinson & Litwin, 1960, Feather, 1961) Scores for *n*Ach of 4 and above are classified as High, below 4 as Low Test Anxiety scores of 96 and above are classified as High, below 96 as Low [5]

Results in Table 2 are opposite to prediction A 2 × 2 analysis of variance applied to the data reveals no significant main effects but a statistically significant interaction ($F = 4\ 64$, $df = 1/66$, $p < 05$) Ss in whom it is assumed that $M_s > M_{af}$ (the High-Low Ss) tend to obtain higher scores in the Moderately Difficult situation than in the Easy situation, whereas Ss in whom it is assumed that $M_{af} > M_s$ (the Low-High Ss) tend to obtain higher scores in the Easy situation than in the Moderately Difficult situation The former simple effect is statistically significant ($F = 4\ 10$, $df = 1/66$, $p < 05$) but the latter is not This pattern of results would be the one predicted on the assumption of a relatively stable P_s set by the initial instructions and relatively unmodified by task performance [6]

Table 3 presents the correlations of performance scores (num-

5 To achieve proportional cell frequencies for the 2 × 2 analysis of variance one S was randomly excluded from the High-Low group in the Moderately Difficult experimental condition and eight Ss were randomly excluded from the Low-High group in the Easy experimental condition

6 High-Low Ss perform better than Low-High Ss in the Moderately Difficult situation ($F = 5\ 63$, $df = 1/66$, $p < 05$) but not in the Easy situation where the mean difference is insignificant

Table 3 Correlations of performance scores with Test Anxiety, *n*Ach, and initial, middle, and terminal probability estimates for Moderately Difficult ($N = 82$) and Easy ($N = 86$) experimental conditions

	Moderately Difficult	Easy
	Performance level	Performance level
Test Anxiety	− 14	− 06
*n*Ach	25[c]	− 11
Initial probability estimate	31[d]	14
Middle probability estimate	60[e]	55[e]
Terminal probability estimate	60[e]	61[e]

[c]$p < 025$, one-tailed test
[d]$p < 005$, one-tailed test
[e]$p < 0005$, one-tailed test.

ber of anagrams correctly solved) with Test Anxiety scores, n*Ach* scores, and initial, middle, and terminal probability estimates.[7]

Table 3 shows that there is no significant relationship between Test Anxiety and performance in either the Moderately Difficult or the Easy situations Following Sarason's (1961) results we might have expected a positive correlation between performance level and Test Anxiety scores in the Moderately Difficult situation and a negative correlation between these scores in the Easy situation, with a significant difference between the correlations But the results do not support this expectation The present investigation thus fails to replicate the results obtained by Sarason It is interesting to note that mean performance scores in the present study exceed those reported by Sarason[8] For the Moderately Difficult situation these means are as follows Present study, $M = 6\ 00$, $SD = 3\ 04$, $N = 82$, Sarason's study, $M = 4\ 18$, $SD = 2\ 91$, $N = 88$ ($t = 3\ 97$, $df = 168$, $p < .01$) For the Easy situation the means are as follows Present study, $M = 6\ 03$, $SD = 3\ 06$, $N = 86$, Sarason's study, $M = 4\ 43$, $SD = 2\ 56$, $N = 88$ ($t = 3\ 72$, $df = 172$, $p < 01$) Ss in the present study apparently found the anagrams less difficult

Table 3 shows that there are significant positive correlations between performance scores obtained by Ss in the Moderately

7 Inspection of the scatter plots of performance scores with Test Anxiety and performance scores with *n*Ach reveals no curvilinear trends

8 The means and *SD*s for Sarason's study are calculated from his Table 2 (Sarason, 1961, p 166)

Difficult situation and both *n*Ach scores and initial probability estimates These correlations are not significant for the Easy situation Indeed in this situation, the correlation between performance scores and *n*Ach is slightly negative For both experimental conditions there are highly significant positive correlations between performance scores and middle and terminal probability estimates These estimates, made by Ss in the post-performance questionnaire, would be influenced by their own success and failure at the task, whereas the initial probability estimates made prior to task performance could not be so affected It is likely then that the positive correlations between performance level and middle and terminal probability estimates reflect the influence of success and failure on expectation, those Ss with predominant success tending to report higher estimates than those with predominant failure

Analysis of Supplementary Data

Table 4 presents intercorrelations of *n*Ach, Test Anxiety, initial probability estimates, reported anxiety, reported disappointment, and performance level for the Moderately Difficult situation Table 5 presents the corresponding intercorrelations for the Easy situation.

These tables show that initial probability estimates are positively correlated with *n*Ach scores in the Moderately Difficult situation, and negatively correlated with these scores in the Easy situation The correlation of initial probability estimates with

Table 4 Intercorrelations of measures for Moderately Difficult experimental condition ($N = 82$)

	*n*Ach	Test Anxiety	Reported anxiety	Reported disappointment	Performance level
Initial probability estimate	.20[b]	− 27[a]	− 29[a]	− 25	31[a]
*n*Ach		− 15	− 15	−.15	25[b]
Test Anxiety			51[c]	39[c]	− 14
Reported anxiety				66[c]	−.22[b]
Reported disappointment					− 48[c]

[a]$p < 01$, one-tailed test.
[b]$p < 05$, one-tailed test
[c]$p < 0005$, one-tailed test

Table 5 Intercorrelations of measures for Easy experimental condition ($N = 86$)

	nAch	Test Anxiety	Reported anxiety	Reported disappointment	Performance level
Initial probability estimate	− 20[b]	− 39[c]	− 08	− 02	14
nAch		03	− 01	08	− 11
Test Anxiety			40[c]	20[b]	− 06
Reported anxiety				62[a]	− 31[a]
Reported disappointment					− 58[c]

[a]$p < 01$, one-tailed test
[b]$p < 05$, one-tailed test
[c]$p < 0005$, one-tailed test

Test Anxiety scores is negative in both situations These relationships are generally consistent with previous theory (Feather, 1963a) and are discussed at length in a related paper (Feather, 1965).

Tables 4 and 5 also indicate that reported anxiety scores and Test Anxiety scores are positively correlated in both situations If we assume that Test Anxiety scores reflect strength of the motive to avoid failure (Atkinson & Litwin, 1960) and that strength of motivation to avoid failure in a situation may be reflected in the level of anxiety or worry about failure reported by Ss (Feather, 1963d), then this result is consistent with the theoretical expectation that motivation to avoid failure should tend to be higher when motive to avoid failure (M_{af}) or dispositional anxiety is relatively strong The mean reported anxiety score is significantly lower in the Moderately Difficult situation than in the Easy situation (For Moderately Difficult situation, $M = 2\ 40$, $SD = 1\ 15$, for Easy situation, $M = 2\ 81$, $SD = 1\ 27$, $t = 2\ 18$, $df = 166$, $p < 05$) This result is consistent with the theoretical expectation of an increase in motivation to avoid failure in the Easy situation as P_s decreases (or P_f increases) In the present model this theoretical expectation is based on a "varying incentive" assumption in which $I_f = -(1 - P_f)$ for all values of P_f This assumption implies that when initial $P_f < 50$ (i e, an Easy situation) motivation to avoid failure would increase to a maximum as P_f rises to 50 and thereafter would decrease with

further rise in P_f The differences in reported anxiety obtained in the present study are also consistent with a "fixed incentive" assumption (Feather, 1963d) in which I_f is fixed by the initial P_f and thereafter does not change with failure The "fixed incentive" assumption implies that motivation to avoid failure would continue to rise as P_f rises with failure at the task, and the increase would be more rapid when M_{af} is strong and when initial P_f is low Both the "varying incentive" and the "fixed incentive" assumptions provide a theoretical basis for describing the Easy situation as more stressful Further research is needed to test these two assumptions

Ss in the Easy situation tend to report more disappointment about failure ($M = 3\ 20$, $SD = 1\ 27$) than do Ss in the Moderately Difficult situation ($M = 2\ 68$, $SD = 1\ 27$), i e, reported disappointment tends to be greater when the task is presented as relatively easy (cf, Feather, 1963c). The difference between means is statistically significant ($t = 2\ 64$, $df = 166$, $p < 01$). Tables 4 and 5 show, however, that reported disappointment scores and initial probability estimates are negatively correlated in the Moderately Difficult situation, but unrelated in the Easy situation This negative correlation may be attributed to the tendency for Ss with high initial probability estimates to perform better in the Moderately Difficult situation. These Ss suffer relatively less failure and tend to report less disappointment about their performance When performance level is controlled by partial correlation, the negative correlation between reported disappointment scores and initial probability estimates falls to -12 in the Moderately Difficult situation

Finally, Tables 4 and 5 show that reported disappointment and reported anxiety scores are negatively correlated with performance level in both situations These correlations indicate that Ss who obtained relatively low scores on the test tend to report more disappointment about failure and more anxiety about failure According to the "motive-expectancy-value" approach a large amount of failure at the task would tend to reduce expectations of success to a low level and to determine "motivational disappointment" (cf, Feather, 1963c) Furthermore, a progressive increase in motivation to avoid failure, indicated by reported

anxiety, would be implied by a "fixed incentive" assumption as predominant failure determines increases in expectations of failure (Feather, 1963d) Using the same argument we would expect reported anxiety scores and reported disappointment scores to be positively correlated as indeed they are

Discussion

The results of the present study reveal an interesting contradiction The performance differences obtained are consistent with an assumption that P_s would tend to remain stable during task performance but the probability estimates and the supplementary data suggest that decreases in P_s did in fact occur If we accept the assumption of a decrease in P_s with failure at the task and keep within the framework of our model, then the performance data for High-Low Ss suggest that, although total motivation may have changed during task performance as assumed, it still maintained a higher level for High-Low Ss in the Moderately Difficult situation than for these Ss in the Easy situation The positive correlation of performance scores with *n*Ach scores in the Moderately Difficult situation suggests that motivation to achieve success was more reliably elicited in this situation Furthermore, due to the reassuring nature of the instructions, motivation to avoid failure may have remained at a low level in this situation These two factors may have determined relatively higher levels of total motivation to perform the task and thus higher performance scores among High-Low Ss in the Moderately Difficult situations than for these Ss in the Easy situation In addition, if P_s decreased more rapidly in the Easy situation (as is suggested by the data in Table 1), we would expect that total motivation among the High-Low Ss would quickly change in this situation and may have dropped to a low level fairly early in performance A more detailed analysis of differences between initial, middle, and terminal probability estimates (Table 6) does in fact show that these estimates tended to decrease to a very low level for High-Low Ss in the Easy situation Thus total motivation to perform the task may have remained at a relatively higher level for these Ss in the Moderately Difficult situation due to a slower rate of decline in P_s in this

Table 6 Mean probability estimates for Moderately Difficult and Easy experimental conditions for groups contrasted with respect to *n*Ach and Test Anxiety

Experimental condition	*n*Ach	Test Anxiety	Mean probability estimates			
			N	Initial	Middle	Terminal
Moderately Difficult	High	Low	20	47	26	24
Easy	High	Low	15	56	18	10
Moderately Difficult	Low	High	20	28	23	23
Easy	Low	High	15	54	.20	23

situation Finally, if a "fixed incentive" assumption (Feather, 1963d) were made for changes in motivation to avoid failure we would expect total motivation to decrease more rapidly for High-Low Ss in the Easy situation due to the more rapid build-up in motivation to avoid failure when initial P_f is low[9]

The failure to discover lower performance scores in the Easy situation than in the Moderately Difficult situation for Low-High Ss (assuming a decrease in P_s) suggests that there may have been little difference in total motivation to perform the task for these Ss in the two situations In particular it is possible that failure in the Easy situation did not determine a decrease in total motivation to perform the task sufficiently large to be reflected in performance differences for these Ss On the other hand Sarason (1961) found that Ss high in Test Anxiety obtained higher scores in the Moderately Difficult situation than in the Easy situation If we assume that Ss high in Test Anxiety are more likely to be those in whom $M_{af} > M_s$ (cf, Atkinson & Litwin, 1960) then this result is quite consistent with the prediction from our theoretical model assuming decrease in P_s with failure The testing conditions of the present study differed from those used by Sarason in that Ss were tested in larger groups (80-90) A large group confers some degree of anonymity on a participant Perhaps the situation would have been more stressful if S had performed the task in a face-to-face situation with E Moreover Ss tended to

9 If a "fixed incentive" assumption were part of the present model instead of a "varying incentive" assumption then achievement-related motivation for given values of M_s, M_{af}, and P_s would be calculated from the expression $(M_s \; P_s - M_{af} \; P'_s)\,(1 - P_s)$ where P'_s is the initial P_s

obtain higher performance scores in the present study. The greater degree of failure in Sarason's study may have determined rapid decreases in P_s with a relatively quick decrease in total motivation to perform the task in the Easy situation among Ss in whom $M_{af} > M_s$

The above comments suggest the need for further research but they also imply that it may be necessary to modify the theoretical model so as to allow for the effect of situational factors in addition to those which influence the perceived difficulty of the task It seems possible, for example, that the positive incentive value of success (I_s) and the negative incentive value of failure (I_f) may be a function not only of subjective probability of success (P_s), as assumed in the theory of achievement motivation (Atkinson, 1957), but of other aspects of the situation For example, the reassuring nature of the instructions to Ss in the Moderately Difficult condition of the present study may be conceived as influencing relatively low negative incentive values of failure among Ss in this situation and consequently low motivation to avoid failure Previous research by the writer (Feather, 1959) also suggests that achievement values are a function not only of the perceived difficulty of the task but also of situational characteristics such as the degree to which the situation involves skill, is test-like in nature, etc

The results of the present study indicate that when Ss are told that a task is fairly difficult and it is in fact difficult, performance scores are positively related to initial estimates of probability of success When, however, instructions to Ss imply that the task should be well within their competence but it is not, performance scores are not significantly related to initial probability estimates The former result supplements the earlier finding (Feather, 1963b) that Ss who state relatively high initial expectations of success tend to persist longer at an insoluble task which is presented to them as very difficult These positive relationships are consistent with theoretical expectation (Feather, 1963b, p 605) if we assume that there is a predominance of students at university level in whom $M_s > M_{af}$ It is interesting to speculate on other possible ways of interpreting these results An important characteristic of the Moderately Difficult situation

appears to be the consistency between what S is told and what in fact occurs as he works at the task He is told the anagrams are fairly difficult and he finds them difficult In the Easy situation, however, S's experience with the task is likely to be inconsistent with what he has been told He is informed that he should find the task within his competence but he finds it fairly difficult Performance relates positively to initial probability estimates in the "consistency" situation but not in the "inconsistency" situation It may be that in the "consistent" situation S feels committed to the probability estimate he has stated and works to justify it, whereas in the "inconsistent" situation he feels that his probability estimate was based on misleading information and that there is less need to justify it in performance Inconsistency models (e g, Festinger, 1957) would also imply greater tension in the Easy situation and, as we have noted, results do in fact indicate a tendency for Ss to report greater anxiety and worry about performance in this situation However, a complete analysis using this type of approach would need to make assumptions about differences in the way people react to inconsistency Unfortunately there is a dearth of information about such individual differences (cf, Feather, 1964) In the present context, one would need to know if level of *n*Ach and Test Anxiety influence reactions to inconsistency [10]

One interesting difference between the present results and previous findings is the negative correlation in the Moderately Difficult situation between reported disappointment scores and initial probability estimates Ss in the Moderately Difficult situation with high initial probability estimates (and relatively high performance) tend to report less disappointment about their performance at the anagrams task This result contrasts with the positive relationship between reported disappointment scores and initial probability estimates obtained in the persistence study (Feather, 1963b) and discussed in a related theoretical paper (Feather, 1963c). There are, however, important differences between the present situation and the persistence situation In the

10 In a recent study (Feather, 1964) a measure of the degree to which Ss evaluate arguments in a manner consistent with attitude was unrelated to either *n*Ach or Test Anxiety

persistence study all Ss experienced uniform and consistent failure, whereas the present study allowed a mixture of success and failure, and Ss knew the maximum number of successes they could possibly obtain (a total of 13 correct anagrams) In the present study, therefore, there was the possibility of variation in performance level and Ss had the opportunity of evaluating their performance in terms of its relationship to the maximum number of successes possible Thus performance level could vary along a scale from zero to maximum success In a persistence situation involving uniform failure, however, there is no success and S fails to solve the problem Hence performance differences between Ss are constant in that each person obtains a zero score. The present study therefore suggests that, where performance level is allowed to vary among Ss, it may become the dominant factor influencing reported disappointment Where, however, performance level is constant among Ss (and particularly where there is uniform failure), reported disappointment will tend to be a positive function of initial expectation of success

We consider that an important advantage of the present model is that it allows prediction of changes in total motivation to perform the task as a function of changes in P_s Most studies of the effects of motivation on performance have failed to allow for possible changes in motivation with task performance But an important characteristic of performance and persistence situations is that S works at the task over a period of time and has "feedback" about his progress Under these conditions expectations are likely to be modified and, in terms of our theoretical orientation, changes in motivation are therefore likely to occur In contrast, a simple choice situation is more static and it appears more reasonable to assume relatively stable expectations about the alternative possibilities involved in the decision The prediction of changes in total motivation to perform the task as a function of success and failure at the task is, however, only the first phase in the complex problem of predicting performance differences It also appears necessary to specify the dominant response tendencies or habits of S with respect to the task Multiplicative-drive theorists (e g, Taylor, 1956) have considered this problem in terms of the concept of a hierarchy of habits

Mandler and Sarason (1952) also refer to different types of reaction to anxiety involving either "task-relevant" or "task-irrelevant" responses In the present study we have assumed, perhaps naively, that higher total motivation to perform the task will determine higher performance scores. But it is quite possible that the relationship of performance level to total motivation may be in accordance with the Yerkes-Dodson law, i e, an inverted-U relationship with an optimum level of total motivation necessary for the most efficient performance of a given task, this optimum motivational level being higher for less complex tasks The future development of the present approach to the analysis of the effects of motivation on performance will need to explore these issues

Summary

There were 168 Ss who worked at a difficult anagrams task Two different sets of instructions were randomly distributed to induce either a high initial expectation of success (Easy situation) or a moderately low initial expectation of success (Moderately Difficult situation) Results show that Ss classified as High *nAch*–Low Test Anxiety obtained higher performance scores in the Moderately Difficult situation. Performance scores related positively to initial estimates of probability of success in the Moderately Difficult situation Measures of reported anxiety and reported disappointment were higher in the Easy situation and related negatively to performance level in both situations. Results are discussed in terms of the "motive-expectancy-value" model

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