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THE ACHIEVEMENT MOTIVE AND RECALL OF INTERRUPTED AND COMPLETED TASKS¹

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One important obstacle to satisfactory integration of the studies of motivation that have utilized the interruption-of-tasks method has been the lack of an adequate measure of individual differences in strength of motivation. The present investigation was an attempt to determine the effect of strength of achievement motivation on recall of interrupted and completed tasks and to determine whether the measure of the achievement motive developed by McClelland and his co-workers (14, 16) fills the need for a measure of strength of motivation.

Several recent reviews (20), particularly Glixman's (7), Alper's (2), and Rosenzweig's (18), treat the literature in a comprehensive manner. The present experiment attempts specifically to resolve the conflicting results of studies in which either presumed indi-

vidual differences or experimentally induced changes in achievement-related motivation have been related to differences in recall of incompleting and completed tasks. The results of Zeigarnik (22) and Marrow (12, 13), for example, imply that the greater the motivation to achieve, the greater the tendency to recall more incompleting than completed tasks. The results of Rosenzweig (17, 19), Lewis and Franklin (9), and Glixman (8), however, seem to imply just the opposite relationship.²

In the present experiment, differences in recall of interrupted and completed tasks are studied in relation to individual differences in strength of the achievement motive (*n* Achievement) with different experimental instructions comparable to those of the earlier conflicting studies. Different groups of *Ss* were exposed to three different instructions prior to performance on 20 paper-and-pencil tasks, half of which were interrupted before completion. The different instructions

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² See also Alper's (1) earlier demonstration that these opposite trends in selective recall can be related to a number of differences in personality.

were designed to vary the probability that Ss would perceive completion of tasks as evidence of personal accomplishment (or success) and incompleteness as evidence of personal failure. The method used to obtain an n-Achievement score for each S has been experimentally validated and elaborated elsewhere (14, 16).

PROCEDURE

Experimental conditions.—In a *Task Orientation* condition, *E* made no deliberate attempt to create any kind of experimental atmosphere. He simply passed out the task folders after being introduced as Mr. — and read an instruction for performance of the tasks adapted from Marrow (12). Tasks were timed without calling attention to the fact. He interrupted by saying, "All right, we'll go on to the next one now." After the twentieth task he immediately read instructions for the "test of creative imagination" (measure of n Achievement) and followed the standard procedure in administering this measure (14, 16). After the final story, recall was asked for in the following manner: "Now on the back of your story sheet, you are asked to recall as many of the tasks as you can that you did before the story test. Just jot them down in the order they come to mind, not necessarily in the order they were given. Be descriptive enough so that I will know which one you mean. When you can't think of any more, I'll take your paper." The Ss took from 2 min. to a 5-min. maximum in recall. Names and sex were not asked for until Ss brought their folders to *E*.

A *Relaxed* and an *Achievement Orientation* condition represent alterations of the basic procedure of the *Task Orientation* condition, on the one hand in the direction of minimizing the importance of the tasks, and on the other of increasing their importance by making them seem to be measures of highly valued attributes.

In the *Relaxed Orientation* condition, *E* lounged on the desk, joked with students, and in general attempted to create a relaxed atmosphere before being introduced as a graduate student who wanted to try out some tasks. This attitude was maintained in making the following remarks before the task instruction: "I have worked out a series of paper-and-pencil tests that I plan to use with college students in some research later. Right now I am simply trying them out to find out which ones are suitable for my purposes. You don't have to sign your names or anything since I'm not interested in your individual scores. However, I will appreciate your serious coopera-

tion so that we can learn something about the suitability of the tests." From this point on the procedure was the same as *Task Orientation*.

In the *Achievement Orientation* condition, *E* conducted himself in a serious manner in passing out the folders and giving instructions. He was introduced as Mr. — who had some tests to give the class. The following preliminary statement was made: "During the war years, psychologists were called on to develop many different kinds of tests in order to select people with high executive capacity, intellectual alertness, the capacity for making quick decisions, and leadership. Now I am going to give you a series of tests in order to compare your scores with those of other college students. Without opening the folder, will you write your name and sex on the outside of the folder. If you know your IQ you might write that under your name and your grade point average for the first semester." After completing the same instruction for the tests used in *Task Orientation*, he added, "Your work will be interpreted as representing the full extent of your ability, so do your best." The procedure already outlined was followed with these changes: (a) *E* made it clear to Ss that they were being timed; (b) while Ss worked on the tasks, *E* walked about the room as if noticing how well or poorly they were performing; (c) after the seventh task he said, "Change tests quickly, you need the time"; (d) after the tenth task he said, "Some of you are taking a lot of time on these."

Measurement of n Achievement.—The four pictures projected on a screen before the group to elicit imaginative stories for the measurement of n Achievement with their usual code designations were: (B) two men working in a shop; (H) a boy seated at a desk holding his head; (A) the heads of two men (TAT 7BM); and (G) boy in foreground with surgical mural behind (TAT 8BM).

Stories were scored according to a modification (B) of the original method (A) which correlates .95 with the original method (16). An S's n-Achievement score represents the frequency of imaginative responses (Need, Instrumental Acts, Anticipatory Goal States, etc.) indicating concern over excellence of performance in his stories. Rescore reliability of the n-Achievement scores for the 83 Ss was .93. Scores obtained from Picture H were eliminated when another study run concurrently (3) indicated certain inadequacies of the scoring procedures when applied to this picture. The scores of Ss on the three remaining pictures, B, A, G, having an estimated equivalent-form reliability of .56 (3) were used in the analysis of results.

The distribution of n-Achievement scores within each experimental condition was divided

as near to the median as possible to provide comparable high and low n-Achievement groups within each condition. The mean n-Achievement score of each high group fell between 9 and 10 and of each low group between 2 and 3.

Tasks.—Folders containing one set of 20 paper-and-pencil tasks modeled after Marrow (12) and MacKinnon (11) in a prearranged order and story blanks for the measurement of n Achievement were distributed at the start of regularly scheduled class periods. Two versions of each task had been constructed. One could normally be completed in 75 sec., the time allotted for each task; the other was rarely completed in that time.

Two sequences of the 20 tasks were randomly determined. Location of 10 short and 10 long versions was also randomly determined. Given two forms (XA and ZA) alike in location of short and long versions but different in sequence of tasks, two other forms (XB and ZB) were constructed reversing the location of short and long versions.

Test folders were distributed in such a manner that Ss in adjacent seats would be working on different tasks at the same time and every S would have the experience of being interrupted when others near him had finished. Some Ss in each section received folders containing only short versions of tasks for another purpose not reported here.

The intended four-way classification of Ss according to form of the test was precluded by an unequal distribution of the four forms among Ss having high and low n-Achievement scores. Therefore Ss were classified only in terms of the location of short and long tasks in the series. Forms XA and ZA were combined and will now be referred to as Form A, and their combined counterparts as Form B. The two forms differ in the distribution of short tasks (easy to finish) in the four quarters of the sequence of 20 tasks. On Form A, the distribution of short tasks was 3, 3, 3, and 1; on Form B, 2, 2, 2, and 4. A fortuitous result of the random placement of short and long tasks is a greater number of short tasks in the early (1-5) and late (16-20) serial positions usually favored in recall on Form B, and long tasks in those locations on Form A.

Subjects.—The Ss were 83 male students in ten introductory psychology sections at the University of Michigan in the spring of 1949, distributed among experimental conditions as follows: Relaxed Orientation, 27; Task Orientation, 32; Achievement Orientation, 24. To eliminate any effect on recall resulting from great disparities between the number of tasks completed and interrupted, 17 other Ss who completed fewer than 8 or more than 12 tasks were excluded as were 9 others who failed to understand directions,

confused the order of tasks, or complained of illness.

Treatment of recall data.—The Ss were classified according to strength of motivation, experimental condition, and form of the task-test to allow systematic control of the three variables which might influence recall in analysis of variance. Since the number of tasks completed varied between 8 and 12, the percentage of tasks of each type recalled is the appropriate measure of recall. In order to apply analysis of variance, each S's percentage recall was converted to angles by the *arc sin* $\sqrt{\text{percentage}}$ transformation (21, p. 447). Subclass *N*'s resulting from the triple classification of Ss were not seriously disproportionate. Analysis of variance by the method of proportional subclass numbers was accomplished following an adjustment for expected *N*'s (21, p. 295; 10).

RESULTS

The mean n-Achievement scores of the Relaxed (4.93), Task (5.63), and Achievement Orientation conditions (5.17) were not significantly different ($F = .22, df = 2$ and 80). Evidently the experimental procedures did not differ sufficiently to produce over-all differences in intensity of motivation of the magnitude previously reported when stimulating conditions were more extreme (14).

However, the three experimental orientations did produce differences in recall, which are evident when high and low n-Achievement groups within conditions are separated (Table 1). The *Zeigarnik effect* is represented here as the difference between recall of incompletions and completions (IR-CR). Table 1 shows that both of the conflicting trends of earlier studies occur when Ss are grouped according to the strength of their motivation to achieve. The Ss high in n Achievement show an increasing tendency to recall more incompleting tasks as experimental instructions increase the probability that completion and incompleting will be perceived as success and failure. Just the opposite is true of Ss low in n Achievement; the tendency

TABLE 1

MEAN RECALL OF INCOMPLETED TASKS (IR), COMPLETED TASKS (CR), AND DIFFERENCE IN RECALL OF INCOMPLETED AND COMPLETED TASKS (IR-CR)*

Orientation	Form	High n Achievement					Low n Achievement				
		N		IR	CR	IR-CR	N		IR	CR	IR-CR
		Observed	Ex-pected**				Observed	Ex-pected**			
Relaxed	A	5	5.8	43.2	41.5	1.7	7	7.9	54.0	43.3	10.7
	B	6	5.6	43.8	43.0	.8	9	7.7	48.1	41.8	6.3
	A+B	11	11.4	43.5	42.3	1.3	16	15.6	51.1	42.5	8.5
Task	A	9	6.8	49.6	40.2	9.4	8	9.4	49.4	43.3	6.1
	B	5	6.7	45.9	46.6	-.7	10	9.1	45.4	45.1	.3
	A+B	14	13.5	47.8	43.4	4.4	18	18.5	47.4	44.2	3.2
Achievement	A	5	5.1	64.7	44.1	17.6	8	7.0	48.4	46.1	2.3
	B	5	5.0	50.4	48.8	1.6	6	6.9	40.8	46.2	-5.4
	A+B	10	10.1	57.7	46.5	11.2	14	13.9	44.6	46.1	-1.5

* Percentage recall of each S was converted to angles by the $\text{arc sin } \sqrt{\text{percentage}}$ transformation (22).

** Adjusted subclass N's for analysis of variance by the method of proportional subclass numbers (10, 22).

to recall more incompletions decreases. The difference between high and low n-Achievement groups in showing the Zeigarnik effect is due to diametrically opposite trends in recall of incompletions between Relaxed and Achievement Orientation. While both groups increase in recall of completions, the high n-Achievement group shows an even greater increase in recall of incompletions and the low n-Achievement group an almost equally great decrease.

Tables 2 and 3 provide a basis for evaluating the significance of these differences. Table 2 is a summary of separate analyses of variance for the IR-CR difference, IR, and CR. Table 3 contains tests of the significance of particular differences.

The Zeigarnik effect (IR-CR).—Differences in Zeigarnik effect attributable to the interaction of Motivation with Orientation and to Form were both significant at the 5% level of confidence (Table 2). Since neither first-order interaction involving Form was significant, their sums of squares were combined with that of the triple

interaction term to provide a combined estimate of error having 5 *df*.

The interaction of Motivation with Orientation is elaborated in Table 3. The Zeigarnik effect of Ss low in n Achievement is significantly greater under Relaxed Orientation than Achievement Orientation, while Ss high in n Achievement show a near significantly greater Zeigarnik effect under Achievement Orientation than Relaxed Orientation. The only significant difference between high and low n-Achievement groups occurs in the Achievement Orientation condition where the high n-Achievement group shows the greater Zeigarnik effect.

As expected, Form A in which interrupted tasks were located in serial positions favoring recall produced the larger over-all Zeigarnik effect; the over-all mean IR (not shown in Table 1) was 51.1 and the CR was 43.1. On Form B, the IR was 45.6 and the CR was 45.1.

Recall of incompleted tasks (IR).—Table 2 shows that Form and the in-

TABLE 2

ANALYSES OF VARIANCE OF DIFFERENCE IN RECALL OF INCOMPLETED AND COMPLETED TASKS (IR-CR), RECALL OF INCOMPLETED TASKS (IR), AND RECALL OF COMPLETED TASKS (CR)

Source	df	IR-CR		IR		CR	
		Mean Square	F	Mean Square	F	Mean Square	F
1. Orientation	2	25.72		50.64		95.81	8.89*
2. Motivation	1	64.18		43.31		1.82	
3. Form	1	1161.99	10.91*	638.86	9.36*	77.43	
4. M × O	2	620.34	5.83*	662.98	9.72*	2.21	
5. M × F	1	71.66		.68		85.98	67.13**
6. F × O	2	146.05		103.35		28.84	22.52**
7. M × F × O	2	84.34		66.90		1.28	
Combined Error (5, 6, 7)	5	106.49		68.24		—	
(4, 6, 7)	6	—		—		10.78	

* $p < .05$ using the combined error term

** $p < .05$ using the triple interaction term

teraction of Motivation with Orientation also contribute significantly to the variance in recall of incompleted tasks. The first-order interactions involving Form were again combined with the triple interaction as an error

estimate. Table 3 shows that under Achievement Orientation, the high n-Achievement group recalls significantly more incompleted tasks than the low n-Achievement group. The high n-Achievement group's recall of

TABLE 3

SIGNIFICANCE OF PARTICULAR DIFFERENCES SHOWN IN TABLE 1

Comparison	Mean Difference	$\sigma_{diff.}$	t	p
<i>IR-CR</i>				
Relaxed to Achievement Orient.				
High n Achievement	9.96	4.46*	2.23	.10
Low n Achievement	-10.02	3.81	2.63	.05
High vs. low n Achievement under Achievement Orient.	12.71	4.27	2.98	.05
<i>IR</i>				
Relaxed to Achievement Orient.				
High n Achievement	14.16	3.57	3.97	.02
Low n Achievement	-6.41	3.05	2.10	.10
Task to Achievement Orient.				
High n Achievement	9.85	3.44	2.87	.05
High vs. low n Achievement under Achievement Orient.	13.02	3.41	3.81	.02
under Relaxed Orient.	-7.55	3.22	2.35	.10
<i>CR</i>				
Relaxed to Achievement Orient.				
High n Achievement	4.20	1.42	2.96	.05
Low n Achievement	3.60	1.21	2.98	.05

* The $\sigma_{diff.}$ and df are derived from the error term of the appropriate analysis of variance.

incompletions is significantly greater under Achievement Orientation than under Relaxed or Task Orientation. Under Relaxed Orientation, the low n-Achievement group recalls near significantly more incompleting tasks than comparable Ss under Achievement Orientation and near significantly more incompletions than the high n-Achievement group under the same relaxed instructions.

Recall of completed tasks (CR).—Differences in recall of completed tasks attributable to the experimental orientations are significant at the 5% level of confidence³ and there is no interaction of Motivation with Orientation in this case (Table 2). Table 3 shows that both high and low n-Achievement groups increase significantly in recall of completed tasks from Relaxed to Achievement Orientation. And Table 1 shows that there is not even a suggestion of a difference between the two motivation groups under any experimental condition.

The meaning of the significant interaction of Motivation with Form may be quickly summarized. Even though the short, completable tasks were located in relatively unfavorable serial positions for recall on Form A, Ss low in n Achievement recalled as many completions (across orientations) on Form A, 44.1, as on Form B, 44.3. The high n-Achievement group, however, showed the expected difference between forms; their CR on Form A was 41.8 and on Form B, 46.1. The

³ Actually, differences due to Orientation are not significant when tested against the Form with Orientation interaction term alone. With only 2 *df* in the error term, differences due to Form with Orientation are sufficiently large to preclude the possibility of revealing over-all differences due to Orientation. However, when all interactions involving Orientation are combined providing an error term having 6 *df*, the differences between orientations are found to be significant at the 5% level of confidence.

Form with Orientation interaction was the result of a greater increase in CR between Relaxed and Achievement Orientation on Form B (5.0) than on Form A (2.8).

DISCUSSION

A study of the relationship of n Achievement to thresholds for recognition of success and failure words by McClelland and Liberman (15) first suggested that while high n-Achievement scores indicated a positive disposition to excel, lower n-Achievement scores may imply something more than indifference or lack of *positive* motivation to achieve. Their data allow the inference that persons high in n Achievement are predominantly success-oriented and have as their goal the feeling of satisfaction accompanying personal accomplishment while persons lower in n Achievement are more concerned with avoiding feelings of failure. This inference provides a basis for interpreting the distinctly opposite trends in recall of Ss classified high and low in n Achievement.

The most clear-cut differences in recall between high and low n-Achievement groups occur in the Achievement Orientation condition, where the probability that completion would be perceived as evidence of personal accomplishment (or success) and incompleting as failure was maximized. The greater recall of incompletions and greater Zeigarnik effect by the high n-Achievement group are consistent with the theoretical expectations and empirical findings of both Zeigarnik (22) and Marrow (12, 13): the greater the motivation to complete the tasks, the greater the relative recall of incompleting tasks.

The recall trends of the high n-Achievement group from Relaxed to Task to Achievement Orientation are also consistent with the findings of Zeigarnik and Marrow. When the situation is deliberately designed to *decrease* perception of performance on the tasks as instrumental to the goal of personal accomplishment (Relaxed Orientation), Ss high in n Achievement recall only slightly more

incompletions than completions, and relatively few of either compared to their significantly greater recall when success and failure are at stake (Achievement Orientation). This resembles the behavior of Zeigarnik's "disinterested" Ss who failed to show any preference in recall. We may take this to mean that motivation to achieve was not engaged by the "relaxed" instructions and that other possible motives, e.g., a feeling of obligation to *E*, intrinsic interest in the tasks themselves, etc. (22, p. 303), were insufficient to produce persistent striving towards completion. However, as the perception of completion as success and incompleteness as failure is favored by task- and achievement-orienting instructions, the achievement motive is apparently increasingly engaged. Both the recall of incompletions and completions and the Zeigarnik effect increase from Relaxed to Task to Achievement Orientation for the high *n*-Achievement Ss—essentially Marrow's finding.

The Ss low in *n* Achievement show just the opposite trend in selective recall, the so-called defensive or anxiety-reducing trend. As instructions increase the probability that completion will be perceived as success, and what is apparently more important to them, that incompleteness will be perceived as failure, there is an increase in recall of completions, the predominant trend appearing in Rosenzweig's group data (17); and a decrease in recall of incompletions, a trend accentuated in Glixman's group data (8). Both trends were reported by Lewis and Franklin (9). The decreasing tendency of Ss low in *n* Achievement to recall incompletions suggests that they are increasingly motivated by an *unmeasured* fear of failure.

Thus when recall of incompleted tasks is viewed as *instrumental behavior*, the traditional interpretation of the Zeigarnik effect, the differences in recall trends reported for high and low *n*-Achievement groups support the hypothesis that in achievement situations their goals differ. When the goal is to experience feelings of success and personal accomplishment, then persistence of the interrupted activ-

ity in recall and subsequent resumption of it are instrumental to attainment of that goal. When, however, the goal is to avoid feelings of failure, non-recall of past failures and presumably non-resumption of previously failed activities are instrumental to the avoidance of renewed feelings of failure.

Interaction of perception and motivation.—This interpretation leans heavily on an assumption that the achievement motive measured in imaginative behavior becomes a determinant of overt striving only to the extent that a particular performance is perceived as instrumental to the goal of personal accomplishment. The achievement motive is viewed as a latent characteristic of personality which is manifested in behavior only when engaged or supported by appropriate environmental cues. This is the assumption commonly made by learning theorists: environmental cues signify the *occasion* for the performance of previously learned instrumental acts (6, p. 32). A hungry man is more likely to reach for, pick up, and chew an object on a table at which he is sitting if the object happens to be a sandwich than if it happens to be an ashtray.

If instructions that the tasks measure an attribute of personal competence engage achievement motivation to a greater degree than instructions designed to deny the importance of the tasks, then there should be evidence that Ss worked harder in response to the former. An independent estimate of how hard Ss were working on the tasks is the number of tasks completed.

The expected increase in mean number of completions between the Relaxed and Achievement Orientation conditions occurred for both high and low *n*-Achievement groups. The smallest mean number of tasks completed (8.91) was that of the high *n*-Achievement group under Relaxed Orientation, supporting the hypothesis based on the absence of Zeigarnik effect in their recall, that they were relatively disinterested. The mean number of completions increased to 10.00 under Task and further to 10.60 under Achievement Orientation in a manner consistent with

the assumption that achievement motivation was increasingly engaged by these instructions.

The mean number of completions of the low n-Achievement group increased from 9.56 under Relaxed Orientation to 9.61 under Task Orientation to 10.14 under Achievement Orientation. Under Task and Achievement Orientation, when the achievement motive had been engaged, the number of completions was greater for the high n-Achievement group, reflecting their stronger motivation. In general, the hypothesized interaction of perception and motivation in the determination of instrumental striving is supported by analysis of performance data.

But an important question remains: why did the low n-Achievement group complete more tasks, recall more incompletions, and show a greater Zeigarnik effect than the high n-Achievement group under Relaxed Orientation? The facts imply that the low n-Achievement group was more motivated to complete the tasks than the high n-Achievement group in this condition and furthermore, that they were apparently unconcerned about failure. The assumption that the relaxed instructions minimized the probability of completion and incompleteness being perceived as success and failure does not rule out the possibility that the relaxed instructions might have engaged some other motive more characteristic of persons in the low than the high n-Achievement group. There is a reason for thinking that this might have been the case. Zeigarnik observed that, in addition to personal ambition, *a feeling of obligation to E* and intrinsic interest in the tasks were often motives to complete the tasks. A recent study by R. Brown (4) has shown that persons in the middle and low thirds of the n-Achievement score distribution obtain higher scores on the F Scale measure of authoritarian personality than persons in the upper third on n Achievement. While the relaxed instruction de-emphasized personal achievement, it did urge cooperation and suggested that *E would be pleased if Ss complied with his instructions*. There is, in other words, some basis for thinking

that the instruction which produced indifference in the high n-Achievement group might have engaged more motivation to comply in the low n-Achievement group.

Reconciliation of conflicting results.—Can we account for the comparability of the trends of Ss high in n Achievement with the group results reported by Marrow (12, 13) and the diametrically opposite trends of Ss low in n Achievement with the group results of Rosenzweig (17), Lewis and Franklin (9), and Glixman (8)? Were there no evidence that Marrow's Ss as a group were more highly motivated to achieve than those of the other three studies, the present findings would be little more than suggestive. But in light of the implications of high and low n-Achievement scores discussed earlier, there is evidence to support the argument. Marrow's Ss were all volunteers; Ss in the other studies were not. Marrow makes a point of mentioning that "no pressure was exerted to compel attendance . . . to insure a co-operative attitude towards the work" (12, p. 16). Glixman's Ss, on the other hand, were all "draftees"; his Ss, members of an introductory course, "were told by the instructor that they were expected to devote a two-hour period to departmental research." In addition, the instructor called off the names of Ss who were to participate each day "to lend prestige to the calling of Ss" and discourage "bias of sampling which is possible when Ss volunteer" (8, p. 228). Subjects in Rosenzweig's "informal group" were employed while those in his "formal group" were "enlisted from the freshman student advisees responsible to the director of the clinic and were personally invited by him" (17, p. 65). Lewis and Franklin's (9) Ss were apparently unaware that they were taking part in an experiment, having been asked individually merely to help out with some work that had to be done.

If persons low in n Achievement are concerned with avoiding failure, it is unlikely that they would voluntarily place themselves in a test situation in which they might fail. On the other hand, an

appeal for volunteers to take part in some kind of testing could be viewed as a challenge by the person highly motivated to achieve. For him, volunteering is a goal-directed instrumental act. So the suggestion for reconciling the gross contradiction between the trend in selective recall reported by Marrow and those of the other studies considered becomes a hypothesis subject to experimental verification: *Ss* who volunteer are characteristically more highly motivated to achieve than a group of randomly selected or drafted *Ss*.

Since both increases and decreases in recall of interrupted tasks occur with changes in experimental instructions when *Ss* are classified according to strength of motivation to achieve, there can be little hope of reconciling many of the other inconsistencies in experiments with no basis for estimating the motivation of particular *Ss*. However, the promise of the measure of *n* Achievement for extended theoretical integration of studies utilizing the interruption-of-tasks method is indicated when the results of Cartwright's study (5) of the effect of interruption, success, and failure on attractiveness of activities are considered in light of present findings. His experimental condition was comparable to the Achievement Orientation of the present investigation. Spontaneous remarks following interruption and interviews after the experiment revealed that *Ss* who raised their attractiveness ratings of tasks following interruption and failure anticipated success at the time of interruption or viewed failure as a temporary obstacle to be overcome by subsequent success on the same activity. Cartwright suggests that for these *Ss* "it is possible that one could speak of a 'need for success'" (5, p. 12). Those who reported anticipating failure at the time of interruption or viewed interruption "as an escape from certain failure" (5, p. 5) more often decreased attractiveness ratings following interruption or failure.

A simple experiment run by the author confirms the expectation that the differences noted by Cartwright could be attributed to differences in *n* Achieve-

ment. Nineteen *Ss* performed the same tasks used in the present experiment under achievement-orienting instructions and were interrupted on half of them. They were then asked to look through a test booklet similar to the one they had worked on and choose the five tasks they liked the best. Only one of ten *Ss* low in *n* Achievement chose more incompletions than completions; five of nine *Ss* high in *n* Achievement chose more incompletions than completions. The predicted difference between the groups is significant at the 5% level of confidence.

SUMMARY

The interruption-of-tasks experiment was performed with male college students under three different experimental instructions presumed to vary the probability that *Ss* would perceive completion as evidence of personal accomplishment (or success) and incompleteness as failure. The *Ss* in each experimental condition were classified high or low in motivation to achieve on the basis of a thematic apperception measure of *n* Achievement.

When instructions clearly signified that completion meant success and incompleteness meant failure, *Ss* high in *n* Achievement recalled more incompleteness and showed a greater Zeigarnik effect than *Ss* low in *n* Achievement. Recall of incompleteness and the tendency to show the Zeigarnik effect increased for *Ss* high in *n* Achievement as instructions increased the probability that completion and incompleteness would be perceived as success and failure. Just the opposite trend occurred for *Ss* low in *n* Achievement.

Results are consistent with a hypothesis advanced by McClelland and Liberman that *n* Achievement is essentially positive motivation to experience feelings of accomplishment and success and that lower *n*-Achievement scores imply relatively greater anxiety about failure. In addition, results were interpreted to mean that the *n*-Achievement score obtained from thematic apperception stories is an estimate of the strength of latent achievement motivation which is manifested in overt striving to the extent that it is engaged by appropriate environmental cues.

A basis is proposed for reconciling the apparently contradictory implications among several earlier studies concerning the relation of Zeigarnik effect to strength of motivation to achieve, and a subsidiary experiment on attractiveness of interrupted tasks is reported to show the value of an independent measure of individual differences

in n Achievement for theoretical integration of experiments using the interruption procedure.

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