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## ACHIEVEMENT MOTIVATION AND TASK RECALL IN COMPETITIVE SITUATIONS

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The recall of completed and incompleting tasks was used to investigate the motivational effects of social context on achievement striving. 3 experimental conditions were employed: a male competing against a male, a female competing against a female, and a male competing against a female. Results showed males exhibited a significantly greater Zeigarnik effect after competing against females than after competing against males. Female Ss also showed a greater Zeigarnik effect when competing against females than when competing against males, although the difference in recall between the females in the 2 competitive conditions was not statistically significant. An objective test used to measure achievement motivation predicted differential recall of incompleting and completed tasks for male Ss but not for females. Because the test items were derived from Atkinson's (1957) theory of achievement motivation, the results tend to validate the test and the theory.

It has been asserted (Mead, 1949) that the norms of our society prohibit females from competing in achievement-oriented activities. This general hypothesis has received empirical support from investigations which demonstrated that females are less effective at problem solving than males (Hoffman & Maier, 1961), and that females classified as relatively masculine on the basis of score on a masculinity-femininity scale perform better at problem-solving tasks than females classified as relatively feminine (Milton, 1957). Mead's assertion also has been supported in a study by Lesser, Krawitz, and Packard

(1963) which revealed that underachieving girls may not perceive intellectual achievement as appropriate to their social roles.

The studies cited above have stressed that males and females differ in their tendencies to inhibit achievement strivings. This study investigates the relationship between the inhibition of achievement motivation and the social context in which the achievement-related behavior occurs. To determine the effects of social context on achievement strivings, the performance of subjects in three two-person competitive situations will be compared. The situations are a female competing against a female, a female competing against a male, and a male competing against a male.

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In the studies of Hoffman and Maier (1961) and Milton (1957) the response indicator of achievement motivation was performance on problem-solving tasks. However, this may not

be the best dependent variable when comparing the achievement motivation of males and females. Males may have had more commerce and more success experiences with such tasks than females. Another possible indicator of aroused achievement motivation is the differential recall of incompleting and completed tasks. Atkinson (1953) and Atkinson and Raphelson (1956) have demonstrated that when achievement motivation is high, subjects recall more incompleting than completing tasks (the Zeigarnik effect) in achievement-oriented conditions. Atkinson (1953) also cited data indicating that volunteer subjects are relatively high in need for achievement (*n Achievement*), and Green (1963) demonstrated that volunteer subjects exhibit a greater Zeigarnik effect (Zeigarnik, 1927) than nonvolunteer subjects. Thus there is strong evidence that the differential recall of incompleting tasks is a valid behavioral criterion of aroused achievement motivation. In this study the social facilitation and social inhibition of achievement strivings will be investigated by comparing the recall of incompleting and completed tasks between subjects in the liked-sex and mixed-sex competitive conditions.

A second purpose of this study is to validate an objective measure of *n Achievement* (O'Connor, 1962). The selection of items for this test (the Achievement Risk-Preference Scale) was guided by the theory of achievement motivation formulated by Atkinson (1957). Atkinson's theory specifies that individuals high in resultant achievement motivation are concerned about success, tend to engage in achievement-related activities, and prefer tasks of intermediate difficulty. On the other hand, the theory states that individuals low in resultant achievement motivation are concerned about failure, tend to avoid achievement-related tasks, and prefer tasks which are too easy or too difficult in relation to their level of ability. The items on the Achievement Risk-Preference Scale (ARPS) reflect these theoretical differences. The items involve choices between: the kind of affect, hope or fear, associated with achievement tasks; the direction of behavior, approach or avoidance, elicited by achievement-related tasks; and the level of difficulty, intermediate versus easy or hard, selected when constrained within an achievement-oriented situation. Some typical items are:

1. I feel:
  - a) unhappy when I do something less well than I had expected.
  - b) happy when I do something better than I had expected.

2. When I'm reading a magazine and come across puzzles or quizzes I:
  - a) often stop and try them.
  - b) rarely stop and try them.
3. If I were a pinch hitter, I would like to come to bat when:
  - a) my team was leading 6 to 3.
  - b) the score was tied.

It was hypothesized that subjects scoring high on this proposed measure of achievement motivation would exhibit a greater Zeigarnik effect than subjects scoring low on this measure.

#### METHOD

Thirty-three males and 37 females enrolled at the University of Michigan or the University of Minnesota participated in the experiment. Pairs of subjects were brought into the experimental room and were seated at the far ends of a table, facing the experimenter. A partition was placed between the two subjects. Each subject was given a "Zeigarnik booklet" which contained 20 simple puzzle tasks, for example, connecting dots, anagrams, etc. Every puzzle had two forms, long and short. It is very rare that long puzzles are completed within the allotted time period, while short puzzles almost always are completed. Four random sequences of puzzles were selected so that each booklet contained 10 tasks of the long form and 10 of the short form.

Subjects were told that the experiment investigated the effects of competition on performance. The experimenter said that the subjects would be competing against one another, and that points would be awarded for successful completion of each task. The subjects were told that after they had attempted all the tasks their points would be totaled, and the "winner" would be the person with the highest number of points.

Subjects were asked to raise their hands to signal the successful completion of a task. Each individual, therefore, could gauge how his performance compared to that of the competitor. On one-fourth of the tasks both subjects succeeded, on one-fourth of the tasks both subjects failed, and on one-half of the tasks one subject succeeded while the other failed. Seventy-five seconds were allowed for each task. When subjects raised their hands, the experimenter recorded the results to give the impression of keeping score.

After completing the 20 tasks the booklets were collected, and the ARPS was administered. During this time interval the experimenter pretended to add the scores. The ARPS consists of 40 items for males and 50 for females; the test takes approximately 7 minutes. After completing the test subjects were asked to recall the tasks in the Zeigarnik booklet. Two minutes were allowed for task recall.

#### RESULTS

Forty of the subjects recalled a greater percentage of incompleting than completed tasks, 28

TABLE 1  
MEAN PERCENTAGE RECALL, INCOMPLETED  
MINUS COMPLETED TASKS

| Sex of competitor | Sex of subject |        |    |        |
|-------------------|----------------|--------|----|--------|
|                   | N              | Male   | N  | Female |
| Male              | 14             | -8.00% | 19 | .21%   |
| Female            | 19             | 13.36% | 18 | 6.94%  |

recalled a greater percentage of completed than incompleting tasks, and for two subjects there was equal recall of completed and incompleting tasks. The mean difference between the recall of incompleting and completed tasks was not statistically significant,  $t = 1.42$ ,  $df = 69$ ,  $p < .20$ .

Table 1 shows the relation between the experimental conditions and the mean percentage recall of incompleting minus completed tasks. Table 1 indicates that both male and female subjects recalled relatively more incompleting than completed tasks when competing against a female than when competing against a male. An analysis of variance of the recall of incompleting minus completed tasks reveals that there is a significant main effect,  $F = 8.94$ ,  $df = 1/66$ ,  $p < .01$ , attributable to the sex of the competitor. Further analysis indicates that males exhibit a significantly greater Zeigarnik effect when competing against females than when competing against males,  $t = 3.02$ ,  $df = 31$ ,  $p < .01$ . Only 3 of the 19 male subjects competing against females recalled a greater percentage of completed than incompleting tasks, while 8 of the 14 males competing against other males recalled more completed than incompleting tasks. For female subjects the difference in recall between the two competitive conditions was not significant,  $t = 1.50$ ,  $df = 35$ ,  $p < .15$ .

Relating scores on the ARPS to task recall reveals that males classified as high (above the median) on the ARPS recalled relatively more incompleting than completed tasks than males classified as low on this measure,  $t = 2.59$ ,  $df = 31$ ,  $p < .01$ . For females there was no significant relation between recall and motive classification,  $t = 1.32$ ,  $df = 35$ ,  $p < .20$ , although the direction of the results was identical to that of the males. This relationship was not enhanced when females were classified jointly according to sex of the competitor and score on the ARPS.

#### DISCUSSION

The data revealed that females exhibit a greater Zeigarnik effect when competing against other females than when competing against males.

However, the difference in recall between the two conditions did not reach an acceptable level of significance, and the data do not clearly confirm the intuitive notion that females suppress achievement strivings when the social context is one of competition against males.

The data for the male subjects revealed that the Zeigarnik effect was maximized when competition was against a female. This finding, considered in conjunction with the data for female subjects, suggests that role theorists might find it profitable to reverse their perspective and attend to the enhancing effect which females have on male achievement strivings, rather than the inhibiting effect which males are presumed to have on female achievement strivings.

The results relating scores on the ARPS to task recall indicate that this test may be a valid motive measure. The findings replicated those of Atkinson (1953) and Atkinson and Raphelson (1956) when a Thematic Apperception Test (TAT) was used to assess achievement motivation. It is of interest to note that the relation between recall and scores on the ARPS supports the prediction for male subjects, while the results for females do not confirm the hypothesis. The absence of a significant relationship between the ARPS and the dependent variable for female subjects parallels the frequent lack of significant results when employing the TAT as a motive measure for females (McClelland, Atkinson, Clark, & Lowell, 1953).

Employing the ARPS as a motive measure presumed that the criteria for high achievement motivation as specified by Atkinson (1957) would covary with other performance indicators more than does the n Achievement score derived from the TAT. That is, it was thought that the reported preference for intermediate risks and the tendency to engage in achievement-related activities would predict differential task recall better than would the motive scores derived from the fantasy measure of n Achievement. The test was "bootstrapped" by the theory, and the positive results in this study tend to validate the theory as well as the test (Cronbach & Meehl, 1955). Further studies relating the ARPS to other performance measures are needed to enhance the validity of this measure.

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## OBSERVER PRACTICE AND LEARNING DURING EXPOSURE TO A MODEL<sup>1</sup>

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The observer's (O's) behavior was examined in relation to a model's (M's) choices when O had a separate source of information about task-relevant behavior. These experiments showed that: (a) O's practiced the M's choices during the exposure period, even without overt performance by M; (b) subsequently, O's did not necessarily choose to perform in a learning task in a manner that was consistent with their prior practice; (c) O's practice of M's choices was not dependent upon instructions regarding the subsequent learning task; (d) O's practice and learning was largely dependent upon M's choices rather than the general popularity of these choices for learning. It is suggested that observational learning is the result of an ongoing tendency for O's to practice M's behaviors during the exposure period.

There is evidence to show that the behavior of one person (observer) can be influenced by exposure to the behavior of someone else (model). Bandura and Walters (1963) have reviewed much of this literature in relation to imitation and social learning. In the general paradigm employed in these studies, the observer is exposed to the model's behavior and is subsequently tested to determine the effect of the model's behavior on the observer's learning. In these studies, the observer's behavior during the

exposure period has generally been ignored. An examination of such behavior may be of relevance to the investigation of how the model's behavior can affect observational learning. This approach is based upon the general theoretical assumption that the observer, far from being a passive bystander, is actively engaged in practicing the behavior of others. Viewpoints in agreement with the foregoing have been expressed by Hebb (1960, p. 742) and Cook (1961, pp. 355-356). This notion of active participation is supported by studies of changes in GSR (Berger, 1962) and changes in heart rate (Kagan & Phillips, 1964) during exposure. Besides these physiological manifestations, *covert* practice by the observer has been regarded as a relevant component of social learning (e.g., Maccoby, 1959). The investigation of the role of the observer's practice, however, has been limited by

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