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ABSTRACT

To explore personal characteristics (achievement motivation and anxiety) which may affect performance on a recognition task, three studies were conducted using a 375-word text on dreaming. In the first study, 54 college students answered questions about the passage either with or without reading the material. Results confirmed that recognition was dependent upon exposure to the text rather than upon knowledge of dreaming. In the second study, students (N=64) completed the EPPS achievement scale, and then read the text while a taped voice read the material. Subjects received the recognition task under one of four instructional sets: semantic focus (concepts and ideas); nonsemantic focus (specific words and phrases); irrelevent focus; or control-no instruction. There were no effects for instructional set on either semantic or nonsemantic recognition items. Both high and low achieving males scored low on the recognition task, while moderate achievers scored higher. Females showed no relationship between achievement motivation and performance. The third study (N=135) manipulated presentation rate (slow or fast) and expectancy (anticipated task difficulty). Slow presentation facilitated males' performance but did not affect females' performance. Achievement motivation facilitated recognition regardless of situation; expectancy affected only performance on the semantic items. (MCF)

# The Effects of Achievement Motivation on Performance on a Recognition Task

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In recent years there has been a growing trend in research to conceptualize behavior as a function of both situational and personal factors. This interactional approach seeks to identify the ways in which individual differences in personality and situational variability independently and interactively cimbine with one another in the production of behaviors. The development of this interactionist perspective is parallel to the larger movement in Psychology toward a focus on cognition. It is therefore not surprising that peesonality psychologists should seek to understand cognition from the interactionist perspective. For example, research of this kind has shown that personalaity characteristics (e.g., mood, psychic states) influence the amount and type of information an individual integrates into the memory system (Ingram, Smith & Schwartz, 1983; Staats & Burns, 1982; Werthiem & Schwartz, 1983). Our work focuses on personal characteristics (e.g., achievement motivation and anxiety) which may be related to how an individual may directly affect performance and alter the influence of these personal characteristics.

The task used in our research was a 375 word text on dreaming, taken from an introductory psychology text. Such a passage was selected since we deemed it to be a meaning ful task for subjects (in regard to both their ability to process the relevant information and to their current academic interests), thereby facilitating a personal involvement. The recognition task consisted of 24 questions pertaining to both the semantic (ideas and concepts) and nonsemantic (specific words and phrases) content of the text (a nonsemantic item was "according to the text, Ss showed what type of need to dream?" a typical semantic item was "another title fo" this passage could be?"). Prior research (Piedmont & Kayson, 1979; Wilson & tyler, 1976) has demonstrated that a text of this kind is a suitable stimulus for assessing performance in recognition rasks of semantic and nonsemantic content. While recognizing the important rôle of the situation, our goal in undertaking this research was to demonstrate that personality characteristics do affect performance, and that the relationship is not entirely situational or

task specific. Additionally, we hope to discover what kinds of persons are most susceptible to situational influence; and which learning situations amplified and dampened personality effects.

## STUDY 1

Since the selected passage contained basic information about dreaming, and subjects would be drawn from Intriductory Psychology courses, we had to first determine if performance on the recognition task was due to having read the passage first, and not to prior knowledge of dreaming. Study 1 examined this hypothesis. Fifty-four subject pool students were randomly assigned to one of rwo conditions: reading the passage prior to completing the recognition task; and answering the items on the recognition task wothout prior exposure to the text. Performance on both the semantic and nonsemantic contentitems was clearly dependent upon prior exposure to the text.

## STUDY II

In Study II, a new sample of 64 undergraduate students were first administered the EPPS achievement scale. They then received the recognition task under one of four instructional sets: semantic focus - where subjects were told to pay attention to the ideas and concepts present in the text; nonsemantic focus - to observe the specific phrasing of the text; irrelevant focus - subjects were told to count the number of words, commas, and periods in the text; and control - where no instructions were given. Subjects were given a printed copy of the text to read as they heard a taped voice read the text. We hypothesized that achievement scores would be positively correlated to both performance measures, and that the semantic focus and nonsemantic focus instructions would improve performance on the recognition task measures consonant with instructions.

A one-way ANDVA did not reveal a main effect for instructional set on either

the semantoc or nonsemantic recognition items. Though instructional set may influence recogni.ion performance, our null results suggest that with a meaningful rext as a stimulus, the effects of instructions are not as important as we hypothesized. We suspect that subjects focus on the semantic fratures of the text regardess pf omstrictopms/ The effects of achievement motivation were examined through multiple regression analysis. In males, an inverted "U" shaped function related achievement scores to performance on the semantic (rach = .11 df 1,33; $rach^2$ = .38 df1,33; R = .40 df 2,32 F=4.88 $p < .05$) and nonsemantic (rach = .28 df 1,33; $rach^2$ = .50 df 1,33; R = .57 df 2,32 F=11.67 $p < .01$) sections of the recognition task. In other words, both high and low anhievers performed similarly, scoring low on the recognition task while moderate achievers performed higher. No relationship was found between achievement and perfoumance for females.

Several hypotheses might account for this effect. High and low achievers could have been 'uninterested' in performing the task since it was seen as either too simple a task or not relevant enough to raise interest. On the other hand, moderate achievers may have been sufficiently interested and involved in the task so as to facilitate their performance. A second hypothesis conceptualizes achievement as a drive, operating in a manner concordant to the corallaries stipulated in the well known Yerkes-Dodson Law (Broadhurst, 1959; Yerkes & Dodson, 1908). This function has been demonstrated in many studies (Eysenck, 1967; Freeman, 1940; Handler, cited in Goldberger & Bresnitz, 1982) If achievement motivation was serving as a source of internal arousal similar to other drives (e.g., anxiety), then the results could be easily explained by the inverted "U" arousal-performance model. Inspection of the bivariate distribution for both semantic and nonsemantic performance with the achievement scale suggested a third possibility: the non-linear component of the regression was due to a handful of influential outliers. Sampling error may have caused a Type I error.

## STUDY III

Since no instructional effect was found in Study II, we were interested in uncovering what situational determinants do influence performance. As such, in Study III, we introduced two new manipulations. The first was presentation rate. Previously-subjects were allowed to follow along with the taped presentation of the passage with a written copy of the text. In this study, all subjects only heard the text. Also,the passage was presented at two different speeds (slow - approximately 4 minutes in length; and fast - 2 minutes in duration). The slower the presentation, the easier the task. The second manipulation was expectancy (anticipated difficulty of the task). Subjects were informed prior to the task that previous subjects got at least 90% of the questions correct (high expectancy), or, at least 50% of the questions incorrect (low expectancy). The objective of these manipulations was to provide a direct assessment of how person and situational variables interact to influence performance on a cognitive task. Specifically, we were concerned with the way situational variables such as actual and expected task difficulty, serve to enhance or faculutate a person's recognition skills and how these situational variables cimbine with the personal characteristics of subjects in influencing performance. We hypothesized that the faster the presentation rate, the lower performance on the recognition task. Also, high achievers in the low expectancy groups should perform better than those in the high expectancy conditions, since they will perceive the task as providing a challenge.

Given the fact that the EPPS achievement scores were uncorrelated to performance in females in the previous study, we added another measure of achievement motivation which was taken from the Adjective Check List (Gough & Heilbrun, 1965). Also, given the possible inverted "U" effect, we included two measures of anxiety (Spielbergs State and Trait Inventory) to provide measures more clearly linked to drive and internal arousal.

Table 1 includes the correlation matrix for all person measures. The EPPS

was more related to performance in males, while the ACL related to performance in females. Though the two achievement measures were independent of one another, we nevertheless created a composite of the two measures. This composite was related to performance in both genders. State and Trait anxiety were found to be highly correlated,so a composite anxiety score was calculated in order to increase the reliability of the anxiety measure. These composite scores were used in all further analyses.

Step-wise multiple regression analyses were used in the evaluation of the data for 135 subjects. This analysis failed to reveal an inverted "U" relationship between achievement motivation and performance for males or females. No such curvilinear effect was detected with anxiety in males or females as well. Table 2 presents the results of the regressions for semantic and nonsemantic performance and Figures 1 and 2 present graphically the results of these analyses.

Figure 2 presents semantic performance as a function of rate of presentation, expectancy, gender and achievement. In predicting performance on the semantic items. there were three main effects among out independent variables: achievement scores were positively associated with performance, and subjests in the low expectancy condition answered more of the semantic items correctly than did subjects in the high expectancy condition. These two effects are independent and combine additively sp tjat subjects with high scores on the achievement composite who were lead to expect a difficult task performed best; while the poorest performance came from subjects with low scores on the achievement composite who expected an easy task. A gender effect, with males scoring higher than females. constituted the third main effect. The source of this effect is illuminated by the gender by presentation interaction. In the fast presentation conditions. there were no sex differences in performance. but males answered more semantic items correctly than did females in the slow ½resentation condition. In other words, rate of presentation had no effect on females but slow presentation did facilitate performance for males.

Figure 1 presents performance on the nonsemantic items. As on the semantic items. there was a main effect for achievement. As achievement motivation increased, so too, did performance on the nonsemantic items. The presentation by anxiety interaction indicated that anxiety has a deleterious effect on performance for subjects in the fast presentation conditions. It appears that anxiety negatively influences cognitive processing of superficial aspects of a written text .

The results of Study III indicate that the achievement composite is related to performance in both recognition tasks. Achievement motivation facilitated recognition performance regardless of the specific details of the task (semantic or nonsemantic items) ot situation. Expectancy affected only performance on the semantic items. Subjects who are lead to expect a more difficult task perform better on the semantic items. From Study II we concluded that the semantic content of the text was the object of the subject's attention regardless of instructions. If so, this suggests that expecting a difficult task facilitates performance only with content that is attended to; while achievement motivation facilitates performanee regardless of attentiona focus.

While er expected presentation rate (which affected the actual difficulty of the task) to be a powerful independent variable, its effects were clearly contingent upon person characteristics; just as person characteristics, except achievement motivation,had effects on performance contingent upon the situation.

In summary,the inverted "U" relationship in Study II was NOT found in Study IIIThis finding may have occurred because the experimental situations used in the two studies were not comparable. Yet, if the curvilinear function was so unrobust that a few changes in the situation made it disappear, we can conclude that the finding in Study II lacks transsituational generality. Further research is necessary to clarify this issue. The effects of achievement motivation appear to be a robust finding. The positive effect of achievement motivation on performance remains constant regardless of situational manipulations. The experimentally

imposed changes in the characteristics of the situation were capable of improving performance,but these effects were task specific, as well as partially dependent upon subject characteristics. We can therefore conclude that some personality charateristics, such as achievement, are relevant to performance on recognition tasks, but other personal, situational and task characteristics combine with one another in complex fashions.

References

Broadhurst, P.L. (1959). The interaction of task difficulty and motivation: the Yerkes-Dodson law revisited. Acta Psychologia, 16, 321-338.

Eyesenck, H. (1967). The Biological Basis of Personality. Illinois: Charles C. Thomas.

Freeman, G.L. (1940). The relationship between performance level and bodily activity level. Journal of Experimental Psychology, 26, 602-608.

Gough, H.G., & Heilbrun, A.B. (1980). The Adjective Checklist Manual. Ca.: Consulting Psychologists.

Ingram, R.E., Smith, T.W., & Brehm, S.S. (1983). Depression and information processing: self-schemata and the encoding of self-referent information. Journal of Personality and Social Psychology, 45, 412-420.

Mandler, G. cited in Goldberger, L., & Breznitz, S. (1982). Handbook of Stress. N.Y.: Free Press.

Piedmont, R.L., & Kayson, W.A. (1979). Effects of task instructions and passage difficulty on semantic and nonsemantic processes of linguistic ideas. Psychological Reports, 45, 83-88.

Spielberger, C.D., Gorsuch, R.L., Luskene, R.E. (1970). State-Trait Anxiety Inventory Manual. Ca.: Consulting Psychologists Press.

Staats, A.W., & Burns, G.L. (1982). Emotional personality repetoire as cause of behavior: specification of personality and interaction principles. Journal of Personality and Social Psychology, 43,873-881.

Weitheim, E.H., & Schwartz, J.C. (1983). Depression, guilt, and self-management of pleasant and unpleasant events. Journal of Personality and Social Psychology, 45, 884-889.

Wilson, W.M., & Tyler, L.K. (1976). Memory and levels of processing in a psycholinguistic context. Journal of Experimental Psychology: Human Learning and Memory, 2, 112-119.

Yerkes, R.M., & Dodson, J.D. (1908). The relation of strength of stimulus to rapidity of habit formation. Journal of Comparative Neurological Psychology, 18, 459-482.

TABLE 1

CORRELATION MATRIX OF PERFORMANCE

AND PERSON VARIABLES FOR

MALES AND FEMALES[1]

| | | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. |
|---|---|---|---|---|---|---|---|---|---|
| 1. | SEMANTIC | ---- | .49* | -.08 | -.22 | .32* | .07 | .27 | -.17 |
| 2. | NONSEMANTIC | .28* | ---- | -.09 | -.009 | .33* | .08 | .28 | -.05 |
| 3. | STATE ANXIETY | .16 | -.04 | ---- | .61* | .08 | .02 | .07 | .90* |
| 4. | TRAIT ANXIETY | -.03 | -.09 | .51* | ---- | .18 | -.09 | .06 | .90* |
| 5. | EPPS ACHIEVEMENT | .22* | .07 | .18 | .19 | ----- | .05 | .72* | .14 |
| 6. | ACL ACHIEVEMENT | .13 | .35* | -.31* | -.43* | .03 | ---- | .72* | -.04 |
| 7. | COMPOSITE ACHIEVEMENT | .24* | .30* | -.09 | -.17 | .72* | .72* | ---- | .07 |
| 8. | ANXIETY COMPOSITE | .07 | -.08 | .87* | .87* | .21* | -.43* | .15 | ---- |

[1]Males above diagonal
Females below diagonal

* $p < .05$

TABLE 2

MULTIPLE REGRESSION ANALYSIS RESULTS

FOR PERFORMANCE ON SEMANTIC

AND NONSEMANTIC ITEMS

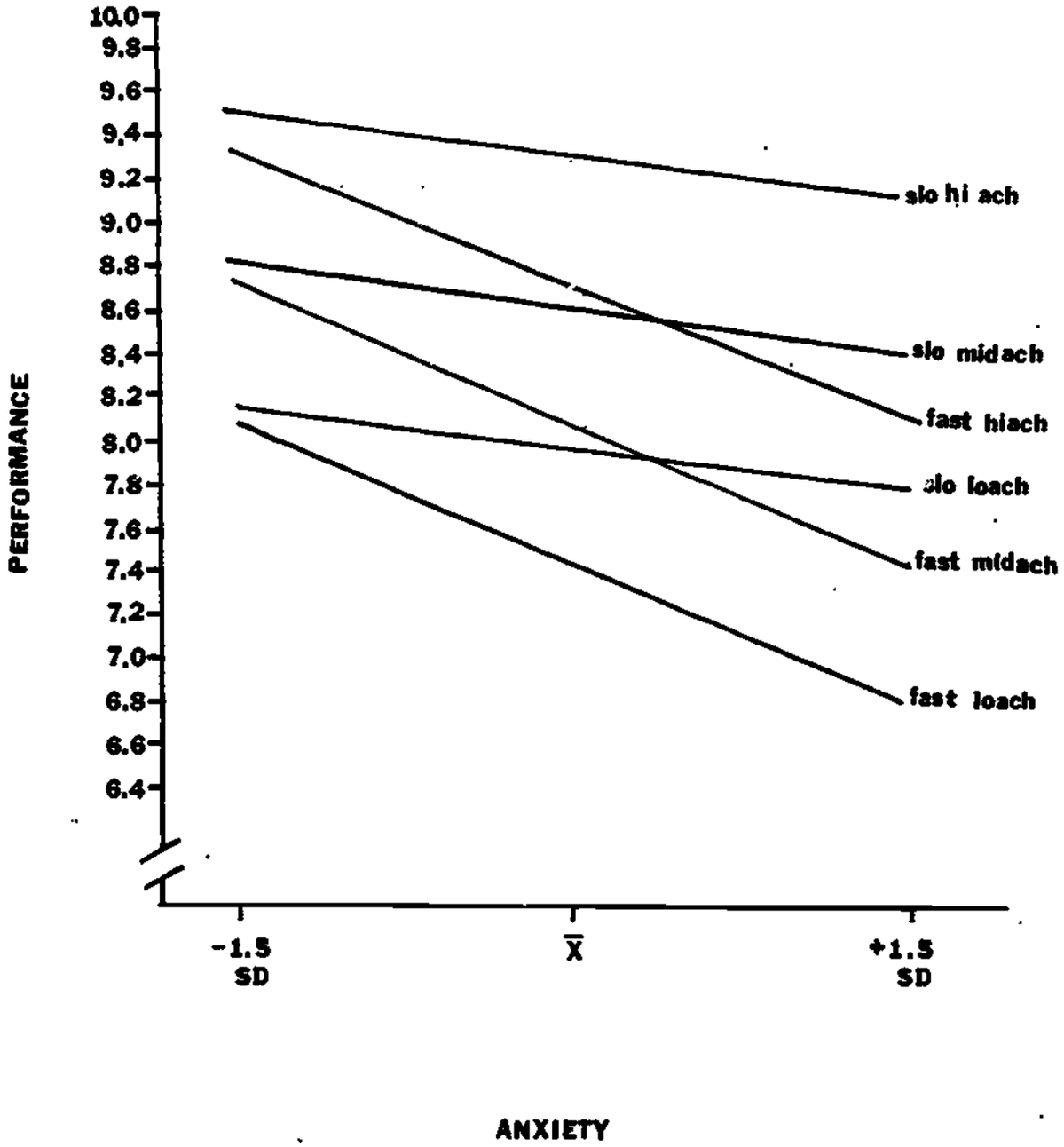
| | | | | |
|---|---|---|---|---|
| NONSEMANTIC | R=.48 | F=9.49 | df=4,129 | p<.001 |
| PRESENTATION | | F=2.04 | df=1,129 | p N.S. |
| ACHIEVEMENT (COMP) | | F=9.70 | df=1,129 | p<.01 |
| ANXIETY (COMP) | | F=.45 | df=1,129 | p N.S. |
| PRESENTATIONxANXIETY | | F=4.85 | df=1,129 | p<.05 |
| SEMANTIC | R=.44 | F=6.23 | df=5,129 | p<.001 |
| ACHIEVEMENT (COMP) | | F=7.91 | df=1,129 | p<.01 |
| GENDER | | F=5.84 | df=1,129 | p<.05 |
| EXPECTANCY | | F=4.17 | df=1,129 | p<.05 |
| PRESENTATION | | F=0.00 | df=1,129 | p N.S. |
| GENDERxPRESENTATION | | F=6.28 | df=1,129 | p<.05 |

FIGURE 1

NONSEMANTIC PERFORMANCE AS A FUNCTION

OF RATE OF PRESENTATION,

ACHIEVEMENT AND ANXIETY



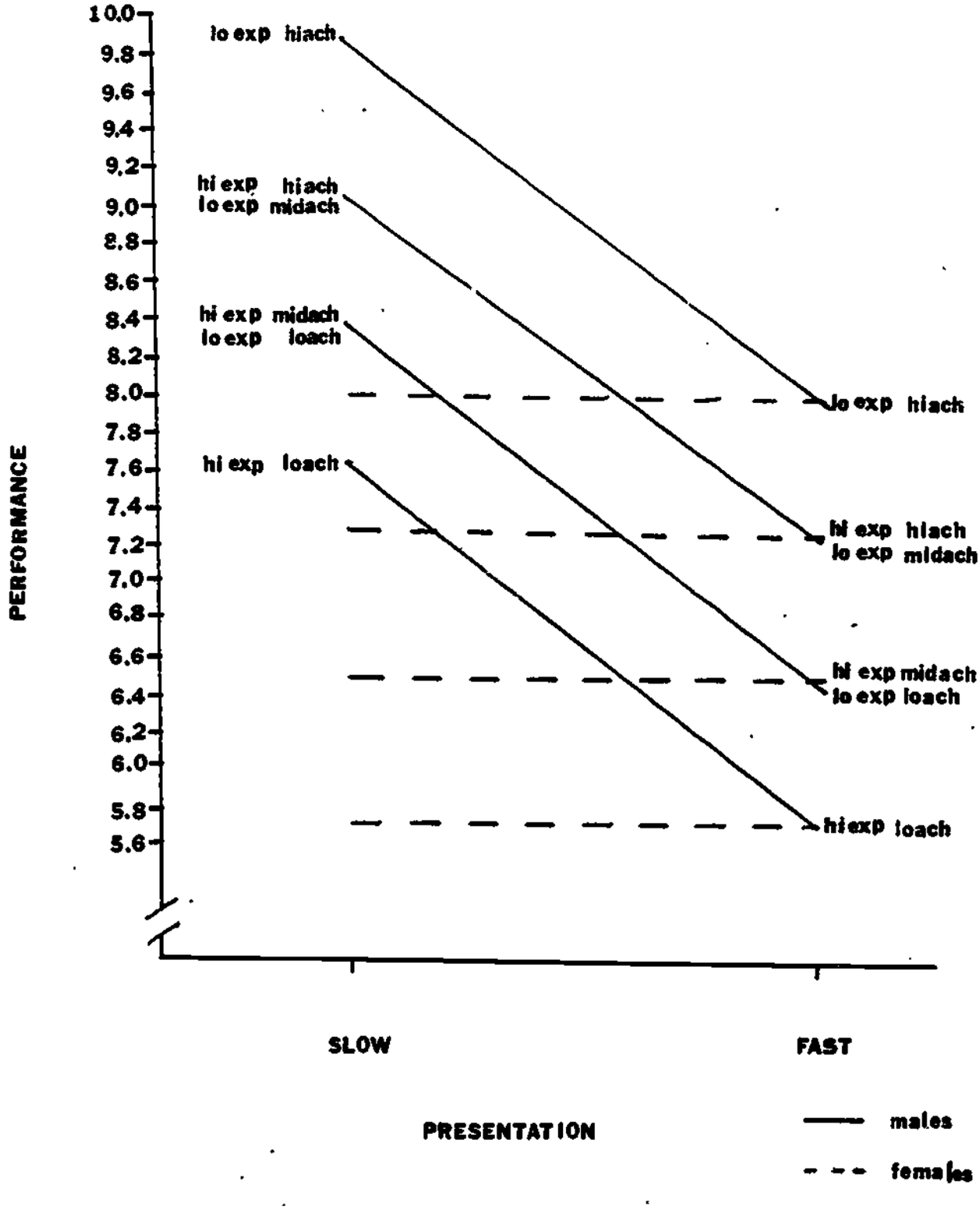

NONSEMANTIC=1.19(PRE)+.06(COMP)-.01(ANX)-.036(PRExANX)+6.18

FIGURE 2

SEMANTIC PERFORMANCE AS A FUNCTION OF

RATE OF PRESENTATION, EXPECTANCY,

GENDER, AND ACHIEVEMENT




SEMANTIC=.07(COMP)+.92(GEN)-.37(EXP)+.004(PRE)-.95(GENxPRE)+3.39