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ABSTRACT

A "release from proactive inhibition (PI) task" method examines the masculine-feminine connotation of a word as an attribute of encoding in memory. Male (N=45) and female (N=61) subjects were given four trials, each trial consisting of three occupations with all masculine or all feminine connotations, a subtraction task, and a recall sheet. Males presented with three sets of masculine occupations, and then switched to feminine occupations on the fourth trial, showed a continual decline in recall. Males presented with a feminine-masculine switch showed 80% release from PI. Males may first have classified masculine occupations presented as "occupations," with feminine occupations subsumed into this category. Males presented first with feminine occupations classified them as such, making the later-presented masculine occupations a new category. Females distinguished between masculine and feminine occupations, regardless of order of presentation, showing a small consistent release from PI. A differing social reality experienced by males and females has an influence on encoding of occupations. No sex-role effects were found. Further research should investigate the effects of cognitive structures such as memory encoding categories on social interaction. (NRB)

Sex and Sex-Role Effects on Release from Proactive Interference

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The effect of internal cognitive structures, called frames (Minsky,1975), scripts (Abelson, 1975), or schemata (Bobrow & Norman, 1975; Stotland & Canon, 1972; Tesser & Conlee, 1975), have been investigated in numerous memory tasks with the one consistent conclusion that recall of specific facts is affected by their relation to an abstract organizing principle. Since considerable evidence now indicates that stimuli (particularly words) are encoded in memory as members of conceptual classes, the task becomes one of identifying the mental schema or encoding categories that are operative for any given individual or group of individuals. One method that has been used to identify many classes or attributes of encoding is the "release from proactive inhibition (PI) task" (Wickens, 1972). For the release from PI task, a trial consists of the presentation of words to be remembered, a distracting task, and a recall period. Recall typically declines with trials if the words presented share a common attribute. When words of a different conceptual class are presented on a later trial, recall should improve, indicating that the last set of words are encoded differently in memory.

In the past, research in this area has concentrated on the processing of neutral or nonsense material. Recently, however, empirical work has been done on the influence of cognitive structures on the selective processing of social information (Markus, 1977). One social encoding category that has been investigated with children (Kail & Levine, 1976; Koblinsky, Cruse, and Sugawara, 1978) is the masculine-feminine connotation of a word. Although this encoding attribute has been found to affect the short-term recall of words for grade

school children, it has not been found to be as salient an attribute of encoding for adults. In addition, children who showed a marked sex-role preference (either masculine or feminine) encoded along the masculine-feminine dimension to a greater extent than those who were less extreme in their sex-role preference. The sex-role variable has not been investigated in an adult population.

The purpose of the present experiment was to further clarify the masculine-feminine connotation of a word as an attribute of encoding in memory for adults, as well as the influence of sex-role orientation on encoding. In recent years, a number of researchers have hypothesized that sex-role stereotypes result in oversimplified perceptions of reality and restriction of life options (e.g., Saario, Jacklin, & Tittle, 1973; Weitzman, Eifler, Hokada, & Ross, 1972). To varying degrees, one's sex-role identity may be organized around such stereotypes, resulting in one aspect of the self-schemata that organizes and guides the processing of information. In other words, having a stereotypic sex-role identity as part of one's self-schemata may result in the "sorting out" of social stimuli into sex-role stereotypic categories -- masculine versus feminine. Occupations were chosen as stimuli for this study since stereotypes exist that some jobs are feminine and others masculine. In fact, it has been suggested that the major factor accounting for sex differences in occupational preferences is sex-role stereotypes (Looft, 1971; Siegel, 1973). Recently, however, researchers have suggested that stereotypic attitudes toward occupational sex-role division are breaking down, and that such trends are most evident in white, middle-class populations (Albrecht, 1976; Entwisle & Greenberger, 1972). The present study assessed the extent of existing occupational stereotypes in a college-age, upper middle-class population.

Subjects. Forty-five male and sixty-one female Introductory Psychology students participated on a voluntary basis.

Release from PI Task. Stimuli consisted of eight groups of three occupations each, four groups of words with masculine connotations (e.g., carpenter, miner, and engineer) and four with feminine connotations (e.g., secretary, dietician, and nurse). Occupations were selected from Holland's Self-Directed Search (1972) and Dwyer, Salbod, & Bedell, 1978 as those most often associated with one sex or the other. Differences between masculine and feminine occupations for income and educational level were minimized. Words in the two categories were equated for length and acoustic properties, while minimizing associations within each group of words. Test booklets contained the following sequence: a) three occupations, b) a subtraction task, and c) a recall sheet. This sequence was repeated for a total of four trials. Control group booklets contained either feminine words for all four trials or all masculine words, while experimental booklets had words selected from one category (e.g., masculine) on Trials 1-3 and from the other category (e.g., feminine) on Trial 4. The ordering for groups of words across trials was counterbalanced.

Sex-Role Task. Twenty masculine and twenty feminine adjectives from the Bem Sex-Role Inventory (BSRI) were used to assess sex-role orientation (Bem, 1974). Based on their self-ratings, all subjects were classified into either a sex-typed or non-sextyped category depending upon whether there was a significant difference or not between their masculinity and femininity scores.

Procedure. All testing was done in the classroom with one male and one female experimenter. Instructions were prerecorded and stimulus materials were presented in individual booklets. Each booklet contained a Brown-Peterson distractor task, with three to-be-remembered items per trial. For each trial

subjects were given 10 seconds to study the group of three words, a 21-second distraction task, and a 10-second recall interval, followed immediately by the next trial. For one-half of the control group the words on the trials were masculine and for the rest the words were feminine. For the experimental groups, the words were selected from one category on Trials 1-3 and from the other on Trial 4.

Results.

Recall data over trials for both males and females are presented in Figure 1. As expected, a significant trials effect (Trials 1-3) was found, indicating a build-up of PI, $F(2,180) = 39.43$, $p < .001$. Although no significant difference was found between the experimental and control groups for the first three trials, they did differ on Trial 4, $F(1,90) = 4.03$, $p < .05$. This too was expected since only the experimental group was presented with stimuli on Trial 4 that differed from Trials 1-3, thus allowing a release from PI. A significant sex (male,female) x type of word (masculine, feminine) x group (experimental, control) interaction, $F(1,90) = 8.57$, $p < .005$, also existed for Trial 4. No main or interaction effects were found for sex-role orientation.

Discussion.

Results indicate that the masculine-feminine connotation of a word is a salient attribute for memory encoding in adults. The effect, however, was different for males and females. Males presented with masculine occupations and then switched to feminine words on Trial 4 showed a continual decline in recall, whereas males presented with the feminine to masculine switch showed an 80% release from PI. Females, on the other hand, showed a small but consistent release from PI.

In order to interpret and explain the above finding, the following hypothesis was formulated. When presented with masculine occupations, males activated the category "occupations." When feminine occupations followed on Trial 4, they were subsumed into the same category of "occupations," and thus no release from PI was shown. Feminine occupations on Trials 1-3 for for males, however, were encoded as "feminine occupations" or non-masculine occupations. When masculine occupations followed on Trial 4 they could not be subsumed in the prevailing category either as "masculine occupations" or "occupations" in general due to the heightened saliency of the sexual stereotype caused by seeing feminine occupations on the first three trials -- a kind of priming effect. Thus, the occupations on Trial 4 were categorically distinct from those on Trials 1-3. Females, on the other hand, recognized the distinction between masculine occupations such as surgeon, lawyer, or electrician and feminine occupations such as nurse, secretary, or housekeeper regardless of the order of presentation. The dichotomy worked both ways for females and resulted in a consistent release from PI.

Implications and Conclusions

The present results suggest that a differing social reality is experienced by males and females in our society, and that this differing experience has a more pervasive influence on encoding of occupations than one's sex-role identity. This is understandable since our social structure has very different consequences for males and females. Few barriers exist for males in terms of occupations because of sex, but, in general, males do not elect to pursue those occupations classified as feminine because of the lower pay and prestige associated with them. Since men are not moving in the direction of more equal representation in feminine occupations, they most likely see masculine occupations as the

"real occupations" versus that other category of "feminine occupations." Females, in their attempt to achieve equality in terms of masculine occupations, are more likely to see the dichotomy between masculine versus feminine occupations, regardless of their own personal sex-role identity or beliefs about what "should be." The small effects found in our study do reflect that this dichotomy is lessening.

Tentative results from a recent study done to test the above hypothesis indicate that this may be a reasonable explanation for the pattern of results found in the present study. We are also in the process of conducting a study to investigate the release from PI effect for the masculine-feminin connotation of words using behavioral traits more often associated with one sex or the other (i.e., traits associated with traditional sex-role stereotypes).

An important implication of the present research is the usefulness of the release from PI method for assessing sex differences, as well as individual differences in attitudes surrounding sex roles and stereotypes. Since this task is a projective measure of encoding categories, it is relatively free of many of the biases affecting self-rating scales for sex role behaviors and attitudes. This has straightforward benefits for understanding a person's performance on other cognitive tasks such as other memory tasks, as well as perception of items on tests of ability that may activate existing stereotypes. We must then investigate how cognitive structures such as memory encoding categories affect a person's social behavior when interacting with others.

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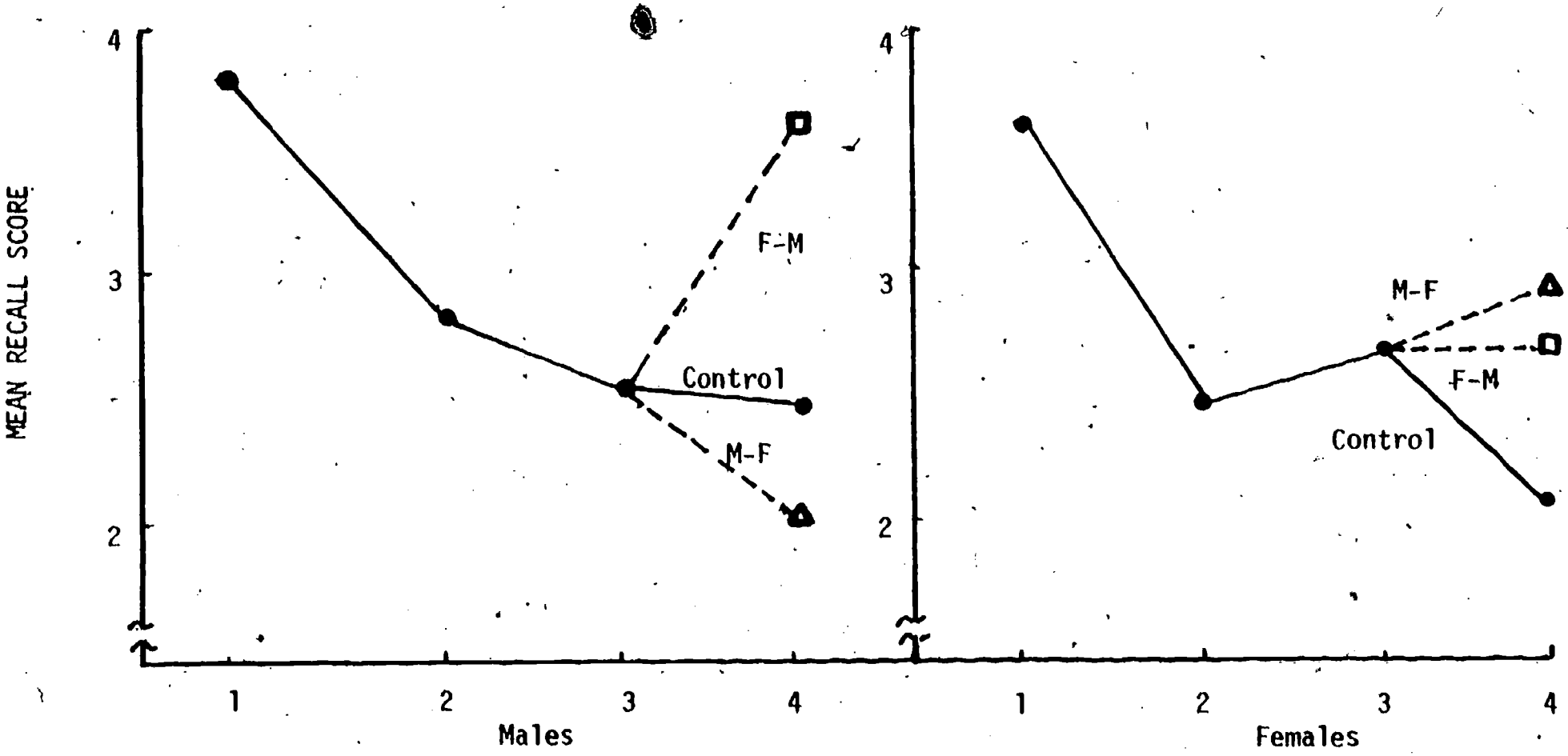

Figure 1. Mean recall scores for males and females with all experimental conditions collapsed on Trials 1-3 but represented on Trial 4.