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Gender Differences in Memory Recall

Past research suggests that males and females differ in memory associated with gender-stereotyped objects. Specific findings, however, have been inconclusive with regards to the specifics of these differences. The purpose of this study was to extend this literature by evaluating gender differences in memory recall when participants are presented with stereotypically masculine items, stereotypically feminine items, and neutral items. Results found that females recalled more items overall and performed better on recalling gender neutral and female stereotyped items. No differences were found between males and females in recalling male stereotyped items. Additionally, no difference was found between males and females in incorrectly recalling items that were not presented in the recall task. Results suggest the ability to recall objects is influenced by an interaction between stimulus and participant gender. Implications and directions for future research are discussed.

Key Words: Gender, Memory, Cognition

The study of individual differences with regards to memory has been a popular topic for research in psychology. Specifically regarding gender, however, these studies have produced varying results. Some researchers have found that females performed better on verbal memory tasks and males performed better on spatial memory tasks (Geiger & Litwiller, 2005; Lowe, Mayfield, & Reynolds, 2003). Other research suggests this distinction is not as clear and has found that females have better skills than males in the identification of objects and some spatial skills (Eals & Silverman, 1994).

Gender schema theory has been proposed to

explain gender differences in memory recall (Cherney & Ryalls, 1999). Specifically, gender schema theory suggests that gender stereotypes have a large impact on memory. According to this theory males and females should recall the same amount of information overall but females should recall feminine stimuli better than masculine stimuli and males should recall masculine stimuli better than feminine stimuli. Research has been generally supportive of this idea. Herrmann and Crawford (1992), for example, studied gender differences in everyday memory performance. They found that females recalled more stereotypically feminine items, such as

items from a grocery list, better than males did. Also, when asked to remember a sheet of directions, stereotypically a masculine task, males recalled more information than females did. Niedzweinska (2003) evaluated the recall of autobiographical information and found that males and females remember different things based on their differing identities and gender schemas. Males recalled more events associated with competitive and power-oriented themes while females recalled more events associated with communal and caring themes.

The purpose of this study is to evaluate gender differences when males and females are presented with stereotypically masculine items, stereotypically feminine items, and gender-neutral items. Based on the gender schema research, it is hypothesized that males and females should recall more stimuli that are stereotypically consistent with their gender.

Method

Participants

Participants were 176 undergraduate students from a large southern university. 97 participants (55%) were female. The ages of the participants ranged from 18 to 54 years with a mean of 21.07 ($SD=4.35$).

Materials

Data was collected using two instruments. The first was a form requesting participants to self-report their age and gender. Additionally, space was provided on this form for participants to record their answers in response to the memory task. The second instrument consisted of a picture page (see Appendix) that presented 30 objects in random order: 10 that were male-stereotyped, 10 that were female-stereotyped, and 10 that were neutral in gender-stereotype. The 10 masculine items were a basketball, a gun, a racecar, an airplane, a truck, a football, a game controller, a skateboard, a tie, and a hammer. The 10 feminine items included a flower, a hairdryer, a dress, a heart, a wedding cake, a doll, an engagement ring, a purse, lipstick, and

nail polish. The neutral items were a pen, a clock, a tree, a computer, keys, paper clips, an apple, a dog, a pumpkin, and a book.

Procedure

The surveys were distributed during class or during a scheduled session outside of class. In both instances the same procedure was followed to collect data. First the general form was passed out along with an informed consent form. Students were asked to read the informed consent form and complete the demographic questions on the general form. Participants were then instructed that another page would be passed out and they would have one minute to look at the pictures presented on the page in an attempt to remember as many of the objects presented as possible. The picture page was then passed out face-down. Participants were all then given one minute to study the picture page. At the end of one minute the participants turned the picture page over and immediately had two minutes to recall as many of the objects as they could. Responses were recorded on the general form. At the end of two minutes participants were required to stop writing and return all papers to the researcher.

After data were collected, the surveys were scored, recording the number of male-stereotyped, female-stereotyped, and neutral stimuli that each participant remembered. The total number of objects recalled was also recorded, excluding any reported items that were not on the picture page. For the purpose of this project false memories were defined as repeated responses or the recall of objects that did not appear on the picture page.

Results

The investigation of memory recall among genders produced results that suggest that males and females do perform differently when recalling objects. Mean number of items recalled for masculine, feminine, neutral, and total objects as well as false memories are presented in Table 1. An independent samples t-test found significant

differences between males and females in the recall of feminine items, $t(174) = -6.20, p < .001, w^2 = .18$. Significant differences were also found in the recall of neutral items, $t(174) = -3.86, p < .001, w^2 = .07$, and in the total number of items recalled, $t(174) = -5.40, p < .001, w^2 = .14$.

Overall, females recalled significantly more feminine and neutral items than males. Males

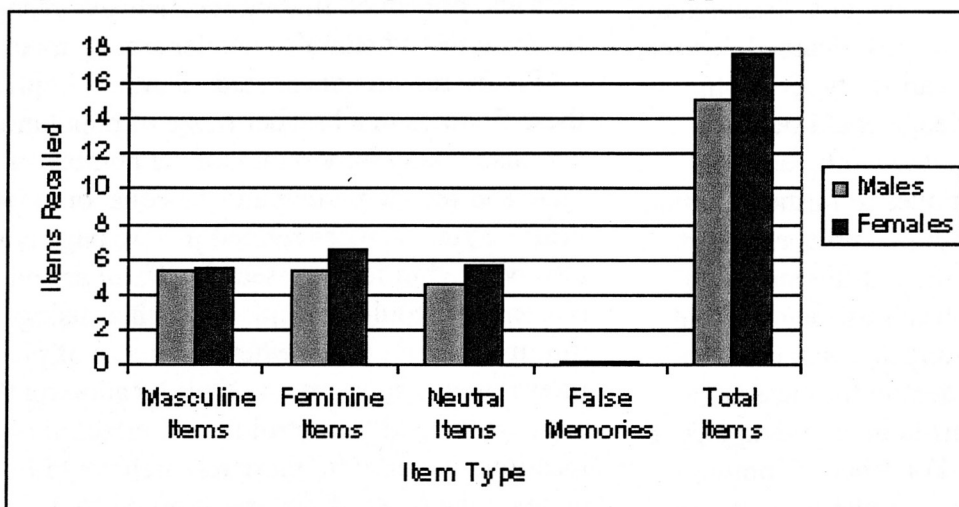
and females performed equally well in the recall of masculine items. Additionally, a relatively small number of false memories were found in item recall and no differences were found across genders in the likelihood of reporting false memories.

The information presented in Table 1 is also presented graphically in Figure 1.

Table 1. Means and Standard Deviations for Recall Task

Variable	Males ($N = 79$)		Females ($N = 97$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Masculine Items	5.24	1.58	5.43	1.55
Feminine Items	5.22	1.54	6.65	1.51
Neutral Items	4.62	1.8	5.66	1.76
False Memories	0.23	0.48	0.13	0.37
Total Items	15.04	3.54	17.69	2.97

Figure 1. Mean Item Recall by Gender across Item Type



Discussion

The hypothesis that males and females should recall more stimuli that are stereotypically consistent with their gender was only partly supported. While women did recall more feminine stimuli than men, men failed to outperform women on recalling masculine items. Furthermore, women recalled more neutral items and more total items as well. The results suggested that, when it comes to gender-stereotyped items, women outperform men in memory recall overall and for all types of items except masculine ones.

Unlike previous research examining gender schema theory, the present investigation suggested that there is a gender difference in overall memory recall. On average, women remembered over two and a half more items than men. Moreover, the results contradict previous studies which supported the notion that men outperform women in recalling masculine-oriented stimuli. Instead, it was only for masculine items that women did not outperform men; even with neutral items, women recalled more. It may be then that, in real word applications, the use of neutral items -which gender schema theory suggests would "level the playing field"- may be counter-effective. Although counterintuitive, it may be that using masculine items is the only scenario in which men are not at a disadvantage.

On a broader level, we have learned that men and women respond to various types of stimuli differently. This knowledge could be taken advantage of in schools, the workplace, and personal learning techniques to further learning among both genders. For example, educators may choose to explore these differences and implement a variety of teaching methods that appeal to different learning styles in order to accommodate both genders in the classroom. Similar efforts can be made in the workplace in the case of seminars and/or other continuing education opportunities. Results from this, and other similar studies, may be most useful when applied to a personal level. Individuals may find it beneficial to take the time to consider the ways

in which they best learn and apply these tactics to their every day lives.

These results should, of course, be considered in light of the study's limitations. First, the placement of the pictures on the picture page and the specific objects chosen may have also threatened this study. Those pictures placed at the top of the page may have been recalled more frequently since, in the English language, we read from top to bottom and have a tendency to look at the top of a page initially. The location of each object in relation to the others may have also influenced our results if the objects that appeared at the top of the page were biased towards one gender, or if there was a grouping of similar gender-stereotyped stimuli, rather than being spread apart.

More generally, sampling techniques may have biased the results. This convenience sample consisted of college students in a mid-sized, southern university. Therefore, these results may not be replicated in populations such as elementary, middle school, and high school students or in the workforce. Similarly, the test was also threatened by a difference in sample sizes for men and women. Although small, the difference of 97 women versus 79 men may have influenced the results since this research was based upon gender differences. Had the groups been equal, we might have obtained different data and prevented finding inconclusive results for the effect of stimulus gender among men.

Future researchers should attempt to replicate these findings in a broader range of populations. It is also vitally important that the number of male and female participants be equal or almost nearly equal. A more refined picture page could also be used in future research. There are many options that could be explored such as using multiple picture pages where the types of pictures remains constant, but their location on the page is changed to control for the effect of object location. In addition, more research could be done on the types of pictures used, to find pictures that may be more representative of or closely related to each gender. Regardless, it will be valuable for future research to extend this

line of research which has challenged some of the basic assumptions of gender schema theory.

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Appendix

