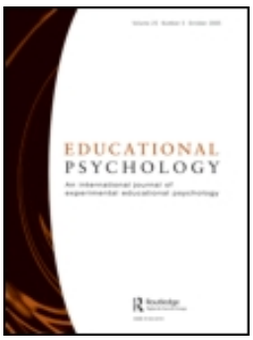

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Can Gender Stereotypes Facilitate Memory When Elaborative Strategies Are Used?

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ABSTRACT *The present study investigated whether learners would spontaneously draw upon stereotypic prior knowledge when asked to learn factual information about men and/or women while using the elaborative interrogation strategy. The 120 participants (60 male and 60 female) studied 30 facts about men, women or a combination of men and women. Overall, memory for facts about men and women was equivalent; however, elaborations about women contained more stereotypic information than those about men. In cases where stereotypes clarified the relationships within facts, performance improved. Although the themes focussed on many negative stereotypes about women, given the prevalence of stereotypic information, there were benefits from utilising this knowledge. The implications of learners using stereotypic information is discussed.*

Elaborative interrogation is a "why" questioning strategy that promotes memory by encouraging learners to connect new to-be-learned information to existing knowledge (Pressley, McDaniel, Turnure, Wood, & Ahmad, 1987). This strategy has proven effective for the acquisition of factual information when learners study single discrete facts (Greene, Symons, & Richards, 1994; Wood, Pressley, & Winne, 1990) or interconnected prose (Boudreau, Wood, Willoughby, & Specht, 1999). Learners of varying ages, varying academic abilites and in a variety of instructional contexts (such as individual versus group learning contexts) have found the strategy beneficial (Wood, Fler, & Willoughby, 1992; Wood, Miller, Symons, Canough, & Yedlicka, 1993; Wood, Pressley, & Winne, 1990). Elaborative interrogation, however, is most effective when learners have some basic prior knowledge in the to-be-learned area (Willoughby, Waller, Wood, & MacKinnon, 1993; Willoughby, Wood, Desmarais, Sims, & Kalra, 1997). The present study extends our understanding of the interplay between prior

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knowledge and the elaborative interrogation strategy. In particular, the study compares male and female students' use of elaborative interrogation when learning factual material about men and women. In these domains students have extensive general knowledge and may have considerable personal experience (Langford & MacKinnon, 2000).

Measures of prior knowledge in previous investigations of elaborative interrogation have typically examined domain-specific knowledge such as knowledge about specific animals when learning animal facts. Generally, performance is maximised when the learner is able to generate accurate, distinct elaborations (Willoughby et al., 1997). In the case of animal facts, these elaborations would be scientifically correct, specific to the particular animal, and clear in distinguishing the appropriateness of the fact to the one animal relative to other similar animals. Often, however, our knowledge involves generalisations that may or may not be correct or distinct. For example, gender stereotypes serve as a source of information which helps us to categorise and organise information (Howard, 1995). Gender stereotypes by nature, however, are generalisations that are not always correct (Matlin, 1987; Moskowitz, Suh, & Desaulniers, 1994).

Gender stereotypes serve as schema that provide structure and organisation for the information we hold about men and women. We develop these schema over time as a result of our personal experiences and through explicit instruction from other members of our cultural group (Langford & MacKinnon, 2000; Oskamp, 1991; Oskamp, Kaufman, & Wolterbeek, 1996). With respect to gender, our schema also contain an affective component: some gender-related information is viewed as positive while some is viewed negatively (Langford & MacKinnon, 2000). In North American society, the established schemata for gender define a whole host of areas including dating roles (Alksnis, Desmarais, & Wood, 1995), occupational roles (Deaux & Lewis, 1984; Reskin, 1993) and personality characteristics (Spence & Buckner, 2000) among other things. Schema about gender are abstract cognitive structures that represent the organisation of our current knowledge of gender, and that organisation guides the processing of subsequent gender-related information (Signorella, 1992). Stereotypes then, can provide a substantial, highly organised knowledge base.

Many researchers have documented the positive impact that prior knowledge has for learning new information in a related domain (Bjorklund & Bjorklund, 1985; Schneider, Bjorlund, & Maier-Bruckner, 1996). Specifically, learners with greater prior knowledge acquire and retain novel information in a related domain more easily than less knowledgeable peers. Similarly, stereotypes facilitate memory performance when to-be-remembered information is consistent with the learner's gender stereotypes (Hamilton, Sherman, & Ruvolo, 1990; Ruble & Stangor, 1986). Stereotypes, therefore, have the potential to serve as a useful tool for learning new information. Although accessing stereotypes when learning could enhance memory for to-be-learned material, not all learners spontaneously access their available knowledge without explicit instruction in strategies that promote this use of prior knowledge (Wood et al., 1990). The present study investigates the spontaneous use of stereotypes when learners are trained to use elaborative interrogation—a strategy that promotes use of prior knowledge.

It is important to note that in most educational settings educators, publishers, and parents actively work to reduce the presence of gender stereotypes in the classroom environment (Handy, 1996; Newton & Newton, 1998; Purcell & Stewart, 1990; Reese,

1994). These efforts have resulted in texts where males and females are more equally represented, and both genders are portrayed in a wider variety of roles (Foley & Safran, 1994). Interestingly, little is known about the impact of such changes on students' memory of factual content. Given that most learners develop a significant knowledge base of gender stereotypes (Bauer, Liebl, & Stennes, 1998), and that a number of educational researchers have advocated instruction in elaborative strategies that draw upon prior knowledge, it is important to determine whether learners spontaneously access that knowledge when trying to use sophisticated learning strategies such as elaborative interrogation. In addition, it is important to assess whether using stereotypes to execute the elaborative interrogation strategy has a facilitative effect on memory performance.

In order to determine whether learners would spontaneously access gender stereotypes while using elaborative interrogation, the present study provided learners with arbitrary, original facts about men and women. The facts were derived from one of the first studies in elaborative interrogation (Pressley et al., 1987). The facts paired a type of man (fat, tall, weak, and so on) with an activity (read the sign, bought the crackers, and so on). The connection between the type of man and the activity was completely arbitrary. These original facts about men were altered to include women. Participants were presented with one of four possible combinations of sentences: facts about men only, facts about women only, or one of two counterbalanced sets that presented half the facts about men and half about women.

It was expected that accessing stereotypic information while using elaborative interrogation would facilitate memory because the learner would have an opportunity to integrate the information within existing schemata. For example, when encountering a novel fact about women, accessing stereotypic information might provide the learner with a wealth of information to help to explain the relation between a type of woman and a specific activity. In addition, associating the novel information with a rich, highly organised knowledge base could facilitate retrieval (Greene et al., 1994; Willoughby et al., 1993). It is also possible that stereotypes could hinder memory performance. For example, if the fact described a woman engaged in a nonstereotypic activity, and the learner accessed prior knowledge that was specific to a stereotype, then the stereotypic information may pose problems for answering the why question and/or cause interference at recall. This latter scenario is similar to the way in which inaccurate scientific knowledge lowered memory performance when learning facts about animals (Willoughby et al., 1997). Given that some stereotypes are factually correct and others are inconsistent with known facts, they offer the potential to both help and hinder the use of elaborative interrogation.

In summary, the present study investigates the impact of accessing gender stereotypic information when using elaborative interrogation. Specifically, for facts about men, women or both men and women the study examines whether stereotypes are generated, when they are generated, and how this information impacts on memory. In particular, the quality of the elaboration generated is examined with respect to its impact on a memory test. In addition, the study examined whether the gender of the learner would impact on the use of stereotypes in each of the contexts—when facts were about their own gender, when facts were about another gender, and when the gender contained in the facts was mixed. The present investigation offers an opportunity to examine whether, when and for whom stereotypes might provide a facilitative effect for learning.

Method

Participants

Participants included 120 undergraduates (60 females and 60 males) with a mean age of 21.7 years (SD = 4.26). Students attended a university in a medium sized Canadian city. Participants either volunteered or they received course credit for participation. Participants were randomly assigned to one of four experimental conditions: man facts only, woman facts only, or one of two counterbalanced mixed gender sets. There were 15 males and 15 females in each condition.

Materials

Four sets of stimulus materials were prepared, one for each of the four experimental conditions. Each set contained 32 sentences, each describing one person engaged in one activity: for example, "The tall man/woman bought the crackers." Two sentences were used for practice and 30 served as the experimental materials. The sentences in all conditions were identical with the exception of the gender of the main character: in the man fact only condition, all sentences described men engaged in an activity, and in the woman fact only condition all sentences described women in each activity. In the mixed sets the facts were counterbalanced with half of the facts about women and half about men. Sentences were presented, via an overhead projector, one at a time for 15 seconds each. Sentences were read aloud via a prepared audiotape.

Participants study booklets contained four sections. The first section contained demographic questions (age, gender, study programme, academic year). The second section contained two blank lines, one for each elaboration of the two practice sentences, followed by two shortened lines, one for each of the two practice memory items. The third section contained 30 numbered blank lines, one for each of the experimental elaborations. The fourth section was a separate page with 30 short blank lines, one for each of the memory items.

Procedure

Participants were tested in groups, but responses to the why questions were generated individually on paper. There were three phases to the study. The first phase involved instruction and practice. At this point participants were introduced to the elaborative interrogation strategy. They were informed that they would be asked to use this strategy throughout the study. The strategy was introduced as a why questioning technique that enhances memory. They were told that it was important to answer the why question with an elaboration that clearly explained why it would be important for the man or woman in the sentence to be engaged in the activity described. Specifically, they were asked to explain why that fact would be true of that particular individual rather than any other type of individual: for example for the sentence, "The tall man/woman bought the crackers," a good elaboration would be, "Because they were on the top shelf." They were told that generating this kind of elaboration would facilitate memory for the information. A practice opportunity followed where participants were exposed to each of the two practice sentences one at a time. After participants had written their elaboration for the first practice item, they were asked one at a time to read the elaboration aloud and feedback was provided regarding the quality of the elaboration. If a poor elaboration was generated (such as, "Because s/he was hungry") the partici-

pant was prompted and encouraged to modify, extend or change the elaboration until the elaboration made a clear association between the actor and the activity. After feedback was provided to each participant for each of the two practice elaborations, participants were asked to cover up their elaborations and were given the practice memory task. The activity for each of the two sentences was provided one at a time in the form of a "who" question: for example, "Who bought the crackers?". Participants were asked to generate the adjective, and for the mixed set condition the gender, for the main character.

The experimental phase followed, with a brief review of the instructions for generating a good elaboration. Participants were then presented with the 30 sentences for 15 seconds each. No feedback was given. After all sentences were presented, the participants turned to the page with the 30 blank spaces and completed the memory phase. Again, participants wrote the adjective (and noun in the mixed set conditions) after being prompted with a who question. No feedback was provided. Participants were instructed to provide an answer for each item. Approximately three seconds was given for each memory item.

Results

Three sets of analyses were conducted. The first set examined memory performance; the second set of analyses examined the quality of the elaborations generated and the impact of these elaborations on memory performance. The final analysis involved a qualitative examination of the gender stereotypes generated.

Memory

Memory for the adjectives presented in the sentences was assessed using a strict and a liberal scoring scheme. The strict scheme included only exact matches to the original adjective. The liberal scoring scheme included synonyms as well as exact matches (such as "wicked" for the adjective "evil"). Two 2 (gender) $\times$ 4 (condition) ANOVAs were conducted, one for the strict and one for the liberal scoring scheme. Regardless of scoring scheme, there was a significant main effect for gender, largest for the strict scoring [$F(1,112) = 12.26$, $P < 0.001$] with females recalling more of the man/women adjectives (mean = 23.42) than males (mean = 20.58). No other main effects or interactions were significant [largest [$F(3,112) = 1.45$, $P > 0.05$] for condition].

An additional 2 (gender) $\times$ 4 (condition) ANOVA was conducted to examine possible differences in the recall of the noun (man or woman) in the mixed set conditions. There were no significant main effects or interactions [largest $F(1, 55) = 2.29$, $P > .05$ for the interaction].

Elaborations

The quality of the elaborations was assessed in two ways. First, elaborations were scored for quality—that is, how well the elaboration answered the why question. Second, the elaborations were scored for gender stereotypic content.

The three-category scoring scheme used to assess quality included precise, imprecise and failure to generate elaborations (Wood, Pressley, & Winne, 1990). Precise elaborations were those that clearly explained the relationship between the man/woman and the activity. Imprecise elaborations answered the why question but failed to clarify the

relation between the type of man/woman and the activity. Failures to generate elaborations included no responses and unelaborated answers (such as, "because"). A 2 (gender) × 4 (condition) × 2 (quality of elaboration) repeated measures ANOVA was used to assess possible differences in the number of precise and imprecise elaborations. Failures to generate a response were not included due to their very rare occurrence.

The quality of the elaboration served as the within subjects factor. There was a significant main effect for gender [$F(1, 112) = 9.09$, $P < 0.003$] and for the quality of elaboration [$F(1, 112) = 150.40$, $P < 0.001$] with females generating more elaborations than males, and there were more precise elaborations than imprecise elaborations. However, both of these main effects were qualified by a significant interaction of gender with the quality of elaboration [$F(1, 112) = 7.08$, $P < 0.009$]. Female participants generated many more precise elaborations (mean = 16.50, SD = 4.87) than male participants (mean = 13.48, SD 4.56) and females generated just slightly fewer imprecise elaborations (mean = 6.5, SD = 3.89) than their male counterparts (mean = 7.05, SD = 3.66). No other main effects or interactions were significant.

The impact of the quality of elaborations on memory was assessed by matching each elaboration with its corresponding outcome on the memory test. These conditional probability scores were then assessed through a 2 (gender) × 4 (condition) × 2 (conditional quality of elaboration) repeated measures ANOVA. The conditional probability score served as the repeated measure. There was a main effect for precision [$F(1, 112) = 160.50$, $P < 0.001$] with precise elaborations (mean = 67.60%, SD = 16.15%) leading to correct recall more often than imprecise elaborations (mean = 30.54%, SD = 15.95%). No other main effects or interactions were significant; however, there was a trend towards interaction of the quality of elaboration and gender [$F(1, 112) = 3.23$, $P = 0.075$]. This trend suggests that precision had a much larger impact for female participants than males. Females remembered substantially more information when it was associated with precise rather than imprecise elaborations (means of 70.1% versus 27.61%). For males the memory difference between precisely and imprecisely elaborated items was not as great (means of 65.18% versus 33.38%).

Stereotyped Elaborations

Elaborations were also scored with regard to the number of gender stereotypes that were used. Two raters scored 40% of the data for the presence of stereotypes with 96% agreement. Discrepancies were resolved by discussion. The remaining data were scored by one of the two raters. In total, 22 of the 30 facts yielded at least one stereotyped elaboration. In total, 89% (108 out of 120) of the participants generated at least one stereotyped elaboration. The mean number of stereotyped elaborations was 2.04 (SD = 1.18). There were 133 stereotypes generated about women and 97 about men. A 2 (gender) × 4 (condition) ANOVA was conducted to determine whether there were more elaborations generated in one condition than another, or more generated by male or female participants. There was a significant main effect for condition [$F(3, 107) = 3.60$, $P < 0.02$]. Post hoc analyses using Tukey *b* comparisons indicated that there were less stereotypes generated in the man sentence only condition than in any other condition (see Table I). No other main effects or interactions were significant.

When the quality of the stereotyped elaborations was assessed, 57.5% were precise and 42.5% were imprecise. A 2 (gender) × 4 (condition) × 2 (type of elaboration) repeated measure ANOVA yielded a significant main effect for precision [$F(1,$

TABLE I. Means for stereotyped elaborations as a function of condition and precision

	Man only sentences	Woman only sentences	Mixed gender set 1	Mixed gender set 2
Precise				
Mean	0.92	1.66	1.28	1.79
SD	0.76	1.11	0.84	1.45
Imprecise				
Mean	0.44	0.72	0.84	0.60
SD	0.51	0.84	0.94	0.75
Overall				
Mean	1.36	2.38	2.12	2.21
SD	0.57	1.23	1.01	1.18
n	25	29	25	29

100) = 30.65, $P < 0.001$] with more precise elaborations being generated than imprecise elaborations. There was also a significant main effect for condition [$F(3, 100) = 3.61$, $P < 0.02$] and a trend towards a significant interaction of the quality of elaboration by condition [$F(3, 100) = 2.21$, $P = 0.09$]. Tukey *b* post hoc comparisons indicated that the man sentences only condition contained fewer precise elaborations than the mixed gender set 2 condition, but there were no differences in the generation of imprecise elaborations (see Table I for means).

Conditional probabilities were calculated to determine the impact of the quality of the elaborations on memory performance. Each gender-stereotyped elaboration was matched to its memory score. A 2 (gender) × 4 (condition) × 2 (conditional quality of elaboration) repeated measure ANOVA was conducted, with quality of elaboration as the within subjects factor. Similarly to previous analysis for the general knowledge elaborations, stereotype-based elaborations produced a significant main effect for the quality of the elaboration [$F(1,25) = 5.28$, $P < 0.03$]. That is, stereotyped precise elaborations facilitated memory more than imprecise elaborations. Unlike the general elaborations, there was also a significant main effect for gender [$F(1,25) = 4.69$, $P < 0.04$] with females remembering more than males. Whereas for the general elaborations there was a trend towards the interaction of the quality of elaboration and gender, among the stereotyped elaborations the interaction of quality and gender was significant [$F(1,25)$ 4.34, $P < 0.048$]. The pattern of interaction for stereotyped elaborations differed from the pattern for general elaborations. For stereotype-based elaborations, the quality of elaboration had less of an impact on females (mean = 80.53%, SD = 37.78 and mean = 71.95%, SD = 38.11 for precise and imprecise elaborations respectively) than males (mean = 82.31%, SD = 35.16 and mean = 53.85, SD = 51.89 for precise and imprecise respectively). Whereas precision appeared to be critical for females using general knowledge for elaborations; it had less of a role when stereotypic knowledge served as the knowledge base.

Within the mixed gender sets, participants were required to remember both the gender and the activity for their memory test. An additional 2 (gender) × 2 (condition) × 2 (conditional quality of elaboration) ANOVA was conducted within these two sets to determine whether memory for the gender in the target sentence was affected by the gender of the participant, the sentence facts or the quality of the elaboration. There were no significant main effects nor was the interaction significant. However, the main effect for quality of elaboration approached significance [$F(1,11) = 4.26$, $P = 0.06$] with

precise elaboration leading to successful recall of the gender of the main character slightly more often than imprecise elaboration (means of 89.3% and 64.5% respectively).

Qualitative Examination of Stereotypes

The stereotyped elaborations were subsequently coded for general themes, to determine the kinds of stereotypes used by the participants. Analytic qualitative analysis followed Glaser and Strauss's (1967) constant comparative method using open and axial coding. Two raters scored over 20% of the data with 93% agreement. Disagreements were resolved by discussion. Themes were first constructed within each fact and then these themes were aggregated across facts.

Interestingly, stereotypes appeared both with respect to the main character, the main event in the sentence, and on two occasions part of the secondary information for the sentence. These two occasions involved, "The brave (person) gave money to the robber" and, "The angry (person) walked into the school." In the case of the robber, 24 individuals explicitly labelled the robber as male. No one identified the robber as female. Eleven individuals identified a troublesome son as the reason for the angry person to walk into the school yet only one individual identified a troublesome daughter.

When stereotypes were assessed only for the main character and main event, seven themes were identified. These themes are identified below.

1) Power and Status. There were 24 individuals that provided elaborations where the male character was identified as powerful, superior, affluent and well employed. In comparison, there were two elaborations about wealthy women but in both cases the woman had not achieved the wealth through her own means and instead was a widow or lottery winner. When women were employed they worked in low level jobs or under the supervision of a male. For example for the sentence, "The smart woman went to work" the following elaborations were provided:– "She knew her boss would be in" and, "(she) Worked for a lawyer". For "The cheap (person) arrived at the shop" the following were given: "She doesn't have much money she works at a shop" and, "Rich man sends people to the shop".

2) Nurturing and protection. A second major theme involved family responsibilities and the role of nurture and protection. Females were more likely to be placed in a role where they were directly responsible for the care of children and their spouse. The care was identified through domestic and nurturing issues such as feeding, preparing meals and caring for the family members. Females were also caretakers for friends and nonimmediate family members. Males, on the other hand, were never solely identified as the care provider for their children and their care role tended to take on more of a support than nurturing function. For example, the following elaborations were given: "She wants to buy food for her children," "She made dinner for her family," "She was a housewife," "To get pay—to support (his) family," and "To make money for his family."

The contrasting roles of men and women are most striking in the elaborations for the facts about "The brave (person) gave money to the robber," where the woman was clearly identified as protector of her children and men were heroes for protecting everyone: "To protect her child from the robber," "Because she gave him what he

wanted to protect her family," "Because he wanted to save everyone else at any cost even brokeness," and "He risked his own life to save the others." And for the fact about "The kind (person) ate dinner," women made the food and men had the food prepared for them: "That she had made for her whole family," and "He doesn't like his wife's cooking." In the odd case where the man was responsible for the food, he was taking a female out: "Took his wife out for dinner," and "Brought his girl out on a date."

3) Violence. A third substantial category involved violence. Most often a woman was placed in the position of victim and a man was the perpetrator of violence. Although the issue of violence appeared throughout the facts, the most obvious place for this was the fact about "The frightened (person) ironed the sheet," where 10 of the 16 elaborations reported involved abuse of a woman: "She knew she would be beaten for wrinkles," "Because she didn't want to upset her abusive husband," and "She was afraid of her husband."In a few cases women were designated as the source of violence and their violence was most often directed at their children whereas for men, the violence was most often directed at his wife or at another man.

4) Sexual Activity. Another major distinction between the roles of men and women involved sexual activity. Elaborations about men being sexually active were much more common than about women. In addition, men were seen as the instigators of sexual advances. Women were the receivers of sexual activity or advances: "Because it is the only people he can hit on," "Because he was trying to pick her up with his charm not looks," and "To buy a prostitute."When women were placed in a sexual role, they tended to be cast in a role that facilitated male sexuality such as a mistress/adulterer, stripper or prostitute.

5) Shopaholics. For several facts about money, stores, finding scissors, and so on, respondents generated elaborations about women and fashion. There was no occasion when a male was purchasing clothes, loving clothes, presenting himself as a fashion designer, or any other reference to males and fashion: "She felt she needed more clothes," "She loves shopping," "She was a dress stylist," and "Because old women liked fashion section."

6) Personal characteristics. In some cases, participants provided a one-word label describing a type of personality (a character label) as the elaboration for a fact. This occurred only in reference to a female character. In general, the labels were not flattering and often described a psychological disorder: "She was materialistic," "Little witch," "She's a witch," "To spread gossip," "She was crazy," and "She is psychotic."

7) Thinness/dieting. The issue of appearance seemed to be particularly important when describing women's intentions and behaviours. There were many allusions to women's figures, especially in terms of dieting, trying to be thin, losing weight and hence, requiring a smaller size. The fact about "The Thin (person) found the scissors" was particularly salient. Even though men were mentioned in relation to this fact, they were not accorded the dieting and eating issues that the women were: "To cut her bulimic body," "Making new dress—lost weight," "To cut up her size 0 dress," and "Because he wanted to hem his pants they were too big."Anecdotally, the practice sentence "The tall (person) bought the crackers" also evoked very different kinds of information for

man and woman sentences: if a woman, it was often because she was a model and was dieting, and if a man it was because he could reach the crackers.

Discussion

The introduction of female gender facts did not impact on memory performance but it did impact on the elaborations that were generated when using the elaborative interrogation strategy. Regardless of whether facts were presented with only a male character, female character or mixed genders, memory performance was equal. Clearly, learning using any of these sets of facts was equal, and similar to the performance for these facts in earlier research on elaborative interrogation (Symons et al., 1994; Wood et al., 1990).

In general, it was when the elaborations were examined that the impact of the manipulations in the present study became most apparent. Overall, precision was critical for memory. The more distinct and specific the elaboration, the better the memory performance. This finding is consistent with previous research where familiar and unfamiliar information was studied (Willoughby et al., 1993).

One of the most striking findings in the present study was that stereotypes tended to be generated more frequently when facts about women were involved. Regardless of whether all the facts were about women, or only half were about women, when women facts were introduced a greater number of stereotypes were generated and this was consistent for both precise and imprecise elaborations. Clearly, facts about males served as a neutral stimulus evoking only a few stereotypes. This effect, though interesting, is not unexpected: indeed there is considerable literature that addresses the general expectation that male characters are the norm and that females have been and continue to be less common and hence, are different from the norm (Foley & Safran, 1994; Newton & Newton, 1998; Purcell & Stewart, 1989).

The significance of this finding becomes apparent in the kind of elaborations that were generated. The themes generated in the present study, although alarming, are not inconsistent with known stereotypes about women. In fact, some of these stereotypes are also factually correct. For example, there are greater reports of females being abused than males (Berkowitz, Burkhart, & Bourg, 1994; Koss, Gidycz, & Wisniewski, 1987). At first glance, many of the stereotypes that were elicited are the kinds of stereotypes that educators, parents, and society in general are attempting to fight. The impetus behind gender-neutral texts is to minimise the presence of stereotypes in order to present a balanced picture of the potential roles of men and women (Foley & Safran, 1994; Storey, 1979) and facilitate learning for both males and females (Ochman, 1996). It is interesting to see that, when forced to access information quickly, the participants here sometimes accessed these less socially desirable stereotypes. Many researchers have pointed out that stereotypes, although sometimes undesirable, are often a good indicator of current sex differences within a culture (Diekman & Eagly, 2000).

The question here was how these stereotypes affected memory performance. In short, precision rather than the stereotype served as the critical factor. That is, precise elaborations led to greater recall than imprecise elaborations. Of interest, however, was that this was less the case for women participants than for men. This means that the stereotype may have had a buffering effect on memory for women.

The trend towards an interaction between the quality of elaboration and gender of the participant approached significance when the general elaborations were evaluated.

The interaction suggested that precision was more important for the female participants the males. However, when stereotypic knowledge served as the source of information for the elaborations, the interaction was statistically significant and the pattern was in the opposite direction. In this case, precision was less important for women than for men in predicting subsequent memory for the information studied. Consistent with related literature, it may be that when women access stereotypic information, especially since the majority of the stereotypes were about women, they accessed a knowledge base that was particularly relevant and meaningful to them. Even less developed elaborations would draw upon and be consistent with their personal knowledge, experiences and expectations, hence providing them with greater potential for memory at test (Bjorklund & Bjorklund, 1985; Signorella, 1992; Stangor & Ruble, 1989).

The impact of the learners' gender on memory was significant. Females outperformed males when using elaborative interrogation. In earlier studies, the proportions of males and females was always controlled in order to minimise the impact of gender of the learner. This was a prudent control. In the present study, when gender was manipulated, there was a clear advantage for females.

Existing literature on elaborative interrogation endorses the use of this strategy for all learners who possess a sufficiently developed knowledge base. The present study employed arbitrary materials identical to those used in early studies of elaborative interrogation. Subsequent studies demonstrated the same learning gains when students used elaborative interrogation to learn nonarbitrary facts and factual material from text (Boudreau et al., 1999; Willoughby et al., 1993). It is not unexpected, then, that educators who encourage students to use elaborative interrogation for text information that designates the gender of an actor may find that their students generate gender stereotypes—especially if the actor is female.

Concern needs to be directed beyond the presence and desirability of the stereotype to the quality of the elaboration that the stereotype affords the learner. The use of this strategy may prompt learners to use their most salient form of organising information—which may be the stereotype. Even though the stereotype may be undesirable or even offensive, it may represent a system of organisation that will facilitate the learner's acquisition of information.

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