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Gender Differences in Attitudes Towards Sexual and Relationship Words

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Gender Differences in Attitudes Towards Sexual and Relationship Words

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Running head: GENDER DIFFERENCES IN ATTITUDES

Abstract

The following research study examines gender differences in attitudes toward sexual and relationship words. Other relevant factors such as whether or not the subject has been in a committed sexual relationship or not, and the relative positive or negative nature of that relationship, were examined. An adaption of the methodology used by Fazio, Sanbonmatsu, Powell and Kardes (1986) to study the automatic activation of attitudes was used. It was hoped that this methodology would allow for a non-reactive measure of attitudes. Using social learning theory and evolutionary theory as guides, it was predicted that men would ascribe more positive adjectives to sexual words than women, and that women would ascribe more positive adjectives to relationship words. The only difference found was that men and women were inhibited by sexual word primes, more so than relationship word primes. This is similar to effects found in other research (Geer & Bellard, 1993) and seems to be a pervasive phenomenon.

Gender Differences in Attitudes

Towards Sexual and Relationship Words

The present study investigated how men and women differentially evaluate words relevant to sexual intercourse and relationships. Several independent variables were examined to see the extent to which they are related to gender differences in attitudes. First we examined the variable of whether or not subjects have been in a committed sexual relationship. We examined the influence of the subjects' assessment of the positive or negative nature of that relationship upon the positive or negative attitudes toward sexual intercourse and relationship words. This study employed a methodology that was to provide a nonreactive measure of the genders attitudes. This was done in an attempt to circumvent the many problems that are encountered in research evaluating attitudes.

Research has been conducted to discern if men and women process sexual and romantic/relationship elements differently (Geer & McGlone, 1990; Geer & Bellard, 1993) and to investigate possible differences in memory

structure of sexual information (Geer, 1994). The studies noted have found stable gender differences in how the genders process sexual information. Geer, Lapour, and Jackson (1990) state that the data suggests that mens' knowledge representations have more erotic elements and that these elements are more powerfully associated to each other. The same conclusion would also be drawn for women except it would refer to romantic elements in place of erotic. Geer et al. (1990) does not rule out an alternative, that men and women may have the same knowledge representation, but that there are gender-specific responding biases that alter or modify their response.

In an attempt to further clarify which of these two hypotheses would better account for the data, additional research has been conducted to directly study the gender's networks. Geer (1994), for example, applied a relatively new technique to accomplish this goal. The technique, called PATHFINDER, generates associative networks based on individual's ratings of similarity between pairs of words. That work is

directly relevant to the present research, given that people's attitudes were inferred from the extent to which positive or negative adjectives are more closely linked in their networks to sexual and relationship words. Next, we turn our attention to methodological concerns that are associated with research on attitudes.

When attitudes are measured, there arises the distinct possibility of reactivity. The degree of honesty of subjects' subjective responses are always to be questioned because of factors such as social desirability. To combat this problem, researchers have tried various procedures, such as assuring subject anonymity. Another method commonly employed in an attempt to get past these assessment concerns in the bogus pipeline (Jones & Sigall, 1971). This involves an elaborate deception to make the subjects believe that a presumed device was able to discern, from physiological data supposedly being measured, whether or not they were being truthful. This technique has been shown by some to increase the accuracy self-

reports (Murray, O'Connell, Schmid, & Perry, 1987), however others have not found that the bogus pipeline procedure improved the veracity of self-reports beyond the effect of assurances of anonymity (Hill, Dill & Davenport, 1988). Thus, there is a need for a non-reactive measure of attitudes to overcome some of these problems, and hopefully obtain objective reports unconfounded by reactivity. A possible solution to this problem may be found using a methodology used to study the automatic attitude accessibility model. This relatively new methodology will be presented in detail below.

As previously noted, the gender's attitudes were examined based on inferences made about their cognitive networks. This may not appear to be different from the Geer (1994) study noted, however, in that study, subjects had to rate the similarity of word pairs to generate networks. The present methodology differs dramatically from the PATHFINDER tests. It appears possible that the PATHFINDER methodology, in the domain of sexuality at least, would be influenced by the same

social desirability factors that the automatic attitude activation model to be used in this study hopes to get past. Second, this study examined other factors that may affect men's and women's cognitive networks, namely whether or not they had been in a committed sexual relationship before and the nature of that relationship. It was hoped that, because the present methodology did not require the subjects to respond directly to the sexual and relationship stimuli, these social desirability concerns could be avoided. If so, this would allow for a more definitive conclusion to be made as to whether differences between the genders are due to a responding bias, or because males and females do have different attitudes (and therefore, different networks).

Differences between the sexes have been found in a wide variety of areas. Two possible theories that can provide a framework for predictions of attitudes are the social/learning theory of behavior and evolutionary theory. These theories make somewhat different predictions as to which group (e.g. women or men, both

who have been in a positive sexual relationship) would have a more positive or negative attitude towards sexually explicit and relationship words. In the following sections, the methodology employed to assess the subjects' attitudes will be described. Then, since both theories are relevant, they will each be explained in turn. The predictions these theories would advance, in relation to the automatic attitude accessibility model, will also be discussed.

Automatic Attitude Accessibility Model

When discussing the process of attitude activation from memory, there are two distinct possible outcomes after observation of the attitude object. The first is that the attitude will be activated automatically despite lack of conscious effort by the individual. The second is that the individual actively considers his or her attitude towards the object and responds accordingly. The automatic attitude accessibility model concerns itself with the extent to which the former process in a viable outcome, and under which circumstances this can occur. The idea of automatic

activation is in contrast with the concept in cognitive psychology known as a controlled process. This concept relates to the second possibility and requires active contemplation on the part of the individual. An automatic process, on the other hand, was described by Shiffrin and Dumais (1981) as any process that causes the activation of some concept or response whenever a given set of external initiating stimuli are presented, regardless of a subject's attempt to ignore or bypass the distraction. This would imply that an individual's attitudes are automatically activated upon confrontation with any attitude object without any reflective thought, and that this is an inescapable process.

As Fazio, Sanbonmatsu, Powell and Kardes (1986) note, however, this process of automatic activation is seemingly dependent upon the strength of association between an evaluation and the object in question (i.e. a previously learned set of responses or associations is necessary). Objects is used in a very broad sense, and can be seen to represent physical objects, social

issues, people, and generally any item or thing which a person can ascribe an attitude. Fazio, Chen, McDonel, and Sherman (1982) conceptualized an attitude as being a simple association between a given object and a given evaluation. Evaluation was viewed as a broad range of possible feelings an individual can have towards an object and the relative strength of these feelings. Since the research study in this paper was drawn from Fazio et al.(1986), special attention will be paid to their work.

To measure the strength of association between an object and an evaluation, researchers (Fazio et al., 1982; Bargh, Chaiken, Govender, & Pratto, 1992) have operationalized it as the evaluation latency on a computer task. Subjects in these experiments were presented with a wide range of objects and asked to evaluate them, as quickly as possible, by pressing a key marked "good" or a "bad" key. The latency of responses (from stimulus onset to response) is seen as the associative strength between the two. As previously stated, this was assumed to be the

determinant of activation. Another relevant factor is the degree to which an attitude is accessible. The results of research by Powell and Fazio (1984), for example, seem to indicate that attitudes that are characterized by strong object-evaluations may be more accessible from memory.

To study the automatic activation of attitudes, past research has utilized a sequential priming procedure quite similar to that used by Neely (1977) to study the facilitation effect of having subjects respond to a target (e.g. robin) that was semantically related to a prime (e.g. bird). Fazio et al. (1986) used a variant of this methodology. Basically, an attitude object (e.g. hangover) was displayed on a computer screen for 200 ms. Following a 100 ms delay, either a positive or a negative adjective would appear on the screen. The delay between the attitude object and the target adjective is so brief, that the adjective would appear to the subject to overwrite the attitude object. The subjects' task was to decide whether the adjective was positive or negative in

meaning, and the latencies to the decisions were recorded. The logic behind this procedure, stems from a theory that semantic memory is organized in a network, such that in the organizational structure, words or concepts that are highly associated are located closer than two unassociated words or concepts (Collins & Quillian, 1969; Meyer, 1970). Also, Fiske (1982) asserts that not only can pieces of information be organized in a network of associations to an object, but that affect may also be linked to the object. Therefore, the subjects' latencies measure the extent to which the presentation of the attitude object activated the evaluations associated with that object, and affect how rapidly subjects could accurately designate the target adjective as being positive or negative. If the target adjective was of the same valence as the prime, responses should be facilitated (i.e. if a word that the subject evaluated as positive was followed by a positive adjective, their response was faster). On the other hand, if the prime and the adjective were opposite in valence, responses should be

inhibited (i.e. slower) as compared to the baseline. Evidence was found for this effect in the various studies mentioned as evinced by a reliable Prime Valence X Target Valence interaction (Bargh et al., 1992; Fazio et al., 1982; Fazio et al., 1986). The present study employed a methodology very similar to the one just described, but had some variations to more adequately address the question at hand.

In the first experiments (e.g. Fazio et al., 1986) the primes were determined by the idiosyncratic strength of the association between the prime and the evaluation. The four prime types were strong-good, strong-bad, weak-good, and weak-bad. A strong-good prime is one that the subject evaluated quickly as being positive in the first computer task, and so forth. The facilitation or inhibition effects were found only in the strong prime types. It was concluded that this was because the only attitudes that are capable of automatic activation upon observation of the attitude objects, were those where a strong association existed. Later research (Bargh et al., 1992) seems to

indicate that this conclusion was premature. Bargh et al. (1992) found that this effect, albeit weaker, was also observed in prime types across a wider range of strength of association, as long as the subjects' attitude was consistent.

In the following experiment, subjects were not asked to evaluate the attitude objects (in this case sexual and relationship words). Instead, subjects completed only the sequential priming task. It would not have been very informative to directly ask them their attitude, which is basically the point of the evaluation latency task, since the evaluation latency task would be susceptible to the biases and social desirability factors that was trying to be avoided. It was reasonable to assume that the priming task will not be affected by an individuals biases because they would not even be aware that their attitude was being assessed. The automatic nature of the task's ability to elicit the effects is what makes it such a potentially non-reactive attitudinal measure. Also, it was thought that even though the strength of

association was not measured, as the Bargh et al. (1992) research illustrates, associative strength may not be the all important factor as was once thought.

Subjects' mean responses for each stimuli type (sexual-positive, sexual-negative, relationship-positive, relationship-negative) were analyzed. The various groups' attitude can be inferred from these. For example, if women's mean latencies to a positive adjective that follows a relationship prime were faster than men's for this stimuli type, it would be inferred that this evaluation (positive) is more closely linked together with relationship words for women than for men.

Another variation that was different from the original studies, is that subjects were not told to do anything with the prime words. This should not have proven detrimental. Fazio et al. (1986) told the subjects that a "memory word" would be followed by an adjective. They were to respond to the adjective as quickly as possible as to whether it had positive or negative connotations, and to then repeat the "memory

word" aloud. This was done to be sure the subject attended to the prime. Given that some of the prime stimuli will be sexually explicit, it was thought that this may act to distract the subject more from the task than it would help. In Bargh et al. (1992), half of the subjects were not told to do anything with the prime word and half had the same instructions as those in the Fazio et al. (1986) study. Afterwards, both groups were tested for their recall of the primes. They were trying to ensure that the "memory word" instructions were not leading to more conscious processing of the primes and thus account for the supposed "automatic" effect. It was found that although the "memory word" group did recall reliably more than the other group, both were able to remember the majority of the primes. This indicates that they were attending to the primes. Thus, to avoid any possible task detracting problems and potential embarrassment on the subjects' part, they were not explicitly told to do anything with the primes.

Last, one important part of the procedure that was

not altered was the stimulus onset asynchrony (SOA) of 300 ms between the attitude object prime and the target adjective. If the SOA were 500 ms or more, it could introduce the possibility that the effects found are due to a conscious expectancy, and allow subjects time to develop a strategy of responding to the target adjective (Neely, 1977). A 300 ms SOA is too brief to enable subjects to form any of these conscious expectancies. Hence, if the mere observation of the attitude object prime influences responses to the target adjectives, it can only be ascribed to an automatic, unintentional activation of the individual's attitude. Subjects were never directly questioned about their attitudes towards the various subject matters. Given the very nature of this methodology, the subjects were not even aware that their attitudes were being assessed.

Social/Learning Theory

Geer (1994) notes that the results from that study are somewhat analogous to existing gender stereotypes. This leads us to the first theory of why there may be

sex differences, social or learning theory. As Byrne and Byrne (1977) point out, females, more so than males, are socialized towards marriage and parenthood. On the other hand, culture condones and practically encourages male sexual expression. Thus, as a result of conditioning since birth towards stereotyped sex roles, it does not seem surprising that there could be marked, possibly predictable, distinctions in sexual attitudes.

Similar to this studies predictions, Geer (1994) found that women had significantly more links between interpersonal relationship words and positive evaluations than for men. Also, men had significantly more links between sexual intercourse words and positive evaluations than did women. The present study hypothesized the same findings, except that instead of links it would be differences in the genders' relative facilitation and inhibition scores for the various prime types. In other words, women's responses should have been facilitated when a positive adjective was preceded by a relationship word and inhibited (or

facilitated to a lesser extent) when preceded by a sexual word. Men's responses should have been facilitated when a positive adjective was preceded by a sexual word and inhibited (or facilitated to a lesser extent) when it was preceded by a relationship word.

Social/learning theory would suggest that having been in a committed sexual relationship would be related to differences in attitudes within genders. If a man, for example, had experienced a positive sexual relationship before, it would generate different associations in his cognitive network. This stems from the concept pervading learning theory that we are a product of our experiences. If this model is followed, and past research in this area is taken as having obtained reliable effects, women have already "learned" more positive associations with relationship factors. This theory predicts that for men, more positive evaluations would be linked to relationship words after experiencing a positive relationship. For women, the same would be true, but it would result in more positive associations with sexual words.

Evolutionary Theory

Another theory that provided a framework for prediction of sex differences was evolutionary theory. Evolutionary theory predicts that sex differences will be found in any area or domain in which the sexes have faced different adaptive problems, and that these differences reflect genuine mind/brain differences produced through natural selection (Symons, 1987). To fully understand the predictions that this theory would advance, which are somewhat different from the predictions drawn from social learning theory, a brief description of evolutionary theory's major tenets will be provided.

From an evolutionary perspective, the major goal of a species is to successfully reproduce, such that the continuance of the species is promoted. Thus, those characteristics that promote reproduction and survival continue. This is the basis of natural selection. Even at this very basic, general level, evolutionary theory offers some predictions, albeit limited. As Dekay and Buss (1992) point out, from this

perspective events relevant to reproduction and survival hold special importance.

Because parental investment (i.e. time, risk and resources involved in pregnancy and rearing of children) for the ^{two} ~~various~~ sexes differ within a species, it follows that there will be differences in mating strategies (Buss & Schmitt, 1993) and mate selection (Buss, 1989). Also, due to these differences, natural selection would operate differently between the sexes. In the human species, for example, parental investment for females is much greater than for males. Therefore it is to the males' reproductive advantage to mate with multiple partners, in the hopes of tying up multiple female investments.

The female, on the other hand cannot increase her reproductive success through multiple matings, because she is only capable of a single pregnancy at any point in time. Natural selection should favor female abilities to discriminate male quality (i.e. which males would be able to provide resources for the female and her offspring) and to discriminate between males

who see them as temporary sex partners, or as potential spouses (i.e. those who would be willing to provide a higher investment of time and resources already demanded of the females). Therefore, as a result of evolution, women should be more apt at finding those men who will commit themselves to a relationship and provide the female with resources necessary to increase the likelihood of her reproductive success.

This sex-linked adaptive problem has been found to relate to sex differences found through research (Buss & Dekay, 1992). For example, Symons (1987) states that men are more likely to be aroused by a visual stimulus of the opposite sex than women. Symons argues that selection has favored the basic male tendency to become sexually aroused by the sight of females, since the male can potentially impregnate the female with hardly any cost to himself. This could possibly increase his reproductive success. Conversely, natural selection should favor the basic female tendency to become aroused tactually by favored males, seeing as females must invest a great deal of energy and incur serious

risks by becoming pregnant. Symons (1987) further relates the notion that if females did have a tendency to be sexually aroused merely by the sight of the opposite sex, the promotion of random matings would not provide the female with anything to gain, but, reproductively, a lot to lose.

When these notions of parental investment and natural selection were applied to the current research question, it appeared to predict that men would have more positive attitudes towards sexual words relative to women, and that women would have more positive attitudes towards relationship words relative to men. This results from the fact that it is to a woman's reproductive advantage to establish a relationship that will provide her with additional necessary resources. It is not to the reproductive advantage of males to commit themselves to a single female. Males should have had more positive attitudes towards sexual words, given that it is to their advantage to mate with multiple partners (and impregnate them) and this is not true for females. This is not to say that men's

attitudes for relationships should have been negative or that females attitudes towards sexual words should be negative. This is hardly the case since, for example, it would not be to the reproductive advantage of a female to hold an entirely negative view towards sex. If this were the case she may never reproduce. These predictions are just to say that males' or females' attitudes should have been more positive or negative relative to each other towards the two types of words. These predictions are similar to those suggested by the social learning theory.

In terms of what role having been in a committed sexual relationship plays in the attitudes of the two sexes, a guide for predictions arises from research done by Buss, Larsen, Westen, and Semmelroth (1992). The results of three studies by these researchers indicated that there were sex-linked differences in the activation of jealousy. These differences were predicted on the basis of the different adaptive problems the sexes have faced over the course of human evolutionary history in mating contexts. The specifics

of their argument are detailed in their study and will not be repeated here. Relevant to the present study was the finding that, within some men at least, the having experienced a committed sexual relationship increasingly activated the type of sexual jealousy associated with men. That is, men in general became more jealous over the notion of their partner not being faithful sexually. Women, on the other hand, became more distressed over the idea of emotional infidelity.

Within men there was a proportion who became more distressed over the emotional infidelity. It was found that there was a strong effect of actually having experienced a committed sexual relationship, such that those who had had a committed relationship were more likely to react in the way the majority of the men reacted. Those who had been in a relationship reacted more strongly to the sexual infidelity, in general, (in a sense, became more typically "masculine"); whereas, those who reacted more strongly to the emotional infidelity were most likely those who had never been in a committed sexual relationship. An extrapolation of

this finding indicated that it would not be unreasonable to suspect that the actual experiencing of a relevant event might be necessary for some to activate the predicted gender specific attitudes. Therefore, it was predicted that men who had experienced a committed sexual relationship would have even more pronounced positive attitudes towards sexual words relative to women, and more negative attitudes towards relationship words relatively (i.e. they would seem to be even more typically "masculine"). This was in direct opposition to the social learning theory's predictions, that after the experiencing of this relevant factor, the gender differences would not be as pronounced. Thus, our study provided the opportunity to directly test social learning theory and evolutionary theory.

Method

Subjects. Forty-one men and thirty-nine women undergraduate students served as subjects for this study. Participation was on a voluntary basis. Students signed up to participate and received extra

credit in a psychology course in return for their involvement. Approval was obtained from the University's Human Subject Committee.

Design and Procedure. The independent variables of interest were gender (Male and Female), prime type (Sexual Words, Relationship Words and Baseline) and target type (Positive Adjectives and Negative Adjectives). Two subject characteristics that were also examined were relationship status (Never in One Before or Yes Before) and the nature of the relationship (Good, Neutral, or Bad). Prime type and target type were within subjects variables, thus it was a 2 X 2 X 3 mixed factorial design. The no-prime baseline for responses was the same used by Fazio et al. (1986), in that a target adjective was preceded by a non-word letter string (e.g. BBB). Facilitation or inhibition of responses then, refers to the extent that the response was faster or slower than this no-prime baseline. The dependent measures were reaction time (i.e. time to respond whether the adjective is positive or negative) and accuracy. Given that the adjectives

used were ones that are universally described as positive or as negative , like magnificent and hideous, the error rate should be practically negligible. Thus accuracy was not expected to prove useful.

Upon arriving at the laboratory, subjects were informed that some of the words in the computer task would be sexually explicit and that they could withdraw from the experiment at any time without loss of credit. No one declined participation. They were then asked to sign an informed consent form and assured that their data would be completely confidential. They were then told that there would be two words presented on the computer, one right after the other, and that they would have to indicate, as quickly as possible, whether the second word was positive or negative in meaning. This was done by pressing either a 1 or a 2, respectfully. Subjects were then led to a computer which regulated the presentation of stimuli and recorded their responses. To familiarize them with the task, there was be a short block of practice trials using primes other than those used in the study. There

were 14 each of sexual, relationship, and baseline primes and 42 adjectives. Also, an attempt was made to keep the level of social acceptability of the sexual words somewhat high, to reduce the possibility of influencing their responses negatively. This was done by examining ratings of words relevant to the domain of sexuality, and eliminating from the possible primes list those that were lowest in social acceptability. Each prime word remained on the screen for 200 ms. After a 100 ms delay, the target adjective appeared to which the subject responded. After a 1s delay, the next attitude object appeared and so forth.

The presentation of stimuli conformed to the following conditions. The trials were randomized and counterbalanced such that each target adjective appeared once in each of three blocks of 42 trials (totaling 126 trials). Primes within each block were in a different random order, and half of each prime type was paired with positive targets and half with negative targets. Each target adjective was paired with a prime from one of the three prime categories

across blocks. This made it such that each target adjective was paired equally often in each of the three prime conditions. Last, this procedure was done twice to produce two different random ordering of trials. Half of each gender received one order and the other half the second ordering.

After completion of the computer task subjects completed a short questionnaire to assess the extent they were aware (or unaware) of the experimental design. If the subjects were aware of what the study is designed to measure, it may call into to question the "automatic" nature of the task. Thus, a questionnaire was modeled according to the guidelines set by Ericsson and Simon (1980) to examine the subjects' level of awareness.

Finally, subjects were asked to complete a relationship questionnaire. To assure anonymity, only a subject number was used on the form to pair it with the person's corresponding computer data. This form allowed for the collection of relevant information such as gender. Subjects were also questioned as to whether

or not they had ever been in a committed sexual relationship, and, if they had been, what the nature of this relationship was (i.e. they had to rate the relationship on a scale from 1-3, 1 being positive, 2 neutral, or 3 negative).

After the completion of these questions, the subject were debriefed and thanked for their participation.

Analysis

General Analysis

Subjects committed very few errors in making judgments on the connotation of the target adjectives ($X = 3$). In those cases where an error was made, the latency was not included in the analysis (approximately 2.5% of the total trials). Six subjects were eliminated and six other volunteers replaced them. Subject removal was necessary because their accuracy rates were much higher than the average (i.e. they missed more than 40% of the trials). Because of this, it appeared as if they either were uncooperative or did not understand the directions. Also, to control the

effect of outliers, each subject's mean reaction time was computed. Those reaction times associated with three standard deviations above the mean was computed for each subject. Those responses over this value were set equal to it. This is a common method employed to reduce the effect of outliers without having to eliminate any additional trials (Ratcliff, 1993).

For the questionnaires assessing level of awareness on the subject's part, their responses to each of the questions were coded into various categories. For the most part, even when provided with additional information, subjects were not able to provide answers which would lead to the conclusion that they were aware of what the experiment was trying to measure. The majority of the responses consisted of descriptions of the nature of the stimuli (e.g. "there were a lot of sexual words") or they thought that the prime word was meant to distract them, and thereby cause their accuracy to decrease. Those whose responses indicated at any time on any of the questions that they were aware of the effect of the prime, were

separated from the rest of the subjects and this was treated as an additional independent variable in an ANOVA. This analysis did not reveal any significant interactions with this additional variable. Therefore, the effects obtained does not appear to be due to any possible level of awareness.

For each subject the mean response latency in each of the 12 cells of the design (Three Prime Categories X Two Target Types X Gender) was computed. Facilitation scores were then calculated. Each subject's mean in a positive target condition was subtracted from the nonprime baseline condition provided by trials in which positive targets were preceded by a letter string. The same was done with respect to negative target conditions for each individual subject. A 2 (Prime Type) X 2 (Target Type) X 2 (Gender) analysis of variance (SAS GLM) was performed on the facilitation scores.

The analysis of variance performed on the facilitation scores did not reveal the predicted three-way interaction, $F(1,78) = 0$, n.s. (Figure 1). The

Target X Sex interaction approached, but did not reach significance, $F(1,78) = 3.05$, $p = .08$ (Figure 2). Males were inhibited by trials in which a positive adjective was the target, while females were inhibited when a negative adjective was the target. There was a significant effect of prime type, $F(1,78) = 6.86$, $p < .01$, such that regardless of target, both genders were slowed relative to baseline by a sexual word prime as compared to trials in which a relationship word was the prime (Figure 3).

Correlational Analysis

There were significant correlations among the dependant variables and with the relationship information. Sexual-positive and relationship-positive prime-target types were positively correlated ($r = .60$, $p = .0001$). This was also true of sexual-negative and relationship-negative pairs ($r = .305$, $p = .0059$). This seems to indicate that people respond in a relatively similar way when the target is a positive adjective and the same is true across pair types in which the target is negative.

The following correlations were also highly significant: Relationship Status (RS) with rating of the relationship (RR) ($r = -.398$, $p = .0003$), Sexual Relationship Status (SRS) with rating of the sexual relationship (RSR) ($r = -.486$, $p = .0001$), RS with SR ($r = -.386$, $p = .0004$), and RR with RSR ($r = .444$, $p = .0001$). Rather than providing additional information, these correlations prove more of a validation of the relationship questionnaire than anything else. For example, the correlation between R and SR basically shows that if someone responded that they have been in a sexual relationship, then they had also responded that they have been in a relationship. By definition, the latter can not occur without the former. If the correlation had not been evident, it would have called into question if the information gathered was the information trying to be obtained. Last, one of the relationship factors was correlated with the facilitation/inhibition latencies for sexual-negative (SN) pair types. RS was positively correlated with SN ($r = .236$, $p = .0348$), such that those who had been in a

relationship before were inhibited by this pair type, as compared to those who had not been in a committed relationship.

Analysis of Covariance

Because the correlation between RS and SN was significant, RS was entered as a covariate in the ANOVA to examine what effect having been in a relationship before or not had on the dependent variables. The analysis revealed a pattern similar to the original ANOVA, in that the three-way interaction was not found, $F(1,78) = .01$, n.s. There was still a significant effect of Prime type, $F(1,78) = 5.38$, $p = .023$. The Target X Sex interaction more closely approached significance, $F(1,78) = 3.4$, $p = .0692$, as contrasted to $p = .08$ from the previous analysis. Additionally, the Prime X RS interaction approached significance, $F(1,78) = 3.53$, $p = .064$. People who had been in a relationship before were inhibited by sexual primes ($X = -26.3\text{ms}$), whereas those not in a relationship before were strongly facilitated ($X = 92.6\text{ms}$). Also, those not in a relationship before were facilitated ($X = 17.6$) by

relationship primes more so than those not in a relationship before ($X = 2.6\text{ms}$).

Raw Data Analysis

An additional analysis was performed on the raw latencies to examine if there were any significant differences in the absolute reaction times prior to alteration. There was a main effect of gender, $F(1,468)=11.14$, $p=.0009$, such that males were much slower than females. This finding is consistent with past observations in research settings that men are generally slower in reaction time tasks, possibly due to lack of attention. The gender's pattern of response were very similar (Figure 4), thus the lack of any significant interactions was not surprising.

Discussion

The ANOVA should have revealed a three-way interaction if social learning theory and evolutionary theory can adequately predict the various attitudes in the men's and women's cognitive networks. Also, entering the subject variable Relationship Status into the analysis as a covariate, along with the independent

variables of interest should have allowed more detailed insight into whether or not this independent variable also plays an integral role in the genders' networks, as the two theories predicted (albeit each predicted it would play a different role). According to the two theories, better predictions on the dependent variables (i.e. the differing attitudes) could be made knowing the subject's gender and past relationship history, which should have been shown by the results of the ANCOVA. These effects were not found.

There are various hypothesis, theoretical and methodological, that can be posited in an attempt to explain the fact that the predicted three-way interaction was not elicited. First, it may be that the since the subjects were not explicitly instructed to do anything with the primes, that they may have actually ignored them altogether, as some subjects indicated on the questionnaires. If so, this would account for the lack of Prime X Target interaction as well as result in a weakening of all effects. It did not initially appear to be a point of concern, for as

previously noted, Bargh, Chaiken, Govender and Pratto (1992) found that when subjects were not given the "memory word" instructions, they were still able to recall the majority of the primes and the Prime Valence X Target Valence interaction was still significant. However, the effect was weaker. This, coupled with the fact that the idiosyncratic strength of association between an individual subject's evaluation and the various primes was not obtained, could account for the lack of significant effects. This last critique could not have been avoided, seeing as in the task measuring idiosyncratic strength of association would require essentially asking the subject their opinion. That would have been in conflict with the whole concern with subject reactivity.

The problems noted thus far have dealt with potential reasons that significant effects were not elicited. However, there were some results that were not even in the predicted direction. This is the case when comparing between gender for the trials in which an adjective was preceded by a sexual word. Recall

that, for example, social learning theory, evolutionary theory and past research indicated that men should have been facilitated by a positive adjective preceded by a sexual word more so than women. This was not the case. In fact, as shown in Figure 2, men were inhibited more than women for this pair type. Also, men were facilitated much more so than women when a negative adjective was preceded by a sexual word. This was in exact opposition to the predictions. A possible explanation for this could be due to our elimination of the socially unacceptable sexual words.

In general, although both genders rate the words that were eliminated as socially unacceptable, women often rate them as even more strongly so than men. This is an indication that for some of those words, women would have more negative affects towards these words and that this would be a strong association. If those words had been used, it could be possible that women would have been inhibited more than men for positive adjectives preceded by a sexual word, seeing as they would have stronger negative associations with

these words than men. One thing to note, however, is that if these words had been included it would make comparisons between prime types more difficult. This is due to the fact that relationship words are rated as socially acceptable and therefore the two lists of primes could not even potentially be equated on the variable of social acceptability.

An important thing to note is the significant effect of the prime word that was noted earlier. This effect seems to be somewhat analogous to earlier research that has found that genders respond slower to sexual stimuli as compared to relationship stimuli and neutral stimuli (Geer & Bellard, 1993). This effect is also more accentuated in women. As illustrated on Figure 3, males and females were inhibited by a sexual prime as compared to relationship primes, and that females were more strongly inhibited. This leads to the conclusion that this slowing down of reaction times to these categories of words is a pervasive phenomenon that is elicited using a wide variety of methodologies.

Finally, it is possible that the failure to find

many of the predicted effects is that there are no differences to be found. However, it would be premature to draw this conclusion based on this one study. It may also be that this methodology is not sensitive enough to elicit the effects. More confident conclusions could be made if the findings were replicated even after the various alterations were made (e.g. instructing the subjects to read the prime word), or if the effects were still not found after modification of the design.

Figure Captions

Figure 1. Prime X Target X Sex facilitation/inhibition reaction times.

Figure 2. Target X Sex facilitation/inhibition reaction times.

Figure 3. Prime X Sex facilitation/inhibition reaction times.

Figure 4. Males and females raw latencies on the sequential priming task for all prime-target types.

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