GENDER STEREOTYPES:

A SOCIAL COGNITIVE APPROACH

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A SOCIAL COGNITIVE APPROACH

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LIST OF TABLES

LIST OF FIGURES

TABLE OF CONTENTS

Page

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ABSTRACT

A social cognitive approach to stereotype research, utilizing the theory and methods of cognitive psychology while emphasizing the fundamentally social nature of the phenomena in question, was used to investigate gender stereotypes. Stereotypes of femininity and masculinity were conceptualized as schemata, following the work of Bem (1981) and Markus & Crane (1982), and some anomalies in the previous research were addressed. Markus and her colleagues focussed on gender self schemata, and seemed to establish that sex typed individuals are either feminine schematic or masculine schematic; while Bem confounded self schemata and role schemata, and argued for a generalized gender schema for both self and other relevant information. One of the aims of the current investigation was to assess the structure of gender role schemata. Particular reference was made to negative sex typed traits and how important they are to stereotypes of femininity and masculinity.

The cognitive methodology used was a lexical decision task in which pairs of words were presented sequentially, and

subjects were required to respond to the second one, deciding whether it was a real word or not. On the basis of research showing that subjects respond significantly faster to words when they follow a word with which they are highly semantically associated (eg. Meyer & Schvaneveldt, 1976; Dannenbring & Briand, 1982), the priming effect was proposed as measure of associative strength. This application had been used in stereotype research only once before, by Gaertner & Mclaughlin (1983) in their investigation of racial stereotypes.

Three categories of prime words were used - feminine, masculine and neutral; followed by feminine positive, feminine negative, masculine positive, masculine negative and neutral target words (and matched nonwords). Neutral prime-target trials were included in order to validate the methodology. The results suggested that the lexical decision task could be used as a nonreactive measure of associative strength in stereotype research, but care must be taken to avoid certain methodological problems, especially the excessive repetition of prime words.

It was found that for feminine and masculine target words subjects' response time did not differ whether the

preceding prime was gender appropriate or inappropriate, providing tentative support for a generalized gender role schema, although further research could clarify this issue. In contrast, for feminine and masculine negative target words, reaction times were significantly faster to words when they followed gender incongruent primes than congruent ones. The differential response would seem to be indicative of an inhibitory mechanism, and is inconsistent with the notion of a generalized gender schema.

The current investigation utilized a social cognitive approach to the study of stereotypes of femininity and masculinity. This accepts the traditional sociocultural perception of stereotypes as consensually defined, while incorporating the theoretical and methodological advantages of cognitive research. Gender stereotypes are conceptualized as role schemata, and the associative strength between schema activating terms and sex typed socially desirable and undesirable traits assessed using a lexical decision task methodology.

STEREOTYPES

The term "stereotype" was first brought to the attention of social scientists by Lippmann (1922) in his book, Public Opinion. His basic thesis is expressed in the title of the first chapter : "the world outside and the pictures in our heads". People do not respond to external reality but to their representation of it, their "pseudoenvironment". Reality is too complex to be fully represented in the pseudoenvironment, and so stereotypes serve to simplify perception and cognition. Lippmann regarded stereotypes as cognitive structures which aid the processing of information about the environment; and as integral components of people's personalities which justify existing social systems and reflect their culture.

Katz & Braly (1933) introduced the concept of stereotypes into the mainstream of social psychology with their research into stereotypes of different ethnic groups. While their major contribution to the research was methodological, their work also has a theoretical impact. They treated stereotypes as socioculturally based consensual beliefs, and linked them with attitudes and prejudice. Allport (1954) further developed the link between stereotypes and prejudice in The Nature of Prejudice, defining a stereotype as an exaggerated belief associated with a category which serves to justify our conduct in relation to that category.

Ashmore & Del Boca (1981) propose that the core meaning of "stereotype" is "a set of beliefs about the personal attributes of a group of people"; based on the agreement in the literature that stereotypes are cognitive structures that comprise the perceived or assumed characteristics of social groups. Although most contemporary stereotype researchers agree on most of the central features of stereotypes, there is a lack of consensus regarding definition, and regarding the appropriate theoretical framework within which to conduct research. Ashmore & Del Boca (1981) identify three basic orientations for research and theorizing - sociocultural, psychodynamic and cognitive.

The Psychodynamic Orientation

The psychodynamic orientation is characterized by a focus on intergroup relations and prejudice; and viewing prejudice as existing to aid personality (or societal) integration. Stereotypes are of interest primarily because of their relation to prejudice and personality. Research has been mainly linked to the study of prejudice , and also of authoritarianism as a personality syndrome (Ashmore & Del Boca, 1981).

The Sociocultural Orientation

The sociocultural orientation has its origin in Lippmann's (1922) view that stereotypes are culturally determined, and defines the concept in terms of consensus. The research fostered by this model usually involves the assessment of stereotypes - frequently a demonstration that a group of subjects agree about the characteristics of some target group or groups; mostly using Katz & Braly's (1933) technique, in which the the subject is directed to select from a list those adjectives which she considers to be "most typical" of a given ethnic group. There has also been research demonstrating the similarity of stereotypes held by different demographic groups, or their persistence over time.

The Cognitive Orientation

The cognitive orientation in the study of stereotypes is distinguished by its view of the phenomena involved as not essentially different from other cognitive structures and processes. The human capacity for processing information is limited, making people susceptible to systematic biases in processing information about people and events, which contribute significantly to the formation and maintenance of stereotypes regarding social groups. The core of this orientation can also be traced back to Lippmann's (1922) work, and his argument that reality is too complex to be fully comprehended and responded to. Stereotypes are seen as helping people to reduce and make more manageable the complexity of the social world. The research utilizes the theory and methods of cognitive psychology, with the emphasis on process (attention, encoding and retrieval) rather than content (Ashmore & Del Boca, 1981). Researchers repudiate the connection between stereotypes and prejudice, claiming that they are merely a social manifestation of human cognitive biases (McCauley, Stitt & Segal, 1980).

Hamilton (1979) analyzed the stereotype literature from a cognitive-attributional perspective. He claimed that stereotyping has occurred when a perceiver makes inferences about a person because of that person's membership of some group; so that ethnicity (for example) serves as a cue which increases the likelihood of the perceiver making certain internal attributions about that person. Hamilton describes a stereotypic statement as the expression of a belief in the correlation between two variables - one to with group membership, the other a psychological variable.

Research into schemata and prototypes suggests that stereotypes may bias both encoding and retrieval of information, although the former is more strongly implicated. Bodenhausen & Wyer (1985) found that when subjects were required to make judgements of perpetrators of criminal acts on the basis of case histories containing information about ethnic group membership, they attributed transgressions consistent with ethnic group stereotypes to stable dispositional factors and therefore punished them more harshly. Data also showed that, having made a stereotype based judgement of the crime and it's determinants, subjects showed differential recall of other case information based on stereotype congruency.

GENDER STEREOTYPES

Until recently, most stereotype research has followed the sociocultural approach, with a strong focus on the centrality of consensus. This is especially true of the gender stereotype literature. The emphasis has been on establishing the nature of consensual stereotypes of femininity and masculinity, and demonstrating their prevalence across a range of subject populations and over time.

Bipolar Conceptualization and Measurement of Femininity and Masculinity

One of the major developments in the field of gender stereotype research has been the change in the conceptualization of femininity and masculinity. Early research was based on the assumption of two gender- linked and therefore dichotomous sex roles (Bernard,1980). It supported the status quo of sex role divisions in suggesting that the adoption of culturally defined gender-appropriate sex roles is developmentally desirable, and in regarding deviations from these roles as maladaptive and undesirable (Barry, Bacon & Child, 1957; Frieze, Parsons, Johnson, Ruble & Zellman, 1978; Kagan,1964; Kohlberg, 1966; Mussen, 1969). A sex role was

something which the individual achieved upon reaching a stage of "sex-appropriate" behaviour (Rowland, 1980).

Thus the domains of femininity and masculinity were viewed as opposite ends of a single unidimensional trait of gender identity (Bernard, 1980). The differences between the two have been characterized as instrumental vs. expressive (Johnson, 1963), agency vs. communion (Bakan, 1966), or other distinctions reflecting the differences between mutually exclusive extremes of a single sex role identity continuum (Spence & Helmreich, 1978).

Consequently, research based on this conceptual model used sex role assessment scales characterized by dichotomous scoring which forced responses to one pole or the other (Bernard, 1980). The definition of femininity - masculinity that has been implicitly used by the developers of these early scales has contained two assumptions - unidimensionality and bipolarity. Although different investigators have emphasized different personality dimensions in the measurement of a femininity - masculinity continuum, one feature common to most unidimensional bipolar inventories is a reliance on the ability of items to discriminate the responses of females from those of males (Constantinople, 1973).

Conceptualization and Measurement of Femininity and Masculinity as Independent Dimensions

In contrast to earlier conceptions of gender roles that relied on a single bipolar dimension, more recent research treats femininity and masculinity as independent dimensions measurable in varying amounts in the same person. Bem (1974) claims that the sex role dichotomy has obscured what she believes to be two highly plausible hypotheses. Firstly, that individuals may be "androgynous" ie. display both feminine and masculine traits, depending on the situational appropriateness of various behaviours; and secondly, that strongly sex typed individuals may be limited in the range of behaviours available to them across situations. These individuals are motivated to keep their behaviour consistent with an internalized sex role standard, suppressing behaviour that is undesirable or inappropriate for that standard (Kagan, 1964; Kohlberg, 1966). Thus, a sex typed individual may sacrifice situational appropriateness for gender consistency (Bem, 1974).

On the basis of an orthogonal model of gender roles, psychological androgyny has been suggested as the most adaptive option, on the basis that it allows an individual

flexibility to be both expressive and instrumental, as situationally appropriate (eg. Major, Deaux & Carnevale, 1981).

An orthogonal model of sex typing has received theoretical and empirical support from Constantinople (1973), as well as later researchers. She questions the assumptions of both unidimensionality and bipolarity held by early researchers in defining and measuring femininity and masculinity. The issue of dimensionality is raised in two ways. Firstly, the question of whether femininity-masculinity is a single dimension, or if it is possible that there are two independently variable, separate dimensions of femininity and masculinity. Secondly, within the constructs of femininity and masculinity, are the traits being dealt with unitary or multidimensional?

The issue of bipolarity is a more basic one and three aspects can be distinguished. Firstly, the implication that femininity-masculinity is a bipolar dimension ranging from extreme femininity through a zero point to extreme masculinity. Secondly, the use of dichotomous variable (sex) to validate a continuous one (femininity-masculinity), necessarily implying two poles; and thirdly, the use of logical reversal (defining A as not-B, and not-A as B). Constantinople reports

that evidence suggests the multidimensionality of the femininity-masculinity construct, and that femininity and masculinity represent separate dimensions. It also indicates that the use of sex differences in response is an inappropriate criterion for item selection.

This approach has led to the development of a number of new scales based on a bidimensional conceptualization of femininity and masculinity, rather than automatically building on an inverse relationship (Worrell, 1978; Bem, 1974). Feminine and masculine individuals are those who have high scores on one dimension and low on the other; and alternate patterns of sex role orientation can be measured (Kelly & Worrell, 1977). The Bem Sex Role Inventory (BSRI) was the first scale to treat femininity and masculinity as separate dimensions, with item selection on the basis of ratings of sex typed social desirability (Bem, 1974). The Personal Attributes Questionnaire (PAQ) (Spence, Helmreich & Stapp, 1975), and the Personal Description Questionnaire (PDQ) (Antill, Cunningham, Russell & Thompson, 1981) have continued developments in this area, the latter created in Australia and based on local norms.

NEGATIVE COMPONENTS OF GENDER STEREOTYPES

Despite these advances in theory and measurement, however, the nature of the research has not changed greatly, resulting in a number of important issues being neglected. Kelly, Caudill, Hathorn & O'Brien (1977) raise one of these issues when they criticize the inclusion of only (supposedly) positively valued items in sex role inventories, arguing that as well as positive components of femininity and masculinity, there must be negative and undesirable sex typed characteristics.

This is implied by criticisms made of sex role inventories, and the influence of these problematic characteristics on stereotype research. The Sex Role Stereotype Questionnaire used by Rosenkrantz, Vogel, Bee, Broverman & Broverman (1968) purported to consist of bipolar items ranging from the feminine to the masculine extreme of a number of personality traits. Research using this instrument found that female and male college students endorsed clearly defined stereotypes of femininity and masculinity, with the qualities of the latter being rated as more socially desirable. This finding has been attributed at least in part to the strong value orientations of the scale traits, invariably involving negative connotations on the feminine pole.

The BSRI, although it treats femininity and masculinity as separate dimensions rather than bipolar opposites, has been criticized on similar grounds. Pedhazur & Tetenbaum (1979) found that feminine items were rated as less socially desirable than masculine ones, even when applied to a female target. Similarly, Gaudreau's (1977) factor analysis showed that several feminine traits loaded negatively on what could best be described as a maturity factor.

The fact that such marked differences in social desirability of items of inventories claiming to measure socially desirable feminine and masculine stereotyped traits is of interest. That such obviously socially undesirable personality traits could be included when subjects generated populations of words representing sex typed characteristics suggests that people's concepts of femininity, at least, include gender referent negative traits.

Although little research has been done in this area, the need for the measurement of negative sex typed traits has been acknowledged; initially by Spence, Helmreich & Holahan (1979), with the inclusion of appropriate scales in the revised version of the PAQ. Later, Antill et al. (1981) constructed negative as well as positive femininity and masculinity scales

for the PDQ, based on subject ratings of the desirability and typicality of adjectives in an item pool to the average Australian woman and man. Those items rated as significantly more typical for one sex than the other, and seen as desirable (or undesirable) for that sex were used to form the feminine positive, feminine negative, masculine positive and masculine negative scales, on two parallel forms.

Barber (1984) conducted an experiment in which subjects rated their idea of the ideal woman, ideal man, typical woman and typical man using the PDQ. The results for the negative scales were of particular interest. It was found that, unlike their positively valued counterparts, negative feminine and masculine traits were found to be highly positively correlated. That is, there was a tendency for subjects to assign to any given target person very similar levels of negative feminine and negative masculine traits. This tendency did not exist for the positive traits, for which (for all target persons) the correlation between feminine and masculine traits was negligible.

This result suggests that sex typed negative traits are less central to subjects' concepts of sex roles, and are therefore not differentiated in ratings. It seems that when subjects call

upon their stereotypes of femininity and masculinity, the traits which are focal to these stereotypes are the positive feminine and masculine traits, which are therefore highly differentially attributed to "woman" and "man" targets. In contrast, the feminine and masculine negative traits may not be central components of these stereotypes; so that when subjects rate the targets on these traits they do not attribute them differentially to "woman" and "man" targets because they are not highly associated with the concepts of femininity and masculinity.

A SOCIAL - COGNITIVE APPROACH

The role of socially undesirable feminine and masculine traits in gender stereotypes is an issue which requires further investigation. However, the methodology of the sociocultural approach to gender stereotypes, which has dominated the research, does not seem appropriate to this problem.

The sociocultural orientation is related to one of the major conceptual debates in the stereotype literature - whether stereotypes are individual or consensual sets of beliefs. Ashmore & Del Boca's (1981) arguments for the conceptualization of stereotypes as sets of beliefs held by individuals do not adequately address the points made by

Gardner (1973). He argues that "if the notion of consensus is ignored in the definition of the stereotype, and stereotypes are viewed at the individual level as simply the attribution of traits to an ethnic group, it seems that the fine distinction between attitudes and stereotypes ... is completely obliterated". Without consensus, stereotypes would refer simply to attributes assigned and evaluative attitudes to them; resulting in a lack of parsimony in the use of the term "stereotype".

The sociocultural model's emphasis on the consensual nature of stereotypes and their pervasiveness is theoretically crucial; but in practice this focus has obscured important research issues. The model lacks the conceptual and methodological framework necessary to investigate the internal structure of stereotypes - the differential accessibility and potency of elements of stereotypes, both at the individual and the societal level. It is in this area that the cognitive approach has become increasingly influential, as it draws upon a field of research that can provide a framework for conceptualizing and investigating stereotypes as cognitive phenomena.

The major problem with this approach is that it fails to recognize that as well as being cognitive phenomena, stereotypes are, by definition, essentially social phenomena.

Proponents of this approach have traditionally argued for the notion of stereotypes as individual cognitive structures. However, it should be possible to utilize the conceptual and methodological framework of the cognitive theorists, while still adhering to the sociocultural view of stereotypes as fundamentally social, and therefore consensual, in nature.

Stereotypes as Schemata

Hamilton (1979) describes stereotypes as being conceptually similar to schemata. Other social cognitive psychologists go further, and regard stereotypes as a type of schemata. Taylor & Crocker (1981) describe a schema as a cognitive structure representing a defined stimulus domain which functions to provide hypotheses about incoming stimuli, including plans for interpreting and gathering schema relevant information. It may also provide a basis for activating behaviour sequences or expectations of specific behaviour sequences. They outline three general classes of social schemata - person schemata (including self schemata), role schemata (including stereotypic conceptions of social groups like women or blacks), and event schemata. Thus stereotypes may be conceptualized as social role schemata.

GENDER SCHEMATA

The investigation of gender stereotypes as schemata has only recently begun. Bem (1981) proposes a gender schema theory in which sex typing partly results from a generalized readiness to process information on the basis of sex linked associations (which constitute the gender schema). She claims that individuals become sex typed as a result of the assimilation of the self concept into the gender schema; and cites evidence showing that sex typed individuals have greater readiness to to process information (including that about the self) in terms of the gender schema.

Markus, Crane, Bernstein & Siladi (1982) explain the processing of gender relevant information in terms of self schemata. Sex typed individuals are seen as either feminine schematic or masculine schematic. Gender schematic individuals who think of themselves as distinctly feminine or masculine are assumed to have a large network of schema relevant cognitions that are retrieved when the schema is activated. For an individual with a feminine schema, all these cognitions are related to the concept of femininity; and so feminine stimuli will be favoured in information processing. Such an individual would probably have some structure relevant to masculinity, but it is not likely to be self relevant.

Markus & Crane (1982) discuss the disagreement between this approach and that of Bem (1981), and outline the shortcomings of the latter. They claim that Bem's definition of a schema requires clarification, and that her discussion of "gender schemata" obscures the difference between those with feminine identities and those with masculine identities. Markus et al. demonstrated that sex typed individuals have self schemata with respect to femininity or masculinity; in contrast to Bem's claim that sex typed individuals have gender schemata (incorporating self schemata). Bem claims that having a gender schema means that "the gender connotations of both masculine and feminine stimuli will be equally salient". However, she claims that this does not imply efficient processing of gender relevant information - contradicting the cognitive concept of schemata (Taylor & Crocker, 1981). She then cites studies demonstrating enhanced recall and quick judgements of either feminine or masculine stimuli (but not both), supporting the model favoured by Markus and her colleagues.

Markus & Crane (1982) claim that sex typed individuals are not gender schematic (as defined by Bem) because feminine and masculine stimuli are not equally available, and

are not processed with equal efficiency. They argue that Bem (1981) ignores the fact that a gender schema may not mean the same thing for female and male sex typed individuals; with what constitutes a schema consistent response for a sex typed female (or male) with a gender schema remaining unclear.

Markus & Crane suggest that the only group which could be considered gender schematic by Bem's definition is that of androgynous individuals, who seem to have self schemata for both feminine and masculine traits, and demonstrate equal efficiency in processing feminine and masculine self relevant information. This seems to reflect a misunderstanding of Bem's theory, in which both feminine and masculine stimuli are salient to sex typed individuals because they are either highly congruent or highly incongruent to the individual's sex stereotypical self schema. The concept of psychological androgyny is based on a total lack of reference to gender stereotypes, with trait accessibility determined by situational appropriateness and personal preference.

Markus and her colleagues seem to have established that, in regard to self schema, a sex typed individual is either feminine schematic or masculine schematic. However, the issue of gender stereotypes with regard to role schemata (as opposed

to self schemata) has not been settled. It appears that the limitations of Bem's model may have occurred as a result of trying to use one schema concept to cover the two areas - how one processes gender relevant information about oneself; and how one processes gender relevant information about others.

The use of gender schemata in processing information about other requires further investigation. In light of sociocultural research demonstrating widespread identification of stereotypes of femininity and masculinity (eg. Deaux, 1984), it seems likely that individuals use a generalized (role) schema, giving preference to both feminine and masculine gender appropriate information, to process incoming information about other people. This would contrast with the feminine or masculine self schemata of sex typed individuals which facilitate processing of only feminine or masculine self relevant incoming information.

COGNITIVE METHODOLOGY

Schema theory provides a conceptual framework within which to investigate stereotypes generally, and gender stereotypes in particular. However, traditional stereotype methodologies are tied to the sociocultural orientation, and are therefore theoretically inconsistent with the approach

discussed here. A review by Cauthen, Robinson & Krauss (1971) shows that, up until two decades ago the sociocultural perspective represented the major experimental paradigm within which stereotype research was conducted. The focus has been primarily on establishing that there are distinct stereotypes of different social groups which persist across a range of subject populations and across time, and measurement has been by questionnaire, checklist or rating scale. These techniques are not able to assess the structure of stereotypes as cognitive phenomena, and are vulnerable to subject reactivity. The investigation of gender stereotypes requires nonreactive techniques of assessment which treat them as cognitive, as well as social, phenomena.

The lexical decision task is a technique used in cognitive research which is conceptually consistent with gender stereotypes as schemata. The subject is required to look at a string of letters and decide whether or not it is a word, and to respond by pressing one of two buttons as quickly as possible to indicate her choice, for which the reaction time is measured. Lexical decision tasks in which two words appear, either simultaneously or sequentially (in which case the first word acts as a prime), show enhanced processing (ie. faster reaction

time) when the the words are highly semantically associated (eg. Meyer & Schvaneveldt, 1976; Dannenbring & Briand, 1982). On the basis of the reliability of this finding, the task can be conceptualized as providing a measure of associative strength between word pairs (Gaertner & McLaughlin, 1983).

According to schema theory, the activation of a schema results in greater accessibility and efficiency of processing of information that is highly associated with the schema (Taylor & Crocker, 1981). The lexical decision task can be used to measure the degree of association between a schematic label (activating the schema) and a schema relevant word; making it an appropriate methodology for studying stereotypes from a schematic perspective. It has been used in this way only once before, by Gaertner & McLaughlin (1983) in their investigation of the associative strength of racial labels with positive and negative stereotyped racial characteristics. They found that subjects did not respond any faster to negative terms when preceded by "black" primes than when preceded by "white" ones, but that response times were significantly faster to positive words when they followed "white" primes than when they followed "black" ones. The use of a nonreactive cognitive measure of associative strength had shown how contemporary

discriminatory racial stereotypes were structured, contrasting with earlier sociocultural research from a time when such attitudes were not seen as unacceptable.

This technique is suited to examining an unresolved issue in gender stereotype research - the centrality of feminine and masculine negative attributes to the role schemata. Using the lexical decision task it will be possible to ascertain the relative degree of association between negative and positive sex typed traits and the relevant gender labels.

With masculine and feminine gender labels as primes (activating the relevant schema), reaction times to the various categories of target words will indicate their degree of association to that schema. In order to ensure that the cognitive methodology is reliably replicated from previous research, neutral prime and target words will also be included. It was on the basis of the priming effect reported with these attitudinally neutral stimulus items that the methodology was proposed as a measure of associative strength applicable to the investigation of stereotypes. The priming effect found with highly semantically associated word pairs is so robust that its failure to occur would be indicative of methodological faults. Thus, the replication of this effect will be necessary as a validation of the experimental design.

PILOT ONE

Method

Subjects: Subjects were eleven males and eleven females between twenty and thirty-two years of age.

Design: Pilot one was a lexical decision task, with pairs of words presented sequentially. The prime words were four masculine labels, four feminine labels (see Appendix D), and four gender neutral words (see Appendix C). The target words were eighteen each of masculine positive, masculine negative, feminine positive, and feminine negative descriptive words (selected from forms A and B of the PDQ, and the PAQ) (see Appendix A); and seventy-two nonwords (adapted from Humphreys, Evett & Taylor, 1982 and Martin, 1982) matched for length and structure with these target words. In addition, there were four neutral target words (which followed neutral primes of which they were high or low semantic associates, according to Thompson, Meredith & Browning, 1976) and matched nonwords.

The experiment was carried out over three sessions. All seventy-two target words appeared once in each session, with one third of the target words from each group following each

type of prime (masculine, feminine, and neutral). Within these constraints, the combinations of prime and target words (within categories) varied between subjects, and the order of presentation of prime - target trials varied randomly. In each session, two of the four neutral primes were each followed by two of the four neutral target words, one of which was a high semantic associate of the preceding prime, the other a low associate; with these combinations randomly varied between subjects. The nonwords appeared following the same prime word as their corresponding target words did.

Procedure: Each trial consisted of a sequentially presented prime and target pair. Following the presentation of the prime, the subject pressed one of three buttons indicating whether the prime was masculine, feminine, or neutral. If the correct button was pushed, the target followed; if not, the trial began again with a different prime. When the target appeared, the subject pressed one of two buttons indicating whether the target was a word or a nonword, and reaction time for the response was recorded. Subjects were instructed to respond as quickly as possible without making mistakes.

Results

Mean reaction times did not differ between any of the prime-target combinations in pilot one, including a failure to demonstrate a facilitation of processing of neutral target words following a highly associated prime.

Discussion

The failure to replicate the robust and frequently reported priming effect for the high semantic associate neutral word pairs indicated that this experiment had methodological problems which prevented priming from taking place. One possible problem was the method of response to the prime, which involved pressing one of three buttons to indicate whether the word was masculine, feminine or neutral. The most obvious effect of this procedure was that on neutral trials, consisting of neutral primes followed by neutral targets which were their high or low semantic associates, the subject responded to the prime by indicating whether it was a masculine, feminine or neutral word. This decision may have diverted attention away from the actual word, focussing on its category, and thus reducing its facilitating effect on the processing of a subsequent highly semantically associated target.

Another effect, reported by several subjects, was that the similarity of the prime classification task to the lexical decision task created confusion as to whether a given word was the first (prime) or second (target) word of a trial pair. This problem of lack of separation of trials could have contributed to the lack of results, not only as a result of response confusion, but also through mechanisms such as backward priming (Kiger & Glass, 1983).

It was concluded from the results of this pilot experiment that a number of methodological changes needed to be made. Trials needed to be distinguished clearly. The method of responding to the prime (considered necessary to make subjects attend to the prime) needed to be changed to one which was clearly different from the lexical decision task, and which did not detract from the meaning and priming effect of the neutral prime words.

PILOT TWO

Pilot two was intended to rectify the methodological problems found in pilot one, and to replicate the priming effect reported by Meyer & Schvaneveldt (1976), and Dannenbring & Briand (1982). Trials were separated more clearly by auditory and visual signals, and responses to the prime and target words differentiated by the positions of the stimulus items and the manner of responding.

Method

Subjects: Subjects were six males and six females between twenty and thirty-two years of age.

Design: The prime words were four masculine labels, four feminine labels (see Appendix D), and eight neutral words. The target words were four masculine positive, four feminine positive (see Appendix A), and eight neutral words; and matched nonwords. The masculine and feminine primes were each followed by a masculine and feminine target, and matched nonwords. Neutral primes were followed by neutral targets representing high and low semantic associates; and matched nonwords (see Appendix C). Presentation order and combinations of prime and target words (within categories) were randomly varied.

Procedure: The beginning of each trial was marked by a tone from the computer and the appearance of three stars on the screen. On presentation of the prime, on the right side of the screen, the subject said the word aloud. When the target appeared, on the left side of the screen, the subject pressed one of two buttons to indicate whether it was a word or a nonword, and a reaction time for the response was recorded. Subjects were instructed to respond as quickly as possible without making mistakes.

Results

It was found that reaction times to neutral target words following a neutral prime were significantly faster when the target was a high semantic associate of the prime than when it was a low associate ($t=2.73$, $p=0.02$). No other significant facilitation effects were found for the combined subject group. When the results were examined separately for male and female subjects, despite small numbers, it was found that female subjects responded significantly more slowly to masculine target words following a masculine prime than to feminine target words following a masculine prime ($t=3.29$, $p=0.022$).

Discussion

The modifications to the methodology appeared to have been successful, as shown by a significant priming effect for highly semantically associated neutral word pairs. However, the expected priming effects for masculine word pairs and feminine word pairs was absent. The only other significant result was for female subjects, who showed an "anti-priming" effect for masculine word pairs. Following a masculine prime, they responded significantly more slowly to a masculine target word than to a feminine one.

This finding is contrary to what would be expected on the basis of the gender stereotype literature, which demonstrates the commonality and pervasiveness of stereotypes of femininity and masculinity among both women and men. A priming effect (ie. faster reaction time) to feminine and masculine targets following gender appropriate primes, or even to any gender referent prime (appropriate or not) could be interpreted in terms of gender role schemata.

A significantly longer response time for masculine targets following a gender appropriate prime for female subjects only suggests the possibility of response suppression rather than an inhibitory "anti-priming" effect. This could mean

that the lexical decision methodology is not nonreactive, as previously thought, and necessitates further experimentation with a full stimulus pool to confirm this as a genuine effect.

EXPERIMENT ONE

Experiment one was designed to incorporate the methodological improvements made in pilot two into a lexical decision task using the full range of primes and targets used in pilot one. It was to determine whether the "anti-priming" effect found among female subjects for masculine target words following masculine primes would be replicated with the full stimulus set.

Method

Subjects: Subjects were ten male and ten female first year psychology students between eighteen and twenty-two years of age.

Design: Prime words were four masculine labels, four feminine labels (see Appendix D), and four neutral words. The target words were eighteen each of masculine positive, masculine negative, feminine positive, and feminine negative descriptive words; and seventy-two matched nonwords (see Appendix A). In addition there were four neutral target words (which followed neutral primes of which they were high or low semantic associates) and matched nonwords (see Appendix C).

The experiment was carried out in one session, with each session divided into three blocks. Each target word appeared once in each block, with target words divided evenly between the three types of prime. Combinations of prime and target word varied between subjects, and presentation order varied randomly. In each block, all four of the neutral target words appeared once each, twice following a high associate prime, and twice following a low associate prime; with combinations varied between subjects.

Procedure: Each trial consisted of a sequentially presented prime and target pair. The beginning of each trial was marked by a tone from the computer, and the appearance of three stars on the screen. On presentation of the prime, on the right of the screen, the subject read the word aloud. When the target appeared on the left of the screen, the subject pressed one of two buttons to indicate whether it was a word or not, and reaction time for the response was recorded. Subjects were instructed to respond as quickly as possible without making mistakes.

Results

Means and standard deviations for all categories of target words (feminine and masculine positive and negative, and neutral) following all prime types (feminine, masculine and neutral) are shown in Table one.

Table 1: Means and standard deviations for all prime-target categories

Prime-target	Means	SD
m-mpos	68.55	12.95
m-mneg	72.21	14.47
m-fpos	68.77	15.70
m-fneg	73.78	16.43
f-mpos	66.88	11.70
f-mneg	72.97	15.41
f-fpos	71.57	20.15
f-fneg	72.17	13.23
n-mpos	69.57	13.17
n-mneg	72.10	14.78
n-fpos	67.54	12.76
n-fneg	72.00	13.16
n-nhi	64.03	14.33
n-nlo	66.41	13.37

The results for experiment one failed to show a priming effect for neutral target words following neutral primes of which they were high semantic associates required as

validation of the methodology. A four way analysis of variance between subject sex, prime gender (feminine or masculine), target sex (feminine or masculine) and valence (positive or negative) was carried out. It showed a significant main effect for valence (whether a target word was positively or negatively socially valued) ($F=29.3$, $p=.001$); and a significant interaction between subject sex and valence ($F=5.2$, $p=.034$) (see Table 2). Reaction times to positive words were significantly faster than to negative ones. The interaction seems to show that female subjects responded generally faster than males, and that the difference was greater for positive than negative target words.

Discussion

The failure to replicate the priming effect with neutral word pairs again indicates the the presence of serious methodological problems. The most obvious difference between experiment two (in which the priming effect was significant) and experiment three was the number of trials, and therefore the number of times which primes were repeated. Masculine and feminine primes were repeated fifty-four times, and neutral primes fifty-seven times each for every subject.

Table 2: Four-way analysis of variance

Source	Sum of Squares	df	Mean Square	F	p
main effects					
subject sex	1978.09	1	1978.0900	1.2877	0.2709
prime gender	0.2182	1	0.2182	0.0027	0.9127
target gender	11.1784	1	11.1784	0.3658	0.5592
valence	591.032	1	591.0320	29.2834	0.0001
2-way interactions					
	26.2893	1	26.2893	0.3231	0.5829
subject * target	6.62921	1	6.6292	0.2169	0.6509
subject * valence	104.391	1	104.3910	5.1722	0.0336
prime * target	80.6407	1	80.6407	0.8366	0.3757
prime * valence	9.87326	1	9.8733	0.2639	0.6190
	116.752	1	116.7520	2.0697	0.1665
3-way interactions					
subject * prime * target	18.4227	1	18.4227	0.1911	0.6699
subject * prime * valence	29.4098	1	29.4098	0.7856	0.3908
subject * target * valence	131.797	1	131.7970	1.9946	0.1773
prime * target * valence	42.664	1	42.6640	0.6630	0.4433
4-way interaction					
subject * prime * target * valence	10.1346	1	10.1346	0.1797	0.6787
explained	3157.3876	15	210.4925		
residual	41694.358	270	154.4235		
total	44851.746	285	1557.3745		

Scarborough, Cortese & Scarborough (1977) and other researchers report the effect of repetitions of target words on lexical decision tasks, but research into the effect of repetition of primes is lacking. However, it seems reasonable to suggest that such frequent repetitions of prime words might have resulted in habituation and reduced impact. On this basis it was decided that a further methodological change was required - increasing the number of primes in each category, in order to minimise repetition.

The analysis of variance results show that despite the absence of priming effects a robust effect for valence is evident, ie. that people respond much more quickly to positive than negative descriptors. The meaning of the interaction is difficult to interpret.

EXPERIMENT TWO

Experiment two was a lexical decision task incorporating the methodological improvements of pilot two and experiment one, in addition to a new pool of prime words designed to reduce the degree of repetition of primes that characterized experiment one.

Method

Subjects: Subjects were nine males and nine females between eighteen and thirty-five years of age.

Design: Primes were eighteen common male names, eighteen common female names, as listed by Dynes (1984) (see Appendix B), and eighteen neutral words. Target words were eighteen each of masculine positive, masculine negative, feminine positive, and feminine negative words; and matched nonwords (see Appendix A). In addition there were eighteen neutral target words, each of which was a high semantic associate of one of the neutral primes; and matched nonwords (see Appendix C).

The experiment was carried out in one session, divided into six blocks with rest intervals between. Each target word appeared three times in the experiment; following a masculine,

feminine and neutral prime. The pairings of prime and target words were varied between subjects; and the order of presentation was randomly varied, with the constraint that a target word was not repeated within a block. For neutral word pairs, nine of the eighteen target words appeared following the prime which was their high semantic associate, the other nine following primes with which they were not semantically associated. Each prime appeared ten times during the experiment - followed by masculine positive, masculine negative, feminine positive, feminine negative, and neutral words, and their matched nonwords.

As the five categories of target words used in experiment two contained equal numbers of stimulus items, it would have been desirable to compare reaction times to all target categories following the three classes of primes (feminine, masculine and neutral). However, constraints on the choice of neutral words (stimulus items and their high associates from the Monash Free Association Norms) necessitated the use of neutral target words that were significantly more frequent (based on the figures of Carroll, Davies & Richman, 1971) and significantly shorter than target

words in the other categories (F=4.32, p=.003; F=6.69, p=.0001). Feminine and masculine positive and negative target words did not differ significantly in frequency or length.

Although all categories of target words had been matched as closely as possible on these variables, differences were inevitable due to the word populations from which they were selected (PDQ and PAQ, as opposed to the Monash Free Association Norms). Previous research using the lexical decision task methodology has demonstrated that familiarity and word length influence reaction time (eg. Scarborough, Cortese & Scarborough, 1977). Consequently, it was decided that comparisons of reaction times to neutral targets with those to other categories of targets would be inappropriate.

Procedure: Each trial consisted of a sequentially presented prime and target pair. The beginning of each trial was marked by a tone from the computer, and the appearance of three stars on the screen. On presentation of the prime, the subject read the word aloud. When the target appeared, the subject pressed one of two buttons to indicate whether it was a word or not, and reaction time for the response was recorded.

Results

Means and standard deviations for all categories of target words (feminine and masculine positive and negative, and neutral) following all prime types (feminine, masculine and neutral) are shown in Table three.

Table 3: Means and standard deviations for all prime-target categories

Prime-target	Mean	SD
m-mpos	61.07	8.42
m-mneg	64.52	9.65
m-fpos	61.47	7.65
m-fneg	62.86	8.94
m-neut	57.72	7.53
f-mpos	60.33	8.95
f-mneg	61.98	8.11
f-fpos	60.90	9.21
f-fneg	63.34	9.18
f-neut	59.14	7.71
n-mpos	61.98	9.64
n-mneg	63.76	8.15
n-fpos	61.34	8.65
n-fneg	62.63	8.27
n-neutall	58.05	9.52
n-nhi	56.42	8.70
n-nlo	59.72	10.99

The results of this experiment show a significant priming effect for neutral primes and targets, with subjects responding significantly faster to neutral words when they

followed primes with which they are highly semantically associated than when they followed non-associated primes (t.=2.52, p=.022).

There were no significant differences in response time between female and male subjects on any of the prime-target categories, so female and male subjects' data were pooled.

Results were analyzed in a three way analysis of variance, with factors of prime gender (feminine or masculine), target gender (feminine or masculine) and valence (whether a target word was socially desirable or undesirable). A significant main effect was found for valence (F=20.3, p=.0005); and a significant three way interaction between prime gender, target gender and valence (F=6.03, p=.024) (see Table four). The main effect for valence indicated that subjects responded significantly faster to positively valued words than to negatively valued ones. The three way interaction indicated that they responded with similar speed to positive targets regardless of whether they were feminine or masculine, and whether they followed feminine or masculine primes. For negative targets, subjects responded faster to a feminine target when it followed a masculine prime than when it followed a

Table 4: Three-way analysis of variance

Source	Sum of Squares	df	Mean Square	F	p
main effects					
prime gender	25.4628	1	25.4628	2.9742	0.0995
target gender	0.99847	1	0.9985	0.1303	0.7206
valence	179.756	1	179.7560	20.2914	0.0005
2-way interactions					
prime * target	22.5957	1	22.5957	2.9257	0.1022
prime * valence	1.28922	1	1.2892	0.1054	0.7445
target * valence	3.58731	1	3.5873	0.2780	0.6103
3-way interaction					
prime * target * valence	18.188	1	18.1880	6.0311	0.0238
explained	251.8775	7	35.9829		
residual	1036.2968	119	8.7084		
total	1288.1875	126	10.2237		

feminine one, and faster to a masculine target when it followed a feminine prime than a masculine one (see figures one and two).

Planned comparisons clarified this interaction, showing that subjects responded significantly faster to masculine negative targets when they followed feminine primes than when they followed masculine primes ($F=6.43$, $p=.02$). There was a similar, but non-significant trend for feminine negative targets to be responded to more quickly when following masculine primes than feminine ones.

The effect of target valence on response time was evident for gender appropriate prime target pairs only. Subjects responded significantly faster to feminine positive targets than to feminine negative targets, following a feminine prime ($F=4.67$, $p=.043$). Similarly, reaction times were significantly faster to masculine positive targets than to masculine negative targets, following masculine primes ($F=15.4$, $p=.001$). Thus, for gender appropriate prime-target pairs, targets representing socially desirable traits were responded to more quickly than those representing undesirable traits. This

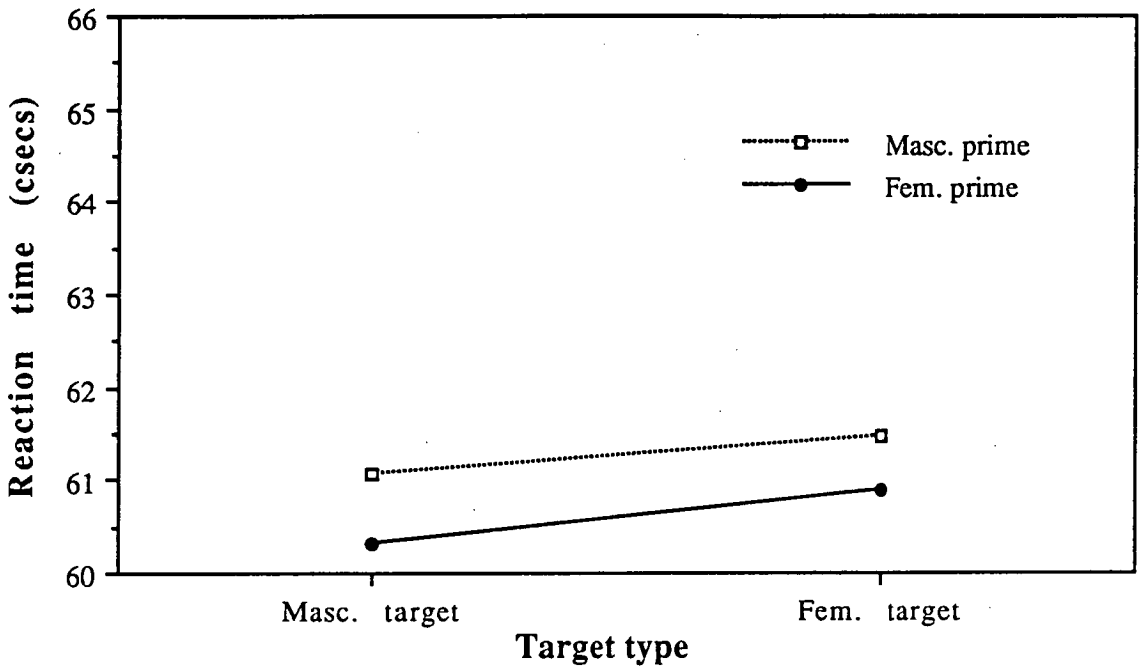

Figure1: Reaction times to positive targets

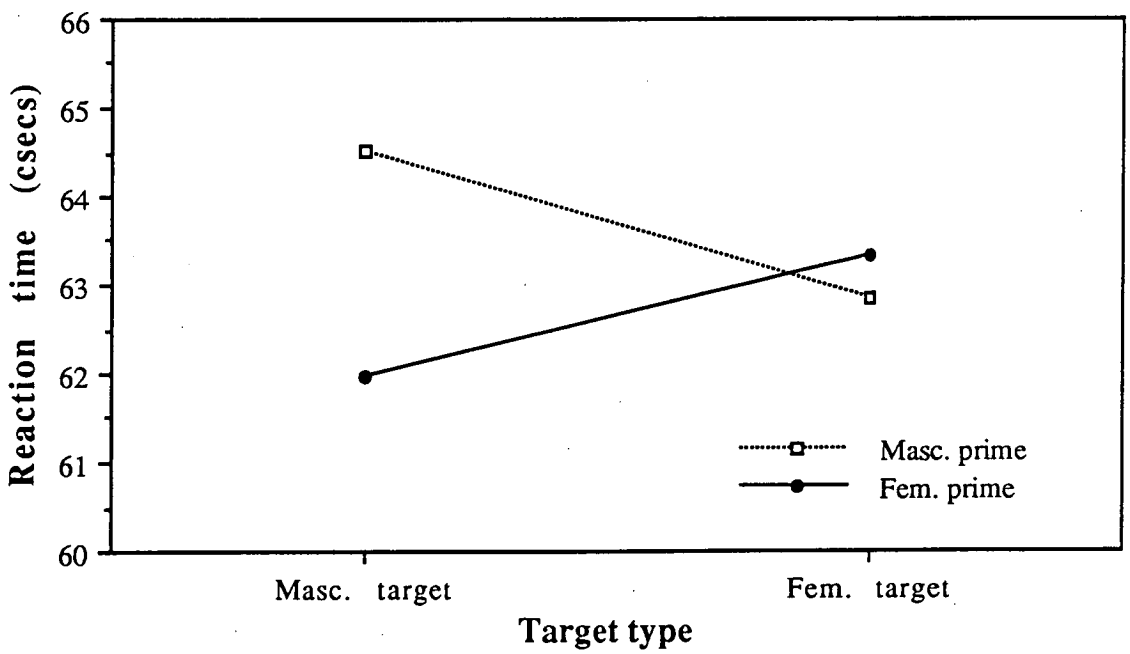

Figure 2: Reaction times to negative targets

was not the case when reaction times for positive and negative targets following opposite gender primes were compared.

For gender relevant positive target words subjects reaction times did differ when they followed gender appropriate as compared to gender inappropriate primes.

Discussion

The finding that subjects responded significantly faster to neutral words preceded by a highly associated prime than those preceded by an unassociated prime indicates that this lexical decision task has overcome the problems of the previous experiments, in that this robust priming effect has been replicated, validating the methodology. The finding that there were no differences between female and male subjects' responses for any of the combinations of primes and targets is consistent with the sociocultural gender stereotype research which shows that women and men do share the same cultural definitions of femininity and masculinity.

The results for feminine and masculine positive target words following different categories of prime was not as expected. The finding that subjects' reaction times to target word did not differ significantly whether the preceding prime

was gender appropriate or inappropriate to the target is inconsistent with expectations (based on sociocultural research) that a priming effect would occur. That is, it was thought that subjects processing of feminine and masculine positive targets would be facilitated by gender appropriate preceding primes.

That this effect was not found indicates that sex typed socially desirable trait descriptors are equally accessible following a prime indicative of either sex, which would seem to provide tentative support for Bem's notion of a generalized gender role schema, which when activated makes gender relevant information (either feminine or masculine typed) accessible. However, the finding that response time to these target categories did not differ following a gender irrelevant prime, as compared to a feminine or masculine one, makes interpretation difficult.

The results for negative feminine and masculine targets, as compared to positive ones, were of particular interest. The finding that, overall, subjects responded significantly more slowly to the negative targets (following gender relevant primes) is in keeping with Barber's (1984) suggestion that negative traits seem to be less central to, and therefore less

accessible from, gender stereotypes. That feminine and masculine negative targets are responded to with significantly differing speed depending on whether they follow a feminine or masculine prime is at odds with the notion of a generalized gender role schema. The finding that subjects respond significantly faster to negative targets following a gender inappropriate prime than an appropriate one suggests the presence of an inhibitory mechanism in accessing gender related socially undesirable trait information.

DISCUSSION

The results of the two pilot experiments, and experiment one have some interesting methodological implications. In pilot one and experiment one the failure to replicate the priming effect for highly semantically associated word pairs was taken as an indication that there were methodological problems which prevented this robust effect from occurring. This was in part related to the size of the experiment, as in pilot two (which used an abridged version of the full stimulus pool) the neutral priming effect was found.

One important issue was that of repetition of stimulus items. Previous research had clearly indicated that repetition of target words had a marked effect on reaction times to them (eg. Scarborough, Cortese & Scarborough,1977), so from the outset experiments were designed to minimize target repetition. However, the comparison of pilot two and experiment one suggested that the repetition of prime words might also impair their effectiveness, so that in experiment two the feminine and masculine prime words were changed to common female and male names to increase the number of available primes. The number of prime words in all three categories was increased, and each word was repeated as few times as possible.

Given the large number of trials used, it was felt that some manipulation to ensure that subjects attended to the prime words was necessary. Requiring the subject to say the words aloud seemed to adequately serve this function, while preserving the semantic integrity of the word; whereas a response involving pressing a button created response confusion between the prime and target tasks.

A further methodological consideration, especially with a large number of trials was the need to clearly separate those trials, which became apparent in pilot one. This was necessary not only to help prevent response confusion, but also to avoid a backward priming effect, as described by Kiger & Glass (1983), especially when the category of prime was varied from trial to trial. All these methodological considerations were taken into account in the design of experiment two, so that possible interfering effects of stimulus repetition, response confusion and backward masking were minimized.

Contrary to what might be expected if response latency could be treated as a measure of associative strength between a schematic label (in this case, common male and female names) and schema relevant words; experiment two failed to find any significant enhancement of response time to socially desirable

feminine and masculine targets following gender appropriate primes. The large body of sociocultural research (including Barber, 1984) has repeatedly demonstrated the strength and persistence of gender stereotypes (based on positively valued gender related traits only).

In order to understand this apparent lack of priming in gender appropriate prime-target pairs for socially valued traits, possible methodological explanations should be considered. One possibility is that the repetition of the primes prevented a priming effect. This does not seem plausible, given the significant priming effect for neutral prime-target pairs, as neutral primes were repeated as often as feminine and masculine ones. Experiment two's successful replication of the robust and frequently reported priming effect (eg. Meyer & Schvaneveldt, 1976; Dannenbring & Briand, 1982) with semantically associated neutral prime-target pairs suggests that this version of the lexical decision task had overcome the methodological problems found in pilot one and experiment one, which prevented any priming from taking place.

Another possible methodological explanation is that there is something qualitatively different between neutral semantic associate word pairs and gender associate word pairs,

such that priming does not occur in the latter case. Thus, it is possible that although the lexical decision priming paradigm is appropriate to neutral word pairs, the nature of gender schemata is such that the experimental paradigm is inappropriate. A possible mechanism for this might be the randomised alternation of prime types, so that on one trial the subject is expected to access their femininity schema, on the next their masculinity schema, on the next respond to a word pair with no gender associations, and so on. It may be that the impact of gender schemata on judgements is evident only when the activation is sustained. This seems unlikely, given the significant differences found in response times to negative traits following gender appropriate as opposed to inappropriate primes, indicating that subjects were able to respond differentially on the basis of gender schemata.

Assuming, therefore, that the results of experiment two represent real effects, they would seem to have interesting implications for gender schema theories. Previous research in this area has focussed largely on the processing of self referent gender relevant information. Markus, Crane Bernstein & Siladi (1982) differentiate sex typed males and females as masculine and feminine schematic respectively, both processing self

relevant information in terms of gender appropriateness. Markus & Crane (1982) discuss research findings and theoretical arguments based on cognitive concepts of schemata to support their perspective over that of Bem (1981).

While Bem's approach fails to adequately account for gender self schemata, it does provide a plausible description of gender role schemata (although she does not distinguish between the classes of schemata), an issue not addressed by Markus and her colleagues. Bem discusses gender schema in terms of a generalized readiness to process information according to gender associations, with no distinction between feminine and masculine referents.

This view would seem to receive tentative support from the results for the socially valued gender relevant targets in this experiment. The finding that subjects' response time to feminine and masculine positive targets did not differ significantly whether they followed gender appropriate or inappropriate primes suggests that the presentation of a gender relevant prime (either feminine or masculine) does not differentially facilitate processing of either a feminine or masculine target word.

Although this would seem to be at odds with the large body of socioculturally oriented gender stereotype research, a distinction needs to be made between the processes measured in this experiment and those in traditional sociocultural methodologies. In the latter, the subject is asked to make a gender based attribution, whereas here she is asked to make a lexical decision on gender relevant material. The distinction is between the conscious application of socially learned gender stereotypes, and the cognitive accessibility of components of those stereotypes.

The finding that subjects' reaction times to feminine and masculine targets were also not significantly different when they followed a neutral prime, as compared to a gender appropriate or inappropriate prime, means that support for a generalized gender role schema is only a tentative interpretation. It also indicates that further research is required to clarify this issue, perhaps with some reference to the previously mentioned methodological issues. That is, although the differential speed of responding to negative targets following gender appropriate and inappropriate primes suggests that some sort of priming has taken place, it is possible that there are different mechanisms involved in the accessing of positive and negative gender relevant traits.

The findings for the negative targets are not consistent with Bem's model of a gender schema. That subjects responded significantly more slowly to socially undesirable feminine and masculine traits when they followed gender appropriate primes than inappropriate ones demonstrates a differential response on the basis of gender, although it does not take the form of the priming effect expected.

That is, although a facilitation effect (shorter reaction times to masculine and feminine targets following gender appropriate primes) would have been expected as evidence of separate femininity and masculinity role schemata, the inhibitory effect (longer reaction times to masculine and feminine targets following gender appropriate primes) found also supports this model. The fact that, following gender referent primes (both feminine and masculine), subjects' response times were consistently different for feminine as opposed to masculine negative target words is contradictory to the notion of a generalized gender role schema, in which the presentation of a feminine or masculine prime predisposes subjects to respond with equal speed to target words with either feminine or masculine gender connotations.

It is clear that further research is required to elaborate on the findings of this experiment. The assessment of gender schemata (or femininity and masculinity schemata) via their impact on cognitive tasks such as the lexical decision task might be carried out more accurately when activation of the schema is sustained, rather than expecting subjects to access (possibly) different schemata from trial to trial.

An experiment in which trials were ordered so that different prime categories were blocked together could address this issue (as well as totally avoiding the possibility of any backward priming taking place). In this way the subject's gender role schema (or femininity schema) could be activated and maintained by a series of feminine primes, followed by the different categories of target words, some of which would be relevant to that schema, and some which would not.

This could clarify the meaning of the lack of any significant differences between response times to feminine and masculine positive targets whether they followed feminine, masculine or gender neutral primes. It may be that this finding is an indication of a generalized gender role schema for socially desirable traits, activated and maintained by the preponderance of feminine and masculine primes, and

therefore continuing to affect response time to positive targets even when preceded by a schema irrelevant prime. Alternatively, separate femininity and masculinity schemata may exist for positive traits but any facilitatory effect may have been obscured by a trial presentation order requiring subjects to access a different schema every five seconds; while the more robust inhibitory effects of femininity and masculinity schemata for negative traits were still apparent.

Another issue which needs to be investigated is the influence of the subjects' own gender self schema on the accessibility of a gender role schema (or femininity and masculinity role schemata). Although the notion of consensus is crucial to the investigation of gender stereotypes, it is possible that even though all members of a given society would have learned the cultural role definitions of femininity and masculinity, they may vary in availability between individuals according to how frequently they are accessed in making social judgements.

It seems plausible that for those individuals who process incoming self referent information in terms of a femininity or masculinity schema, culturally defined concepts of femininity and masculinity would be highly salient. These individuals may

also be more likely to process incoming other referent information in terms of these concepts, so that they more frequently access their gender role schema. It would be interesting to determine whether sex typed individuals' gender role schemata are more accessible than those of non sex typed individuals. Subjects could be grouped on the basis of PDQ self ratings as feminine schematic, masculine schematic or non sex typed, and priming effects representing the accessibility of their gender role schemata compared.

Further research could expand the use of cognitive methodology in investigating gender stereotypes, from determining their structure to examining how that is reflected in making explicit gender based judgements. Previous research from the sociocultural perspective has been influenced by reactive effects such as evaluation apprehension, with subjects consciously manipulating their response patterns in order to avoid responses which may represent their actual attitudes, but which they may see as unacceptable or inappropriate in the context of the experimental task. A reaction time measure can be used to determine how accessible the bases of conscious gender related judgements are, with an instructional set

emphasizing speed as well as accuracy, so that manipulation would be prevented or would be obvious from unusually long response times.

CONCLUSION

The results from these experiments suggest that the lexical decision task can be used as a nonreactive measure of associative strength in the investigation of the structure of gender stereotypes. Careful attention must be paid to methodological factors, however, in particular the repetition of prime stimuli.

It was found that there was no enhancement of response time for feminine and masculine positive target words when they followed gender related primes, although this may be attributable to the experimental design which required subjects to access different classes of gender relevant information in rapid succession. If not, it would seem to provide tentative support for Bem's notion of a generalized gender role schema, in that response time to feminine and masculine items did not differ whether they followed gender appropriate or inappropriate primes.

In contrast, the findings for feminine and masculine negative target words are contrary to the notion of a

generalized gender schema, in that subjects responded to these stimuli differentially depending on the gender of the preceding prime. This difference took the form of an inhibitory effect, with faster response times to targets when they followed gender inappropriate primes.

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APPENDIX A

Masculine and feminine positive and negative target words, and matched nonwords; length & frequency

MASCULINE POSITIVE		length	freq.
firm	serd	4	24.94
confident	pevelious	9	6.16
competitive	unsalmative	11	1.41
casual	torish	6	4.16
forceful	malopent	8	1.99
strong	pankly	6	210.02
carefree	ronslote	8	2.55
outspoken	soretive	9	0.14
athletic	nerthual	8	7.09
brave	thall	5	44.47
adventurous	repoilurous	11	3.17
independent	stonnothish	11	24.52
daring	houbal	6	11.45
active	dardly	6	29.77
outgoing	fragresh	8	0.76
intellectual	inthorpuous	12	4.45
ambitious	domudious	9	5.14
forward	mertain	7	107.51
	mean	8	27.20
			(per million)

MASCULINE NEGATIVE		length	freq.
bossy	shoat	5	0.66
noisy	groon	5	15.75
aggressive	plaimitive	10	2.09
sarcastic	trundible	9	0.85
mischievous	restontorish	11	1.61
boastful	blootful	8	0.72
rude	neen	4	5.32
swears	croise	6	0.24
crude	murny	5	10.21
rebellious	fandelical	10	0.93
selfish	sarnial	7	4.07
abrupt	rerdic	6	1.81
arrogant	thoulant	8	0.72
egotistical	reshaitible	11	
greedy	breale	6	3.33
dictatorial	enraltitive	11	0.18
cynical	crespal	7	0.25
hostile	pemtile	7	5.36
	mean	7.6	3.18

(per million)

FEMININE POSITIVE		length	freq.
patient	rurtent	7	18.04
appreciative	blantsaftive	12	0.56
grateful	chepious	8	9.53
responsible	confoostive	11	21.60
emotional	panetible	9	14.21
loyal	murny	5	5.71
gentle	bliely	6	35.24
helpful	toodish	7	34.93
gracious	drickful	8	3.81
sensitive	soretious	9	13.11
forgiving	renumpant	9	
humane	lornly	6	0.57
courteous	brealeous	9	3.26
tactful	unroath	7	0.14
kind	wune	4	433.99
creative	golstive	8	8.24
considerate	conplaimate	11	0.94
understanding	proresheting	13	52.88
	mean	8.3	36.49
			(per million)

FEMININE NEGATIVE		length	freq.
dependent	brustious	9	10.63
nervous	drepent	8	25.28
timid	preth	5	3.42
weak	brod	4	44.06
bashful	preharn	7	0.01
shy	dap	3	13.98
anxious	rondful	7	14.45
worrying	rigeting	8	5.16
dreamy	soally	5	1.56
religious	magerent	9	30.89
reserved	untheped	8	3.68
fussy	seech	5	1.15
gullible	santless	8	0.01
spineless	holckible	9	
servile	hoilous	7	
whiny	shurb	5	0.01
complaining	redismitive	11	2.79
nagging	feanous	7	0.33
	mean	6.9	9.84
			(per million)

Masculine and feminine positive and negative target words were taken from Forms A and B of the Personal Description Questionnaire (Antill, Cunningham, Russell & Thompson, 1981) and the Personal Attributes Questionnaire (Spence, Helmreich & Holahan, 1979). Word frequencies for target words were taken from Carroll, Davies & Richman (1971). Nonwords were adapted from those used by Humphreys, Evatt & Taylor (1982) and Martin (1982).

APPENDIX B

Masculine and feminine primes

(experiment two)

MASCULINE PRIMES

James

Michael

David

John

Stephen

Robert

Patrick

Christopher

Peter

Paul

William

Brian

Donald

Philip

Alan

Anthony

Mark

Thomas

FEMININE PRIMES

Elizabeth

Jennifer

Margaret

Susan

Christine

Amanda

Michelle

Carol

Joan

Patricia

Judith

Wendy

Lisa

Linda

Valerie

Sarah

Rebecca

Emma

Masculine and feminine primes for experiment two were the eighteen most common male and female given names over the last fifty years, as listed by Dynes (1984).

APPENDIX C

Neutral primes and neutral target words (high semantic associates), and matched nonwords; length and frequency

PRIME	TARGET		length	freq.
air	breathe	monsept	7	26.86
answer	question	nuckible	8	161.17
arm	leg	ved	3	57.50
cat	dog	irm	3	231.49
city	town	feve	4	219.74
vacuum	cleaner	resords	7	4.64
tree	leaves	untike	6	167.40
gold	silver	ickton	6	91.55
hide	seek	boud	4	18.55
home	house	knuth	5	496.81
hour	time	remm	4	1634.30
jury	judge	plang	5	29.95
length	width	mulst	5	18.73
leopard	spots	tught	5	25.02
lime	green	finod	5	222.21
mantle	piece	aungs	5	205.90
tobacco	smoke	shife	5	55.81
harness	horse	perde	5	208.34
		mean	5.1	215.33

(per million)

PRIME	TARGET		length	freq.
air	breathe	monsept	7	26.86
answer	question	nuckible	8	161.17
arm	leg	ved	3	57.50
cat	dog	irm	3	231.49
city	town	feve	4	219.74
vacuum	cleaner	resords	7	4.64
tree	leaves	untike	6	167.40
gold	silver	ickton	6	91.55
hide	seek	boud	4	18.55
home	house	knuth	5	496.81
hour	time	remm	4	1634.30
jury	judge	plang	5	29.95
length	width	mulst	5	18.73
leopard	spots	tught	5	25.02
lime	green	finod	5	222.21
mantle	piece	aungs	5	205.90
tobacco	smoke	shife	5	55.81
harness	horse	perde	5	208.34
		mean	5.1	215.33
				(per million)

The neutral high associate prime-target pairs were selected from stimulus words and their associates in the Monash Word Association Norms (Thompson, Meredith & Browning, 1976), where the associate represented the response of at least one half of the subject population, and neither word had gender connotations. Word frequency measures were taken from Carroll, Davies & Richman (1976). Nonwords were adapted from those used by Humphreys, Evatt & Taylor (1982) and Martin (1982).

APPENDIX D

Masculine and feminine primes

(pilot experiments and experiment one)

MASCULINE PRIMES

man

manly

male

masculine

FEMININE PRIMES

woman

womanly

female

feminine

APPENDIX E

Raw data from experiment two

	SUBNO.	SUBSEX	MMPOS	MMNEG	MFPOS	MFNEG	MNEUT	FMPOS	FMNEG	FFPOS	FFNEG	FNEUT	NMPOS
1	1.00	2.00	57.61	62.63	61.83	58.59	54.89	60.19	65.65	62.56	60.53	55.17	59.00
2	2.00	1.00	53.33	52.59	60.56	55.59	54.00	50.89	55.56	55.11	55.47	50.24	54.65
3	3.00	1.00	60.00	68.90	56.64	61.17	51.67	59.88	65.10	60.13	59.64	52.78	57.18
4	4.00	1.00	80.06	88.38	78.42	82.44	71.13	79.17	76.63	84.69	87.09	71.64	83.14
5	5.00	1.00	60.07	64.20	59.81	67.42	62.00	57.80	68.00	59.40	63.14	61.75	56.88
6	6.00	2.00	52.11	49.06	52.17	51.88	50.33	52.44	51.47	47.50	52.71	49.06	52.78
7	7.00	2.00	66.50	68.61	63.41	70.31	53.88	67.76	66.79	63.18	72.07	58.00	64.78
8	8.00	2.00	57.18	62.06	62.89	57.69	51.78	56.53	59.76	57.72	57.94	51.76	58.94
9	9.00	1.00	58.33	64.59	63.17	64.94	60.33	62.72	55.41	62.41	61.18	67.41	59.76
10	10.00	1.00	79.13	80.00	76.86	73.88	74.12	72.75	75.62	75.27	76.83	75.76	79.00
11	11.00	1.00	56.17	60.93	51.56	60.00	52.11	56.83	56.94	52.06	63.86	55.71	54.65
12	12.00	2.00	64.50	67.69	61.75	66.63	62.06	67.94	68.35	66.89	64.88	64.24	69.17
13	13.00	2.00	57.06	53.85	53.31	52.71	54.71	48.78	52.80	48.73	59.36	54.59	53.94
14	14.00	1.00	52.83	58.00	52.88	50.54	53.27	55.41	55.70	59.29	53.85	55.50	52.00
15	15.00	2.00	67.60	73.83	69.25	77.45	65.33	74.06	70.50	71.91	75.38	64.89	79.29
16	16.00	2.00	58.06	66.06	63.31	63.67	53.94	54.13	58.47	59.12	56.71	56.07	59.56
17	17.00	2.00	69.47	68.00	66.19	65.38	67.44	62.38	65.63	60.56	68.06	68.71	68.75
18	18.00	1.00	49.18	51.93	52.41	51.29	46.00	45.33	47.33	49.61	51.40	51.24	52.17

	NMNEG	NFPOS	NFNEG	NNEUTALL	NNEUTHI	NNEUTLO
1	60.73	62.56	62.50	60.67	65.11	56.22
2	57.63	52.18	56.29	50.83	48.67	53.00
3	59.88	59.08	60.31	53.50	51.33	55.67
4	79.89	78.00	77.73	76.94	71.11	76.78
5	60.07	59.67	57.58	55.57	56.14	55.00
6	56.24	50.89	52.80	46.83	48.00	45.67
7	64.00	57.00	65.38	57.47	54.13	60.44
8	58.25	62.28	59.47	50.94	50.78	51.11
9	63.67	58.89	67.13	68.88	65.00	73.25
10	80.14	74.25	76.10	73.61	68.89	78.33
11	65.00	59.83	61.65	50.61	49.44	51.78
12	67.00	65.76	65.29	64.56	59.75	69.38
13	56.93	57.77	58.20	45.82	44.11	47.75
14	61.64	56.88	57.56	60.56	58.14	62.44
15	77.29	77.29	77.69	62.94	57.44	69.13
16	54.93	59.20	58.71	49.06	51.43	47.22
17	71.53	68.79	67.50	70.17	64.78	75.56
18	52.80	43.88	45.40	45.94	42.25	46.25