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Processing undesired aspects of the self: The role of rejection and schematic complexity

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PROCESSING UNDESIRED ASPECTS OF THE SELF: THE ROLE OF REJECTION AND SCHEMATIC COMPLEXITY

by

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Abstract

PROCESSING UNDESIRED ASPECTS OF THE SELF: THE ROLE OF REJECTION AND SCHEMATIC COMPLEXITY.

by

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Theories of cognitive organization of information related to one's self-identity have been proposed by Bem's (1981) gender schema theory and by Markus' self-schema theory (Markus, 1977; Markus, Crane, Bernstein, & Siladi, 1982). Although these theories are similar in many respects, they make different predictions in some circumstances, and neither can completely account for the published data on the subject. The purpose of the present research was to test a new model that attempts to deal with some of these difficulties. Specifically, the proposed model addresses results of a study conducted by Frable and Bem (1985). In that study, cross-sex-typed subjects showed enhanced processing of sex-consistent compared to sex-inconsistent information. In addition, cross-sex-typed subjects displayed enhanced processing of sex-

consistent information compared to other groups of subjects. Neither theory can explain why cross-sex-typed subjects manifested enhanced processing of information related to the dimension for which they they are considered aschematic (i.e., sex-consistent dimension). The present model proposes that cross-sex-typed subjects have, at some point in their development, rejected sex-consistent attributes from their self-schema in order to identify with characteristics that they perceive as more desirable (i.e., sex-inconsistent attributes). Despite the fact that they reject sex-consistent information, they are probably more experienced and, therefore, familiar with this dimension than with the sex-inconsistent one with which they have chosen to identify. The greater familiarity of the rejected dimension was hypothesized to result in a cognitive structure that is more complex than that representing the accepted, but less familiar dimension. In addition, it was hypothesized that cross-sex-typed subjects might pay special attention to information that pertains to the rejected dimension. It was, therefore, predicted that they would display

enhanced processing of information that is sex-consistent relative to other groups of subjects. Results from an incidental recall task were generally supportive of predictions made by this new model, whereas they failed to confirm those made by either self-schema theory or gender schema theory. Unexpectedly, data obtained from a complexity task failed to vary as a function of familiarity, opposing predictions made by all three models. Information obtained from an exploratory questionnaire revealed several demographic factors that might be associated with the process described by the model. The negative results for complexity and the application of this model to domains other than gender are also discussed.

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1. INTRODUCTION

Overview

The self has been conceptualized, both historically and currently, as a unique and central psychological entity. It is thought to have cognitive and affective qualities that distinguish it from other structures. High levels of affect are often associated with the self; in fact, strength of affect sets the self apart from other structures. However, the position taken here is that aside from its highly affective associations, the cognitive organization of the self is essentially similar to representations of other people, events, and concepts.

This dissertation will review the literature on cognitive views of the self and will propose a revised model of the organization of information which is self-relevant. The model will focus on issues of acceptance and rejection of information from the self, and cognitive structures created and employed to accomplish these purposes. Before developing the new model, the paper will briefly review the history and current status of cognitive models of the self.

Historical Overview

The crucial role of the self in social perception was emphasized in the theories of many of the early psychologists (e.g., Hall, 1898; James, 1890; McDougall, 1921). It was considered a critical element that was vital in organizing the individual's perception of the social world. The self was also thought to contain strong affective components and numerous (and diverse) concepts of importance to the individual.

In addition to the self's essential role, its psychic centrality was also a frequent theme in early theoretical discussions. For example, Cooley (1902/1964) compared the self to the nucleus of a living cell, which is "not altogether separate from the surrounding matter...but more active and definitely organized" (p. 182). Koffka (1935) similarly placed the self in the center of the psyche.

Following such conceptualizations, the self virtually disappeared from psychology due to the rise of a behaviorist positivism with its emphasis on the observable and its lack of tolerance for that which could not be empirically validated. In reaction, G. Allport (1943) argued for the readmittance of the self as valid subject matter in psychology. He presented experimental evidence to support his point that "ego-involvement, or its absence, makes a critical difference in human behavior" (p. 459).

Despite Allport's confidence that it was time for psychology to once again take up the self, few sustained programs of research were developed. We can see in retrospect that this was due to the lack of adequate procedures with which to study the self. Some progress had been made by a number of theorists who viewed the self as a set of cognitive structures that serve an integrative and organizational function in the processing of social information (e.g., Epstein, 1973; Kelly, 1955; Rogers, 1951). Conceptualizing the self in cognitive terms removed much of the metaphysical quality that had previously been associated with definitions of the self, but did not, however, make it any the more accessible to direct observation. In addition, these early cognitive models could not specify the process by which the self performs its functions, nor how these functions could be empirically investigated. Theorizing at this time was at a more advanced stage than the available methods of investigation.

The Information Processing Approach

With the advent of the information processing approach and its recent emphasis in social cognition, techniques became available for studying the functions of the self. The influence of the information processing approach is seen most clearly in the transition from the usage of the term self-concept, to that of self-schema. In general, the schema concept emphasizes the role of the perceiver as an active constructor of his/her reality. Rather than being a passive recipient of a literal copy of the social world, the individual constructs his or her reality by attending to, remembering, and interpreting information in accordance with prior expectations, and by either forgetting or distorting information that is inconsistent with them.

A schema is a cognitive structure, abstracted from experience, that serves to organize and guide perception, memory, and inference (cf., Fiske & Linville, 1980). The schema concept maintains that information is stored in an abstract form rather than as a collection of specific instances of the general case. It is similar to the concept of a cognitive category but places additional emphasis on function and organization. In other words, it is both a structure and a process, or as Neisser (1976) puts it: "...The schema is not only the plan but also the executor of the plan" (p. 56). The importance of the dual nature of schemata has been noted by many theorists (e.g., Fiske & Linville, 1980; Neisser, 1976; Rumelhart & Ortony, 1977; Taylor & Crocker, 1981). A schema is a rich and well articulated knowledge structure that aids the individual in simplifying an extraordinarily complex environment and in filling in the gaps when there is scanty or ambiguous information.

A study conducted by Cohen (1981) illustrates many of these properties. Subjects in this experiment viewed a videotaped segment that depicted a man and woman eating a birthday dinner. Prior to viewing the videotape, some subjects were told that the woman was a librarian, and others that she was a waitress. When later asked to recall what they had seen, those whose waitress schema had been primed remembered her drinking beer and owning a television; those told that she worked as a librarian remembered her wearing glasses and owning classical records. The subjects' prior expectation (schema) shaped the perception and memory of what they had seen.

The schema concept has been applied to the self in much the same way that it has been applied to other categories of social information. According to Markus (1977), self-schemata "are cognitive generalizations about the self, derived from past experience, that organize and guide the processing of self-related information contained in the individual's social experiences" (p. 64). Like schemata in general, they facilitate the processing of social information by enhancing the individual's ability to attend to and remember information that is consistent with the self and by enabling him/her to infer consistent information where it is missing.

2. SELF-SCHEMATA

Properties of Self-schemata

Although self-schemata are thought to function much as do schemata for other people, events, and concepts, they are thought to differ from them in several important respects. Self-schemata are considered more complex, memorable, and affect-laden than other schemata (cf., Fiske & Taylor, 1984). Perhaps as a result of these characteristics (especially the affective quality), the processing of information that is self-relevant is also frequently subject to systematic biases. It is on the basis of these distinguishing qualities that a number of theorists have recently assigned the self a central and/or unique position in models of social information processing (e.g., Greenwald & Pratkanis, 1985; Markus & Sentis, 1982).

Self-schemata are thought to contain more and better organized information than other schemata. This increased complexity enables the individual to make finer discriminations (Frable & Bem, 1985; Markus, Smith, & Moreland, 1985), less extreme evaluations (Linville & Jones, 1980; Linville, 1982a), faster decisions (Kuiper & Rogers, 1979; Markus, 1977; Markus, Crane, Bernstein, & Siladi, 1982; Markus & Sentis, 1982); to provide more evidence of past behavior (Markus, 1977; Markus, Crane, Bernstein, & Siladi, 1982); and to more confidently predict future behavior (Markus, 1977) along the self-schematic dimension than along non-self-schematic ones. For example, Markus (1977) found that individuals who were self-schematic ("Schematic" in her terminology) on the dimension of independence were able to make faster judgments about the self-descriptiveness of trait adjectives of independence, provide more behavioral evidence of past independent behavior, and more confidently predict future independent behavior than Aschematics (individuals who did not possess a self-schema for independence). This pattern of results was replicated for Dependent Schematics when processing information along the dimension of dependence.

Schematic complexity has also been invoked to explain results from work in the area of intergroup relations. For example, a number of studies have demonstrated that individuals tend to view members of an outgroup as similar to one another and different from oneself (Brewer, 1979; Sherif, Harvey, White, Hood, & Sherif, 1961; Wilder, 1981). This finding can be understood in terms of schema complexity. Because individuals are typically more familiar with information relating to ingroups than outgroups, their outgroup schemata are likely to be less complex than their ingroup schemata (which ordinarily contain more information and involve more integrated structures) (cf., Linville, 1982b; Linville, Salovey, & Fischer, 1986). The greater complexity of ingroup schemata results in the ability to make finer discriminations on the ingroup dimension. Similarly, it will be argued here that the complexity of self- versus non-self-schemata is also a function of familiarity with a given domain of knowledge.

In addition to being more complex, self-schemata are thought to be more memorable than other schemata (Kuiper & Rogers, 1981; Markus, Crane, Bernstein, & Siladi, 1982; Rogers, 1981; Rogers, Kuiper, & Kirker, 1977). For example, Rogers et al. (1977) demonstrated superior recall of words that were judged in relation to the self than of ones judged on the bases of structural, phonemic, or semantic properties. The advantage of self-relevant information in memory has come to be known as the "self-reference effect" and has been extensively reviewed by Rogers (1981; for a more recent review see Higgins & Bargh, 1987).

Finally, self-schemata differ from other schemata as a result of the high level of affect attached to the self. Several theorists have suggested that the advantage of the self in perception, memory, and inference is due to the emotional importance of self-relevant information (Bargh, 1982; Ferguson, Rule, & Carlson, 1983; Greenwald & Pratkanis, 1985; Rogers, 1981). Indeed, the distortions and biases often associated with self-relevant processes may be due to the affective nature of self-schemata.

For example, there is a tendency for individuals to take credit for success but to deny responsibility for failure. This phenomenon has been termed the "self-serving bias" and has been extensively researched (e.g., Bradley, 1978; Miller & Ross, 1975; Snyder, Stephan, & Rosenfield, 1976; Zuckerman, 1979). In general, however, researchers have found more evidence that individuals accept credit for success than that they deny responsibility for failure (Miller & Ross, 1975). A related bias, known as the "self-centered bias" involves the tendency for individuals to take more than their share of credit for a jointly produced outcome (Greenwald, 1980; Ross & Sicoly, 1979). In contrast to the self-serving bias, the self-centered bias involves taking more than one's share of credit for a joint outcome, regardless of whether the outcome was successful or unsuccessful.

In summary, many theorists conceptualize the self-schema as a unique, central structure because of its cognitive and affective qualities. The high level of affect ordinarily associated with the self is thought to distinguish it from other structures. The present work will focus, however, on the cognitive properties of the self. The cognitive characteristics of the self (e.g., complexity and memorability) are hypothesized to develop from experience and familiarity with a given domain of knowledge. In this respect the self is viewed as qualitatively similar to other cognitive structures. It is proposed that although self-relevant dimensions are usually the ones that are most familiar, there exist a variety of concepts that are at least equally familiar but that are not associated with the self.

Definition of Self-schematicity

Most researchers define self-schematicity by the following dual criteria: 1) the individual endorses items corresponding to a given domain as self-descriptive; and 2) the individual indicates that this pattern of self-description is important to him or her. Using this definition, the researcher must trust the subject's verbal assertion that the pertinent information is self-descriptive and important. It is conceivable, however, that the subject's self-description might be altered or distorted for reasons of social desirability or to serve self-presentational goals. That is, s(he) might describe herself or himself in a certain manner because s(he) feels that it is preferable to be viewed this way, yet have little experience or knowledge and a poorly integrated representation of such information. Although this individual would appear self-schematic by definition, s(he) would not be expected to display enhanced processing of information on this dimension.

Conversely, an individual might deny that items pertaining to a given dimension are self-descriptive, yet, in fact, have a great deal of experience and knowledge, and a well integrated knowledge structure for such information. This could happen if either the dimension is genuinely not self-descriptive yet still important to the individual (i.e., it pertains to other people, events, or concepts of importance to the individual), or if the dimension has been rejected from the self for reasons of perceived undesirability. It is predicted here that, in either case, such information might be processed in a relatively efficient manner, as the individual has a well integrated representation of this information. It should be noted that this prediction is advanced despite the fact that, by the usual definition, the individual would not be considered self-schematic on the dimension.

It is not currently possible to definitively specify whether something is part of the self, not part of the self, or rejected from the self. It is conceivable, however, that, at times, non-self-schemata (schemata that the subject does not endorse as self-descriptive and/or important) might prove at least as influential as self-schemata in terms of information processing. Although there is a dearth of research on the role of schemata that have been rejected from the self, several studies have compared the relative superiority of self-schemata versus schemata for other people, events, and/or concepts.

The Self-reference Effect

Support for the position that non-self-schemata can be as influential as self-schemata comes from several studies that have provided results which run counter to the self-reference effect. For example, it has been claimed by many investigators that the results of the Rogers et al. (1977) study might be due to subjects' involvement in the task, rather than self-reference per se. It will be recalled that subjects in this study were required to make self-referent versus semantic, phonemic, or structural judgments prior to recall. The self-referent condition, however, may have merely engaged subjects' attention more than the judgments required in the other conditions.

Kuiper and Rogers (1979) sought to control for this by adding an other-referent condition to the ones described above. In five studies, self-ratings were judged as easier to make, and subjects placed more confidence in them than other-ratings. When the other-referent task involved a familiar other, however, the superiority for the self in memory disappeared.

Hull and Levy (1979) investigated the self-reference effect in subjects who were either high or low in self-consciousness. They found superior memory performance for subjects who encoded information in relation to the self, but only for those high in self-consciousness.

Lord (1980) studied the self-reference effect for verbally versus visually presented information. Subjects in this study demonstrated superior memory for information that had been processed relative to the self when it was presented verbally; visually imaged information, however, was better remembered when other people were the "hook" rather than the self. This result fits the hypothesis that schema complexity is likely to result from familiarity. That is, visual images of others are probably constructed more frequently than images of oneself, and are, therefore, likely to be more familiar.

Bower and Gilligan (1979) argue that the self-reference effect is an example of the general rule that "any well-differentiated cognitive structure can serve as a 'hitching post' for evaluation and attaching to the items to be remembered" (p. 429). They provide data that indicate that recalling episodes related to the self or to one's mother produce comparable levels of incidental memory.

Finally, Ferguson, Rule, and Carlson (1983) found that many of their results failed to support the self-reference effect. In particular, memory for desirability-rated adjectives was at least as good as memory for self-rated adjectives. It is probable that judging the desirability of stimuli in one's social and physical environment is a cognitive act that is of vital importance to individuals and one they perform quite frequently.

Taken together, the results of these studies indicate that the self is not always the most available concept for organizing information. Non-self-schemata, at times, provide at least as good, if not better, "hitching posts" if they are of equal or greater familiarity or importance to the individual. The advantage of non-self-schemata is a process to which we shall return.

Self-schema Theory

Self-schema theory has emerged as one of the more comprehensive models developed to account for the advantages of the self in the processing of social information (Markus, 1977; Markus & Sentis, 1982; Markus & Smith, 1981). According to this theory, individuals who rate trait adjectives on a given dimension as being both highly self-descriptive and highly important are considered schematic on that dimension. The self is conceptualized as a system of interrelated schemata that occupy a central position in the memory space.

In Figure 1 (from Markus & Smith, 1981) schematic dimensions are represented as ovals connected to the self in varying degrees (as indicated by their closeness to the self). Concepts that are connected to the self represent ones for which the person is considered schematic. Those that have no connection to the self are dimensions for which the person is judged aschematic. It is important to note that Markus uses the term aschematic to refer to dimensions for which the person does not have a self-schema. In other words, the individual may still have a schema for this concept, but it would lie outside the self-schema. In Figure 1 the schematic dimensions include graduate school, independence, women, jogging, and food; the aschematic dimensions (that is, non-self-related schemata) represented here are ladders and pentagrams. Schemata that are tied to the self are thought to have an advantage in the perception, memory, and inference

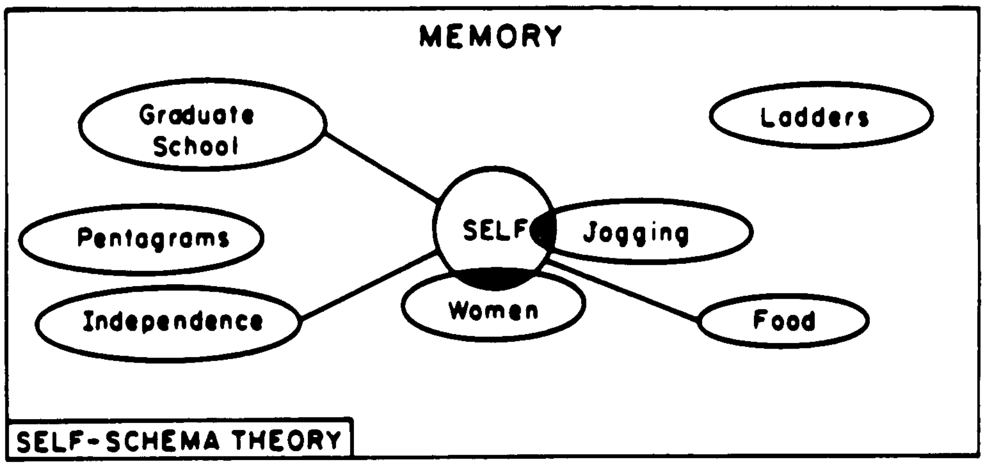

Figure 1 Hypothetical system of self-schemata: self-schema theory. (From Markus & Smith, 1981)

of social information. Research that has tested hypotheses derived from self-schema theory has demonstrated such advantages on a variety of dimensions, including independence (Markus, 1977), extraversion (Fong & Markus, 1982), and gender (Markus, Crane, Bernstein, & Siladi, 1982).

In the domain of gender, Markus, Crane, Bernstein, & Siladi (1982) investigated the effect of subjects' differential patterns of self-schematicity on information processing. In one experiment, subjects were classified as feminine schematic, masculine schematic, high androgynous, or low androgynous, based on their pattern of responses to the Bem Sex Role Inventory (BSRI; Bem, 1974). After completing the BSRI, subjects were required to recall as many of the items from the questionnaire as possible. Feminine schematics (subjects who are self-schematic for femininity, and aschematic for masculinity) recalled a greater number of feminine than masculine items from the BSRI. Similarly, masculine schematics (subjects who are self-schematic for masculinity, and aschematic for femininity) recalled more masculine items than feminine items from the BSRI. High androgynous subjects recalled a greater number of feminine than masculine words, although this difference was smaller than that found for feminine and masculine schematics. This result was unexpected, as high androgynous subjects are conceptualized by self-schema theory as being self-schematic on both the masculine and the feminine dimension. They should, therefore, process information relating to masculinity and femininity equivalently. Low androgynous subjects (subjects who are aschematic for both masculinity and femininity) recalled feminine and masculine words in equal proportion.

In a second experiment, subjects were categorized with respect to sex-role group (feminine schematic, masculine schematic, high androgynous, or low androgynous), based on their responses to a subset of items from the BSRI and the Personal Attributes Questionnaire (PAQ; Spence, Helmreich, & Stapp, 1975). Subjects categorized as feminine schematics endorsed more feminine than masculine attributes, had shorter response latencies for making "me" judgments about those attributes, longer response latencies for making "not me" judgments about masculine attributes, were more confident about their endorsements, and were able to provide more evidence of past feminine behavior than masculine behavior. Parallel findings were obtained for masculine schematics when processing information pertaining to masculinity. Androgynous subjects (both high androgynous and low androgynous) endorsed a greater number of masculine than feminine words from the BSRI; nevertheless, their response latencies, confidence estimates and descriptions of past behavior were equivalent, whether the information was relevant to masculinity or femininity. In addition, for "me" judgments, the response latencies of androgynous subjects were comparable to those of feminine schematics making judgments about feminine attributes, and masculine schematics making judgments about masculine attributes. Further, for "not me" judgments, their response latencies were comparable to feminine schematics for masculine attributes, and masculine schematics for feminine attributes.

3. GENDER AND COMPLEXITY OF SELF-SCHEMATA VS. OTHER SCHEMATA

Overview

An ongoing debate exists between self-schema theory (Crane & Markus, 1982) and gender schema theory (Bem, 1982) with respect to the domain of gender. Self-schema theory (e.g., Markus, 1977; Markus, Crane, Bernstein, & Siladi, 1982) views gender as one component of a larger, more general cluster of self-related cognitions (gender is a subcategory of the self). According to this theory, the self-schema can include representations of masculinity, femininity, both masculinity and femininity, or neither masculinity nor femininity. Which pattern a given individual manifests depends on how that individual views himself or herself and on how important these attributes are to his or her self-definition. Gender concepts that are represented within the self-schema are thought to have an advantage in terms of information processing compared to those represented outside the self-schema.

Gender schema theory (e.g., Bem, 1981), on the other hand, views the self as a subcategory of a larger, socially pervasive gender schema. The latter maintains that sex-typing derives from the assimilation of the self-concept into society's ever-present gender schema. As children learn the role expectations society has for males and females and the importance it places on these roles, they learn which attributes are to be linked with their own sex and, therefore, with themselves. Once the self-concept is assimilated into the gender schema, the individual manifests the effects of schema-based processing, in general. That is, the individual invokes the gender schema in order to evaluate and assimilate new information, even in contexts for which gender is not of primary concern. The net result is that the individual is particularly prone to partitioning incoming social information into the categories "masculine" and "feminine." In addition, s(he) manifests the usual effects of schema-based processing (i.e., memory facilitation, inference, etc.) for the gender domain.

Terminology

In order to compare the two theories, both conceptually and empirically, we need to first define some differences between them in terminology. Both self-schema theory and gender schema theory use the

BSRI to categorize subjects with respect to sex-role condition.

Self-schema Theory. Based on their scores on the BSRI, subjects are classified by self-schema theory as being either masculine schematic, feminine schematic, high androgynous or low androgynous. The latter two groups are sometimes termed high undifferentiated and low undifferentiated by self-schema theory (e.g., Markus & Sentis, 1982). In the interest of consistency and clarity when comparing the theories, these groups will be referred to here as androgynous, in place of high androgynous or high undifferentiated, and undifferentiated, rather than low androgynous or low undifferentiated. The BSRI consists of sixty trait adjectives, twenty of which reflect society's definition of masculinity (e.g., independent), twenty of which reflect its definition of femininity (e.g., gentle), and twenty of which are neutral and serve as fillers. All subjects receive both a masculinity and a femininity score. Masculine schematics are individuals of either sex who score above the median on masculinity and below the median on femininity; feminine schematics conform to the opposite pattern. Androgynous individuals score above the median on both scales; and undifferentiated individuals score below the median on both scales. This four-fold classification is made independent of the subjects' biological sex.

Gender Schema Theory. Gender schema theory, on the other hand, categorizes subjects as either sex-typed, cross-sex-typed, androgynous, or undifferentiated, also based on their scores on the BSRI. Sex-typed individuals are those of either sex who score above the median on the sex-consistent scale and below the median on the sex-inconsistent one (e.g., females who endorse feminine adjectives and who reject masculine ones). Cross-sex-typed individuals score above the median on the sex-inconsistent scale and below the median on the sex-consistent one (e.g., males who endorse feminine adjectives and reject masculine ones). Androgynous subjects score above the median on both scales; and undifferentiated subjects score below the median on both scales.

In other words, Markus' self-schema theory categorizes people with regard to their psychological gender and treats as unimportant their biological sex. Bem's gender schema theory, on the other hand, categorizes people with regard to the consistency of their biological sex and psychological gender, and treats as unimportant whether that gender is masculine or feminine. The differences in terminology reflect the fundamentally different perspectives of these theories.

Comparison of Self-schema Theory and Gender Schema Theory

Self-schema theory considers the masculine schematic as one who has a masculinity schema that is connected to the self-schema and a femininity schema that is unconnected to it; the feminine schematic possesses a femininity schema that is connected to the self-schema and a masculinity schema that lies outside it. The androgynous subject is thought to have schemata for both dimensions, connected to the self-schema; and the undifferentiated subject possesses both schemata, but unconnected to the self-schema.

Gender schema theory, however, views only the sex-typed (and possibly the cross-sex-typed) subject as being schematic, as they are the ones that dichotomize the gender dimension. The theory has not specifically addressed and is not precise regarding the schematic or non-schematic character of cross-sex-typed individuals. Androgynous and undifferentiated individuals are thought to be without a gender schema, as they do not differentiate on the basis of gender.

The two theories, then, lead to different predictions in terms of which subjects should demonstrate the effects of schema-based processing. Markus' self-schema theory predicts that feminine schematics and masculine schematics should demonstrate schematic processing for femininity and masculinity, respectively. Androgynous subjects should demonstrate such effects on both dimensions; and undifferentiated subjects should do so on neither dimension. Bem's gender schema theory, however, predicts that only sex-typed subjects should display gender schematicity. Although the treatment of cross-sex-typed subjects has been inconsistent, Bem has usually considered them to be aschematic. For example, in the Bem (1981) study, the performance of cross-sex-typed subjects was interpreted as indicating that they are not gender schematic. Frable and Bem (1985), however, interpret the results obtained from their cross-sex-typed subjects as being indicative of gender-based schematic processing.

Empirical Evidence

Each theorist has provided evidence that supports her own model. As discussed previously, Markus et al. (1982) found that subjects who were classified as feminine schematics, based on their responses to both the BSRI and a subset of items from the BSRI and PAQ, remembered feminine attributes better, and endorsed them faster and with more confidence than masculine trait terms. They were also able to provide more examples of past feminine than masculine behavior. Masculine schematics demonstrated superior memory, and shorter response latencies and greater confidence for self-judgments on the masculine compared to the feminine dimension. Both androgynous and undifferentiated subjects endorsed feminine attributes as quickly as masculine ones, and provided as many examples of past feminine behavior as past masculine behavior. Androgynous subjects, however, were more confident of their endorsements (both masculine and feminine), and provided more examples of past masculine and feminine behavior than did undifferentiated subjects.

Bem (1981) conducted a study of clustering of gender-related words in recall and found that subjects who had been categorized as sex-typed (i.e., their pattern of endorsement on the BSRI was consistent with their biological sex) demonstrated greater clustering of words on the basis of gender than the other three groups combined (cross-sex-typed + androgynous + undifferentiated). In a second experiment, sex-typed subjects had shorter response latencies when making sex-consistent judgments and longer response latencies when making sex-inconsistent judgments than the other three groups. This last set of results contradicts the findings obtained by Markus et al. (1982).[1]

In that study, the response latencies of androgynous subjects were comparable to the latencies of masculine schematics for masculinity, and feminine schematics for femininity, when making "me" judgments (or in Bem's terms, they were comparable to that of sex-typed subjects making sex-consistent judgments). In addition, for "not me" judgments, the response latencies of androgynous subjects were comparable

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[1]It should be noted that the recall stimuli used by Markus et al. (1982) and by Bem (1981) differed. Markus required subjects to recall trait terms from the BSRI; Bem used an independent set of items (i.e., names, verbs, animals, and articles of clothing) that had been normed for their degree of masculinity versus femininity.

to that of feminine schematics for masculinity, and masculine schematics for femininity (i.e., they were comparable to that of sex-typed subjects making sex-inconsistent judgments.

Support for both self-schema theory and gender schema theory comes from a study conducted by Mills (1983). Subjects in this study were categorized, based on their responses to the Adjective Check List (ACL; Gough & Heilbrun, 1965), as either masculine, feminine, or balanced (androgynous and undifferentiated, combined) and then rated themselves on feminine, masculine, and neutral attributes from the BSRI. Finally, subjects were required to recall as many of the attributes from the BSRI as possible. For both masculine and feminine subjects, ratings were higher, reaction times faster, and recall better for sex-consistent than for sex-inconsistent items. No differences were found for balanced subjects.

Payne, Connor, and Colletti (1987) attempted to resolve the discrepant results reported by these theorists by pitting gender schema theory against self-schema theory experimentally. Subjects in this experiment were categorized, based on their scores on the PAQ, according to both the organizational strategy used by Bem's gender schema theory (i.e., sex-typed, cross-sex-typed, androgynous, and undifferentiated) and by Markus' self-schema theory (i.e., masculine schematic, feminine schematic, androgynous, and undifferentiated). At a later time, subjects engaged in an attribute rating task (i.e., they were required to indicate whether the items from the PAQ described themselves by responding either "Me" or "Not Me" to each item), and then either a free-recall or a recognition task, based on the stimuli used by Bem (1981).

These investigators found that subjects' endorsements, response latencies, and confidence ratings on the attribute rating task fit self-schema theory quite well, whereas they failed to support predictions made by gender schema theory (e.g., masculine and androgynous subjects endorsed more masculine attributes, and did so faster and with greater confidence than did feminine and undifferentiated subjects). Results obtained from both the free-recall and recognition tasks, however, failed to support either model. Specifically, performance on the memory tasks did not vary as a function of sex-role category.[2]

The Challenge

Recently, gender schema theory has reported experimental results that pose a serious challenge to self-schema theory. This challenge involves the results of a study conducted by Frable and Bem (1985) that required subjects to recall "who said what" after listening to a taped conversation. The speakers consisted of three women and three men. A photograph of each speaker was projected on a screen as s(he) spoke. An analysis of subjects' errors revealed that all subjects, regardless of sex-role category, had a significantly greater tendency to confuse speakers who were of the same sex as one another than to confuse speakers whose sex differed from one another. For example, if a statement was originally made by a woman, and if the subject made an error, it was in attributing

[2]Deaux, Kite, & Lewis (1985) and Edwards and Spence (1987) also failed to find differences in performance using Bem's (1981) stimuli.

that statement to another woman (within-sex error). Within-sex errors, in general, indicate that subjects had initially encoded the speakers' statements in terms of gender. They remembered which sex said what but not necessarily which person. The fact that all subjects made many more within-sex errors than cross-sex errors (confusing a man for a woman, or a woman for a man) probably reflects the improbability of finding an individual who is truly without a self-schema for the dimension of gender. It might make more sense to think of people as varying in degree of schematicity on such primary dimensions. These results are reproduced in Figure 2 (from Frable & Bem, 1985).

In addition, analysis of the within-sex errors made by androgynous and undifferentiated subjects reveals results that confirm predictions made by Bem's gender schema theory but that oppose those made by Markus' self-schema theory. Specifically, according to self-schema theory, androgynous subjects should make fewer within-sex errors on both dimensions than should undifferentiated subjects, as the former are thought to possess a self-schema corresponding to both of these dimensions, whereas the latter are viewed as lacking a

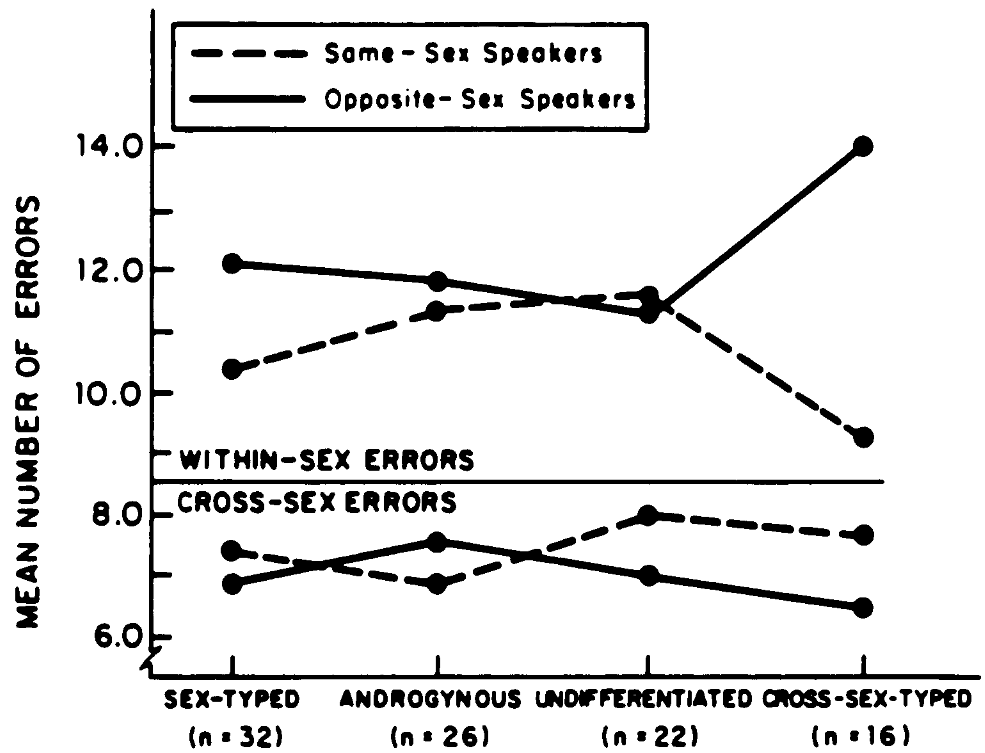

**Figure 2 Errors as a function of sex-role orientation.
(From Frable & Bem, 1985)**

self-schema on either dimension. The performance of the androgynous and undifferentiated groups, however, was virtually identical. This is precisely what gender schema theory would predict because neither group is thought to dichotomize social information on the basis of gender (neither group is thought to be gender schematic).

Finally, both sex-typed and cross-sex-typed subjects tended to make more within-sex errors for opposite-sex speakers than for same-sex ones (male subjects were more likely to confuse one female speaker for another; female subjects were more likely to confuse one male speaker for another). As may be seen in Figure 2 this tendency is greatest for the cross-sex-typed subjects, who display the most confusion of opposite-sex speakers and the least confusion of same-sex ones. Since the cross-sex-typed subject is one who describes herself/himself in terms of opposite-sex attributes, why should s(he) be better at discriminating members of the same sex? This finding poses problems for both self-schema theory and gender schema theory.

Self-schema theory, although never having treated cross-sex-typed subjects as a separate group (males were included as feminine schematics, and females as masculine schematics), would seem to view these individuals as having a schema on the sex-inconsistent dimension that is tied to the self-schema and as having a schema on the sex-consistent dimension that lies outside it. Therefore, the representation of sex-inconsistent information should be better integrated than sex-consistent information (which should involve a less well-integrated cognitive structure). This ought to enable cross-sex-typed subjects to make finer discriminations on the sex-inconsistent than sex-consistent dimension.

Gender schema theory also has difficulty interpreting this result. It, too, cannot explain why it is always the opposite-sex speakers who are confused with one another. Even if cross-sex-typed subjects are viewed as being gender schematic (and they usually are not, as discussed previously), this theory would seem to predict that any advantage in information processing would be consistent with the direction of subjects' self-descriptions. For example, the model might propose that as individuals learn the sex-roles associated with men and women, they pay special attention to information that pertains to their self-definition, rather than their biological sex. Contrary to the results obtained by Frable and Bem, however, cross-sex-typed subjects would, then, be expected to perform better on the sex-inconsistent dimension than the sex-consistent one (i.e., make fewer within-sex errors for opposite-sex than for same-sex speakers).

Race and Schema Complexity

The results of the Frable and Bem (1985) study seem conceptually similar to those reported from research involving face recognition. For example, it has been demonstrated that both children and adults tend to confuse photographs of members of another race and they tend to be relatively better at discriminating faces of members of their own race (Brigham & Barkowitz, 1978; Katz, 1973; Malpass & Kravitz, 1969). These results can be understood in terms of schema complexity. As discussed above, it is thought that we have more complex schemata for groups to which we belong than for those that represent outgroups. The more complex schema for the ingroup enables the individual to make finer discriminations along this dimension than along the outgroup one.

The greater complexity of the ingroup schema also results in more moderate evaluative judgments of ingroup than outgroup members. For example, Linville and Jones (1980) hypothesized that people who have a simple schema for a given group would tend to make more evaluatively extreme judgments of members of that group than of those belonging to groups for which they have a complex schema (this has been termed "the complexity-extremity hypothesis," Linville & Jones, 1980; Linville, 1982a).

This follows if schematic complexity is equated with numerosity of concepts in a given domain. For example, imagine that an individual has schemata for two people, one for person S which is relatively simple, and one for person C which is rather complex. Further, imagine that the schematic representation of person S included the attributes intelligent, warm, and athletic, whereas that of person C contained the characteristics intelligent, warm, athletic, outgoing, and independent. If our hypothetical individual now receives an equivalent item of negative information about each person, person S will be evaluated more negatively, overall. The schema for person S contains three attributes, one of which has now changed in a negative direction (person S is now viewed only 2/3 as positively as s(he) had previously been). Person C, on the other hand, is thought of in terms of five attributes (s(he) is now seen as being 4/5 as positive as previously).

Linville (1982a) and Linville and Jones (1980) found that subjects who were assumed to have a complex schema did, in fact, make more moderate judgments than those who have a simple schema (which resulted in more extreme evaluations--either highly positive or highly negative). For example, in one series of studies, white subjects read and rated law school applications, in which the race of the applicant (black versus white) and the strength of the applicant's qualifications (strong versus weak) were varied. When the applicant's credentials were strong, subjects rated the black applicant more positively than the white applicant. However, when the applicant's credentials were weak, the black applicant received more negative evaluations than did the white applicant. The same pattern was partially obtained by subjects who rated applicants of either the same or opposite sex (Linville & Jones, 1980). A second series of studies demonstrated this effect for the dimension of age (Linville, 1982a).

Although in the experiment discussed above, Linville and Jones (1980) assumed that whites have more simple schemata for blacks than they do for whites, they also directly demonstrated this phenomenon using a trait-sorting procedure employed in multidimensional scaling tasks. In this experiment, half of the subjects performed trait sorts corresponding to blacks, whereas half generated trait sorts for whites. A measure of dimensional complexity was calculated for each subject's trait sort using an index provided by Scott (1962, 1969). The results supported the prediction that whites have more complex schemata for white than for black undergraduates.

With the exception of the last study, cognitive complexity has been assumed rather than directly measured. The assumption that ingroup schemata are automatically complex and that outgroup schemata are simple follows from a long tradition in which the self is invariably held to be a unique, central, and complex psychological entity relative to representations of other people, events, or concepts. It follows that the self as part of an ingroup would be hypothesized to be complex, relative to representations of others as members of outgroups. The model proposed below questions the assumption that self-schemata are automatically more complex than non-self-schemata. It is, instead, hypothesized that individuals have a number of self-schemata that are relatively simple, and many other schemata that lie outside the self, but that are, nevertheless, quite complex.

4. THE PRESENT MODEL

Cross-sex-typed Subjects and Differential Complexity for Sex-consistent vs. Sex-inconsistent Information

It is proposed that the pattern of results obtained by Frable and Bem (1985) can also be understood in terms of schema complexity. Thus, sex-typed subjects are hypothesized to have a more complex schema for the sex-consistent dimension than the sex-inconsistent dimension. Cross-sex-typed subjects, however, do not necessarily have a great deal of experience with or information about the sex-inconsistent dimension even though this is the one that they identify with. Since society places considerable emphasis upon the learning and ultimate adoption of the sex-consistent sex-role, it seems likely that cross-sex-typed individuals would have greater experience with and knowledge about what is involved in this role compared to the sex-inconsistent role. Although these individuals might prefer to define themselves in sex-inconsistent terms for reasons of perceived social desirability or self-presentation, the cognitive representation of this information might involve a relatively simple, poorly integrated knowledge structure. It is hypothesized that cross-sex-typed individuals have, at some point in their development, rejected sex-consistent attributes from their self-schema and have then embraced sex-inconsistent ones. Although they are self-schematic on the sex-inconsistent dimension by definition, this schema is relatively simple. For such individuals, the sex-consistent schema, although residing outside the self-schema, is actually more complex than the self-schema.

The reasons for the initial rejection of the sex-consistent dimension from the self can only be speculated upon at this point. One possibility, as discussed above, is that individuals might engage in such a process if they perceived the corresponding attributes as socially undesirable. For example, the pressure exerted by the counterculture of the late 1960's and early 1970's upon individuals to change (and to expand) their definitions of what is "appropriate" masculine and feminine sex-role behavior has had considerable impact upon this society. It is understandable that individuals who have been sensitized to these issues might perceive sex-consistent traits to be unacceptable.

Because society expends so much effort in enforcing sex-consistent attributes in its young, however, it seems likely that individuals would have a great deal of experience and complex knowledge structures corresponding to this dimension. Rejecting it from the self does not diminish its richness. On the other hand, acceptance of the sex-inconsistent dimension into the self does not necessarily imply extensive experience with or a deep understanding of it. For example, would a cross-sex-typed female find the behavior, attitudes, and emotions of men more predictable and understandable than that of women? Although this question is posed solely for illustrative purposes and will not be specifically investigated in this dissertation, it seems conceivable that an individual would be better able to anticipate and to interpret behavior performed by sex-consistent actors (in this example, women) compared to sex-inconsistent ones (i.e., men), despite the fact that s(he) views herself/himself in sex-inconsistent terms.

Following this line of reasoning, the same predictions could be made for androgynous and undifferentiated subjects, as the former endorse sex-inconsistent attributes and the latter reject sex-consistent attributes on the BSRI. However, androgynous subjects accept sex-inconsistent attributes, in the context of also accepting sex-consistent attributes on the BSRI. This pattern does not reverse the traditionally appropriate pattern and might reflect a tendency on the part of androgynous subjects toward flexibility or tolerance of ambiguity, in terms of self-definition.

Similarly, undifferentiated subjects reject sex-consistent attributes, in the context of also rejecting sex-inconsistent attributes on the BSRI. It is more difficult to speculate upon possible mediators of this pattern. On the one hand, the concurrent rejection of both types of information from the self-schema has a passive quality to it and might result from an absence of such information in the self-schema or from low self-esteem, rather than from active rejection of that which is deemed appropriate by the general society. Alternatively, this pattern might reflect active rejection on the part of these individuals, similar to that hypothesized to mediate the pattern of self-identification for cross-sex-typed subjects. The present model, however, tentatively conceptualizes undifferentiated subjects in the manner suggested by the first alternative (i.e., as being "cognitively vacant" on the sex-consistent dimension).

The pattern exhibited by cross-sex-typed subjects may, then, reflect a tendency to define themselves in the negative (i.e., in terms of whom they would prefer not to be), and then derive who they are through inference. For example, a cross-sex-typed female might ordinarily view herself, more in terms of being not dependent, than in terms of being independent. However, if she were directly questioned as to whether she considered herself independent, she would "look up" the contents of her self-schema and encounter the item "not dependent." She would conclude that she was, in fact, independent, as this is consistent with being not dependent.

Hypervigilance and Hypovigilance

If cross-sex-typed individuals do, in fact, define themselves in terms of whom they would prefer not to be (i.e., the sex-consistent dimension), we might expect them to pay careful attention to such information. They might, therefore, prove hypervigilant with respect to sex-consistent information (i.e., the rejected dimension) compared to individuals with other sex-role orientations. Conversely, if they derive who they are (i.e., the sex-inconsistent dimension) through inference, rather than through direct experience or self-knowledge, we might expect them to pay less attention to such information. They might, then, prove hypovigilant when processing sex-inconsistent information (i.e., the accepted dimension), compared to the other three groups.

Initial support for this view comes from the fact that the cross-sex-typed subjects in the Frable and Bem (1985) study made fewer within-sex errors for same-sex speakers (i.e., cross-sex-typed females were relatively good at differentiating one female speaker from another female speaker; cross-sex-typed males were relatively good at discriminating between male speakers), and more within-sex errors for opposite-sex speakers (i.e., cross-sex-typed females were relatively poor at discriminating one male speaker from another; cross-sex-typed males were relatively poor at differentiating between female speakers), compared to subjects in the other three groups (see Figure 2).

As previously discussed, research on the self has usually defined self-schematicity in terms of an individual's endorsement of the pertinent dimension as being self-relevant and important. Using this definition, the cognitive organization of the cross-sex-typed individual suggests the possibility of a complex schema that is represented <u>outside</u> the self (i.e., the sex-consistent schema) and a relatively simple self-schema (i.e., the sex-inconsistent schema). In addition, it is hypothesized that cross-sex-typed individuals have actively rejected the sex-consistent schema from the self and that this will be reflected in hypervigilance for sex-consistent, and hypovigilance for sex-inconsistent information.

The present model maintains the self as a central psychological structure, as it often involves concepts that are very familiar and important to individuals. The self is not viewed, however, as having any special cognitive power. In fact, some of the concepts represented within the self can be relatively simple and poorly integrated compared to those outside the self. Previously found advantages for self-relevant information are thought to result from the increased familiarity (and resultant complexity) and importance that are ordinarily associated with the self.[3]

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[3]As mentioned earlier, the self is probably an unusually affect-laden structure. However, such considerations are beyond the scope of this paper.

Figure 3 illustrates the present model. Dimensions for which the individual is considered schematic are indicated in Figure 3 by ovals, connected to the self (closely following Markus et al., 1981; see Figure 1). Concepts for which the individual is considered aschematic are represented as ovals, unconnected to the self. Finally, complex schemata are depicted as dotted ovals; simple schemata are represented as diagonally striped ovals.

This model predicts that information that is rejected from the self will have a powerful influence on information processing, as the individual is likely to have a relatively complex schema for it. Conversely, schemata that represent dimensions of self-identity that an individual aspires to, but that s(he) actually has little experience with or information about, are predicted to be relatively simple, and to therefore, exert less influence on information processing.

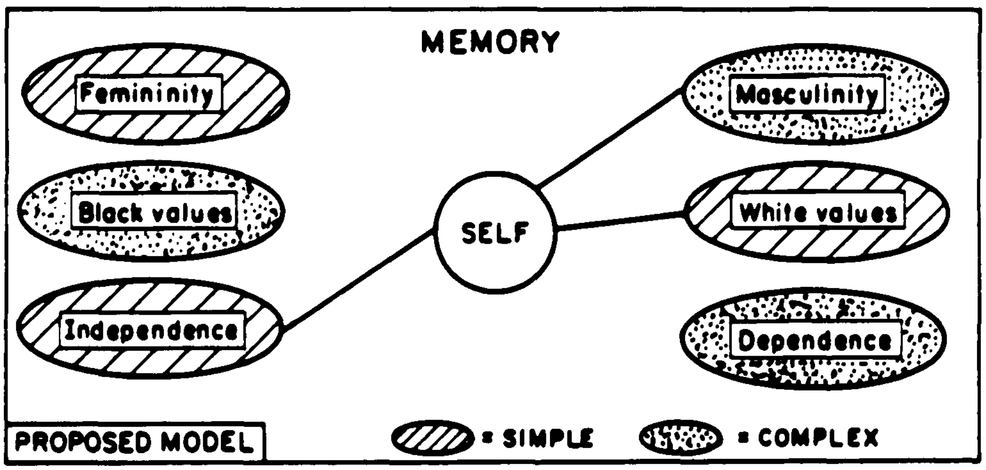

Figure 3 Hypothetical system of self-schemata: the present model.

Differences Between the Models

The present model, self-schema theory, and gender schema theory are represented diagrammatically in Figure 4. The proposed model differs from Markus' self-schema theory in that it allows for relatively simple self-schemata and complex schemata represented outside the self. It views self-schemata and schemata outside the self as being qualitatively similar in their cognitive organization. Schema complexity is seen to result from familiarity. The present model is able, therefore, to explain the results of studies designed to test hypotheses derived from self-schema theory. Moreover, it can account for data from studies that have reversed the self-reference effect (e.g., Kuiper & Rogers, 1979). Self-schema theory would have difficulty explaining the results of studies that have run counter to the self-reference effect. In addition, as discussed previously, self-schema theory has difficulty interpreting the results of the Frable and Bem (1985) study. On the contrary, the present model can account for that data, as it has the ability to incorporate rejected aspects of self-identity. As such, it represents a more dynamic and multifaceted view of the self than self-schema theory.

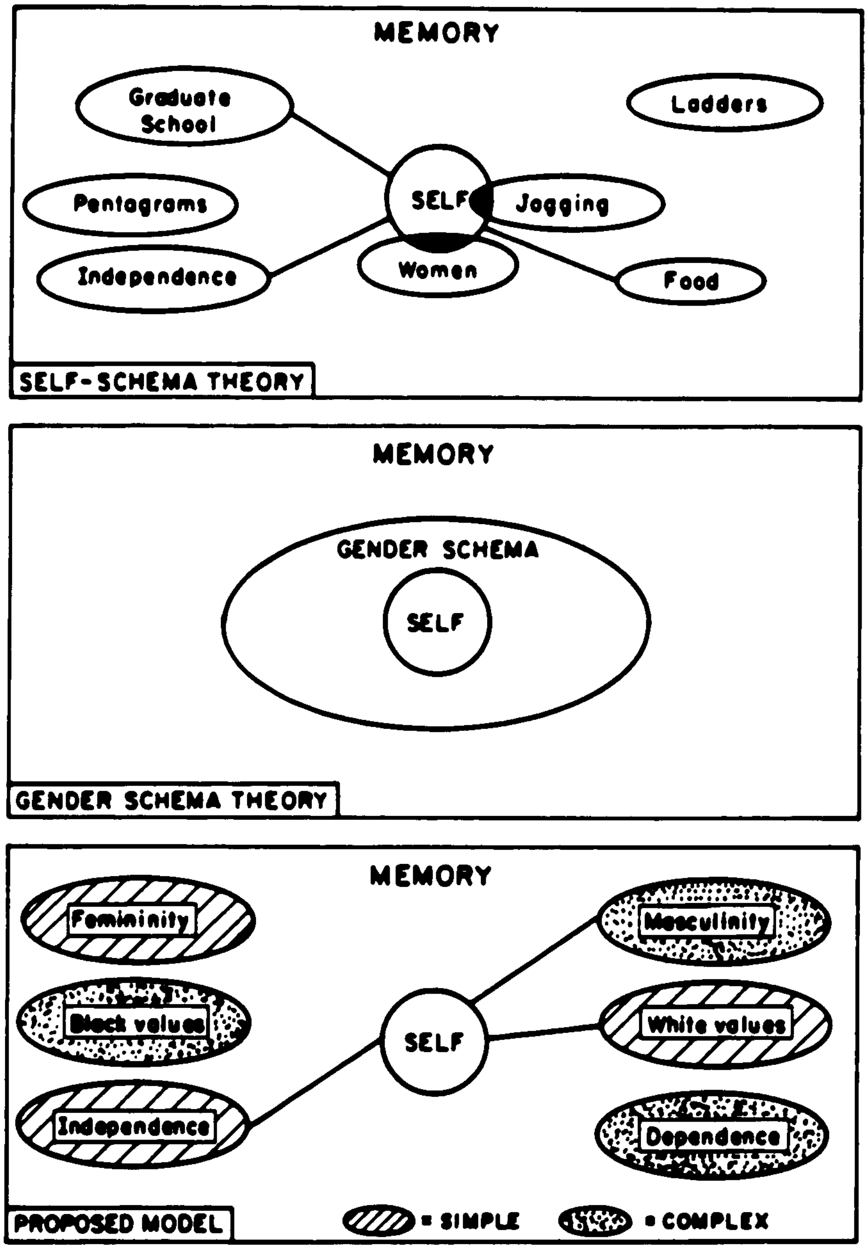

Figure 4 Comparison of self-schema theory, gender schema theory, and the present model.

Further, self-schema theory would predict that individuals should process information that pertains to the self-schematic dimension better than information that is represented outside the self. In contrast, the present model would expect individuals to process information that corresponds to the complex schema more efficiently than information related to the simple schema. In many situations, therefore, the two theories would make the same predictions. At times, though (e.g., when individuals have rejected a very familiar dimension from the self), the theories diverge and make conflicting predictions.

The present model differs from Bem's gender schema theory in that it represents a general model of the self in social information processing, of which gender is but one part. In addition, the present model maintains the self as a central and unique structure due to its strong affective characteristics. Gender schema theory, on the contrary, views the self as a subcategory of a larger gender schema. Further, gender schema theory cannot account for the results obtained for cross-sex-typed subjects in the Frable and Bem (1985) study. To do so, it would need to maintain that individuals, as they learn the contents of the gender schema, pay special attention to the attributes that belong to the gender they identify with. If gender schema theory were to be modified in this manner, it would no longer be a model of gender, but rather, a model of the self (and not very different from Markus' self-schema theory). The present model has the advantage of being able to explain the results of the Frable and Bem (1985) study (a study designed to test predictions made by Bem's gender schema theory), as well as those from the Markus, Crane, Bernstein, and Siladi (1982) study. In addition, gender schema theory cannot address the results of studies that have investigated domains, other than gender. The present model, although using gender as the medium to test its predictions, represents a more general model of the self, and applies to a wider range of dimensions of self-knowledge.

5. PREDICTIONS

The present model, self-schema theory, and gender schema theory all hypothesize that certain individuals should manifest the effects of schema-based processing for information relating to gender, whereas others should not. As previously discussed, schematic processing typically results in enhanced memory and complexity for schema-relevant information. Because the three theories differ in their conceptualization of which individuals are self-schematic and/or aschematic, and for which dimension(s) of gender they are self-schematic and/or aschematic (i.e., masculinity, femininity) the models make conflicting within-subjects predictions for differential processing of sex-consistent versus sex-inconsistent information.

In addition, the three models make conflicting between-subjects predictions. In particular, the between-subjects predictions made by both self-schema theory and gender schema theory are based solely on consideration of whether a given group is self-schematic versus non-self-schematic on the relevant dimension. The present model also makes between-subjects predictions based on this consideration; in addition, however, it hypothesizes that hypervigilance (hypovigilance) influences the processing of gender-related information. In other words, according to the present model, both sex-typed and cross-sex-typed subjects should perform well on the sex-consistent dimension because both are thought to have complex schemata for this dimension. The performance of cross-sex-typed subjects, though, is expected to exceed that of sex-typed subjects, as cross-sex-typed subjects are hypothesized to be hyperviglant with respect to sex-consistent information. Tables 1, 2, and 3 provide a summary of the predictions the three theories make.

Within-subjects

The within-subjects predictions are summarized in Table 1. As may be seen in the table, and as will be discussed below, the three models make similar predictions except for cross-sex-typed subjects. For cross-sex-typed subjects, the present model predicts enhanced processing (i.e., greater memory and complexity) for sex-consistent information relative to sex-inconsistent information. In contrast, self-schema theory predicts the opposite: heightened processing of sex-inconsistent information relative to sex-consistent

Table 1

Summary of Within-subjects Predictions Made by the Present Model, Self-schema Theory, and Gender Schema Theory

Model	Within-subjects Predictions*
Present Model:	
Cross-sex-typed	Sex-consistent > Sex-inconsistent
Sex-typed	Sex-consistent > Sex-inconsistent
Androgynous	Sex-consistent = Sex-inconsistent
Undifferentiated	Sex-consistent = Sex-inconsistent
Self-schema Theory:	
Cross-sex-typed	Sex-consistent < Sex-inconsistent
Sex-typed	Sex-consistent > Sex-inconsistent
Androgynous	Sex-consistent = Sex-inconsistent
Undifferentiated	Sex-consistent = Sex-inconsistent
Gender Schema Theory:	
Cross-sex-typed	Sex-consistent = Sex-inconsistent
Sex-typed	Sex-consistent > Sex-inconsistent
Androgynous	Sex-consistent = Sex-inconsistent
Undifferentiated	Sex-consistent = Sex-inconsistent

* ">" denotes enhanced information processing; "<" denotes diminished information processing; "=" denotes equal information processing.

information. Gender schema theory predicts equalivalent processing of sex-consistent and sex-inconsistent information.

Present Model: Because cross-sex-typed subjects are hypothesized to have a more complex schema for the rejected (i.e., sex-consistent) than the accepted (i.e., sex-inconsistent) dimension, they are expected to display superior processing of sex-consistent compared to sex-inconsistent information. This prediction is made by the present model, despite the fact that cross-sex-typed subjects are usually considered aschematic on the sex-consistent, and self-schematic on the sex-inconsistent dimension. Sex-typed subjects should also demonstrate enhanced processing of sex-consistent compared to sex-inconsistent information, as they are considered self-schematic on the sex-consistent, and aschematic on the sex-inconsistent dimension. Androgynous subjects should process sex-consistent and sex-inconsistent information equivalently, as they are considered self-schematic on both dimensions. Because undifferentiated subjects are tentatively viewed by the present model as lacking a schema on both dimensions, their processing of sex-consistent and sex-inconsistent information should not differ.

Self-schema Theory: For cross-sex-typed subjects, self-schema theory would predict diminished processing of sex-consistent information compared to sex-inconsistent information, because they are considered aschematic on the sex-consistent, and self-schematic on the sex-inconsistent dimension. Self-schema theory predicts that sex-typed subjects should manifest heightened processing of information pertaining to the sex-consistent compared to the sex-inconsistent dimension. In other words, according to self-schema theory, only sex-typed subjects are thought to be self-schematic on the sex-consistent, and aschematic on the sex-inconsistent dimension. On the contrary, the present model predicts that both sex-typed and cross-sex-typed subjects should exhibit heightened processing of sex-consistent compared to sex-inconsistent information. In agreement with the present model, self-schema theory would expect androgynous subjects to display comparable performance on the sex-consistent and sex-inconsistent dimension, because these subjects are conceptualized as having a schema for both dimensions. Undifferentiated subjects should also process sex-consistent and sex-inconsistent information equivalently, as these subjects are viewed as lacking a schema for both dimensions.

Gender Schema Theory: Gender schema theory would also make predictions that are at variance with those made by the present model. Because cross-sex-typed subjects are viewed as being non-schematic, they would not be expected to display differential processing of sex-consistent versus sex-inconsistent information. However, sex-typed subjects are hypothesized to pay careful attention to information that applies to their own gender and, therefore, to themselves. Thus, gender schema theory would expect sex-typed subjects to display enhanced processing of sex-consistent compared to sex-inconsistent information. Androgynous subjects should process sex-consistent and sex-inconsistent information equally, as should undifferentiated subjects, since neither group are viewed as being gender schematic.

Between-subjects

The between-subjects predictions for sex-consistent information are summarized in Table 2.

Table 2

Summary of Between-subjects Predictions Made by the Present Model, Self-schema Theory, and Gender Schema Theory, for Sex-consistent Information

Model	Between-subjects Predictions*
Present Model:	Cross-sex-typed > Sex-typed & Androgynous > Undifferentiated
Self-schema Theory:	Sex-typed & Androgynous > Cross-sex-typed & Undifferentiated
Gender Schema Theory:	Sex-typed > Cross-sex-typed, Androgynous, & Undifferentiated

* ">" denotes enhanced information processing; "<" denotes diminished information processing; "=" denotes equal information processing.

Table 3 summarizes the predictions for sex-inconsistent information.

Sex-consistent Information. As may be seen in Table 2, the most critical difference in the predictions that the three theories make involve which group(s) should manifest enhanced processing of sex-consistent information relative to which other group(s). The present model predicts enhanced processing of sex-consistent information for cross-sex-typed subjects compared to subjects from the other three groups. On the contrary, self-schema theory predicts enhanced processing of sex-consistent information for sex-typed and androgynous subjects. Gender schema theory predicts enhanced processing of sex-consistent information for sex-typed subjects.

Present Model: The present model expects cross-sex-typed subjects to demonstrate superior processing of sex-consistent information compared to the other three groups. Cross-sex-typed individuals are hypothesized to define themselves, primarily in terms of whom they prefer not to be (i.e., sex-consistent attributes) and to, therefore, pay careful attention to

Table 3

Summary of Between-subjects Predictions Made by the Present Model, Self-schema Theory, and Gender Schema Theory, for Sex-inconsistent Information

Model	Between-subjects Predictions*
Present Model:	
	Androgynous > Sex-typed & Undifferentiated > Cross-sex-typed
Self-schema Theory:	
	Cross-sex-typed & Androgynous > Sex-typed & Undifferentiated
Gender Schema Theory:	
	Cross-sex-typed = Sex-typed = Androgynous = Undifferentiated

* ">" denotes enhanced information processing; "<" denotes diminished information processing; "=" denotes equal information processing.

information pertaining to the sex-consistent dimension. Thus, they are expected to prove hypervigilant for sex-consistent information. The performance of sex-typed and androgynous subjects should be comparable to one another for the sex-consistent dimension, because both groups are considered self-schematic with respect to this category of information. In addition, the performance of sex-typed and androgynous subjects should prove superior to that of undifferentiated subjects (who are viewed as being aschematic on the sex-consistent dimension), but inferior to that of cross-sex-typed subjects (who are thought to be hypervigilant with respect to sex-consistent information).

Self-schema Theory: Because self-schema theory views both sex-typed and androgynous subjects as being self-schematic for sex-consistent information, it would predict enhanced processing for subjects from both of these groups compared to cross-sex-typed and undifferentiated subjects, who are considered aschematic on the sex-consistent dimension. In contrast, the present model predicts enhanced processing for cross-sex-typed subjects compared to subjects from the other three groups.

Gender Schema Theory: According to gender schema theory, sex-typed subjects should display heightened processing of sex-consistent information compared to subjects from the other three groups. As discussed above, self-schema theory predicts that both sex-typed and androgynous subjects should demonstrate enhanced processing of sex-consistent information compared to cross-sex-typed and undifferentiated subjects. Thus, these models differ from the present model, primarily in terms of predictions made for cross-sex-typed subjects. It will be recalled that the present model predicts that cross-sex-typed subjects will display enhanced processing of sex-consistent information compared to the other three groups of subjects.

Sex-inconsistent Information. As may be seen in Table 3, the most notable difference between the present model and self-schema theory involves the predictions for cross-sex-typed subjects. For cross-sex-typed subjects, the present model predicts diminished processing of sex-inconsistent information compared to subjects from the other three groups. Self-schema theory, however, predicts that cross-sex-typed subjects will display enhanced processing of sex-consistent information compared to sex-typed and androgynous subjects. In contrast to both of these models, gender schema theory predicts that all four sex-role groups will process sex-inconsistent information equivalently.

Present Model: As discussed previously, cross-sex-typed subjects are hypothesized to derive who they are through inference. The present model, therefore, predicts diminished processing of sex-inconsistent information compared to subjects from the other three groups. Sex-typed and undifferentiated subjects, although thought to be aschematic for this dimension, are expected to exhibit enhanced processing compared to cross-sex-typed subjects, since they are not thought to be hypovigilant for sex-inconsistent information. Androgynous subjects should display the best processing of this information, since they are conceptualized as being self-schematic for this dimension.

Self-schema Theory: According to self-schema theory, cross-sex-typed and androgynous subjects should exhibit heightened processing of sex-inconsistent information compared to sex-typed and undifferentiated subjects, because the former groups are viewed as being self-schematic on the sex-inconsistent dimension. On the contrary, the present model predicts that cross-sex-typed subjects should manifest diminished processing of sex-inconsistent information compared to the other three groups of subjects.

Gender Schema Theory: According to gender schema theory, the performance of cross-sex-typed subjects should not differ from that of subjects from the other groups on the sex-inconsistent dimension. Self-schema theory, however, would predict that both cross-sex-typed and androgynous subjects, because they are schematic for sex-inconsistent information, should display heightened processing of sex-inconsistent information compared to sex-typed and undifferentiated subjects. The present model, in contrast to both self-schema theory and gender schema theory, predicts that cross-sex-typed subjects will demonstrate diminished processing of sex-inconsistent information compared to the other groups of subjects.

This dissertation was designed to test the competing hypotheses advanced by the present model, self-schema theory, and gender schema theory, in two ways: 1) by assessing differential patterns of memory (using an incidental recall task) as a function of individuals' sex-role orientation, and 2) by assessing differential patterns of cognitive complexity (using a trait-sorting task) as a function of individuals' sex-role orientation.

6. METHOD

Subjects

A total of 208 male and female undergraduates from the subject pool at Brooklyn College volunteered for the experiment in partial fulfillment of a requirement for an introductory psychology course. Ten subjects (7 males and 3 females) were dropped from the sample due to failure on their part to accurately follow the instructions. Data from an additional 8 subjects were excluded from the analyses, as their scores on the BSRI fell on the median. The 18 subjects that were excluded from the analyses were approximately evenly distributed across experimental condition. The final sample, therefore, consisted of 190 subjects (105 females and 85 males).

Experimental Materials

Sex-role Instrument. Subjects were categorized as either sex-typed, cross-sex-typed, androgynous, or undifferentiated based on their scores on the BSRI (see Appendix A; Bem, 1974). As previously discussed, the BSRI consists of sixty trait adjectives, 20 of which represent society's definition of masculinity (e.g., independent), 20 which represent its definition of femininity (e.g., gentle), and 20 which are neutral. The BSRI is based on a 7-point response scale (1-7), anchored at the endpoints with the descriptors "Never true or almost never true" and "Always true or almost always true." Each subject received two scores, one for the masculinity scale, and one for the femininity scale. Subjects' scores on the neutral scale were not calculated, since this information was not relevant to the present experiment. Thus, a subject's total score for either the masculinity or femininity scale could range from 20-140. Scores on the masculinity and femininity scales were divided by 20, yielding a mean masculinity and mean femininity score for each subject (i.e., subjects' mean masculinity or femininity score could range from 1-7).

Assignment of subjects to sex-role condition was accomplished by the method of median splits. Separate medians for the masculinity and femininity scale were calculated independently for male and female subjects. Hence, four medians were calculated: 1) median masculinity score for male subjects (cutoff = 5.05), 2) median femininity score for male subjects (cutoff = 4.95), 3) median masculinity score for female subjects (cutoff = 4.85), and 4) median femininity score for female subjects (cutoff = 5.25).[4]

The masculinity and femininity score obtained from each male subject was compared to the masculinity and femininity medians that had been calculated for male subjects. In this manner, males who scored above the median for masculinity and below the median for femininity, compared to other males, were categorized as sex-typed. Males who scored above the median for femininity and below it on femininity were categorized as cross-sex-typed. Males who scored above the median for both masculinity and femininity were classified as androgynous. Those who scored below both medians were classified as undifferentiated.

Similarly, the scores obtained from female subjects were compared to the masculinity and femininity medians that had been calculated for females. Females who scored above the femininity median and below the masculinity median were categorized as sex-typed. Those who scored above the

[4]The results obtained by classifying subjects in this manner did not differ from those using combined medians for male and female subjects. These analyses are reported in Appendix B.

median for masculinity and below it for femininity were classified as cross-sex-typed. Females who scored above both the masculinity and femininity medians were categorized as androgynous. Those who scored below both medians were classified as undifferentiated.

There were two related rationales for performing separate median splits for male and female subjects. First, performing separate median splits has the effect of relaxing the criterion for classifying subjects as cross-sex-typed (e.g., males must have a femininity score that is high for males, but not necessarily high for females). In this manner, a greater number of cross-sex-typed subjects were obtained than when the combined median was used. Second, since the number of female subjects exceeded the number of male subjects, scores obtained from the females would have been overrepresented in median splits performed on the combined data.

Data obtained from male and female subjects were analyzed separately in order to ascertain whether the predicted effects varied as a function of gender.

Complexity Instrument. The complexity of subjects' schemata for masculinity versus femininity was determined by using a trait-sorting task. Half of the subjects were instructed to perform a trait sort corresponding to the dimension of femininity, the other half to the dimension of masculinity (they were instructed to think of as many types of women and men, respectively, as they could). Each subject was provided with a deck of sixty index cards; each index card had a separate trait term printed on it. In addition, each subject was given a preprinted sheet (see Appendix C) to record their trait sorts on. Type of trait sort performed (femininity vs. masculinity) was counterbalanced across experimental session.

The trait terms used for this task (e.g., "bitchy," "sensitive," "chauvinistic," etc.; see Appendix D) were generated by a separate sample of male and female undergraduates from Brooklyn College who were instructed to think about the males that they are acquainted with (either personally or through various media) and to then list the traits that they associate with them. The same procedure was followed in terms of females. The order in which subjects generated the traits (male first vs. female first) was counterbalanced across experimental session. The sixty traits that appeared most frequently in the protocols obtained from this sample were selected for use in the trait-sorting task.

In replication of the procedure used by Linville and Jones (1980; Linville, 1982a), a complexity score was calculated for each subject according to the following formula provided by Scott (1962; 1969): $H = \log_2 n - \frac{1}{n}\sum n_i \log_2 n_i$, where n = the total number of traits; n_i = the number of traits that appear in a particular combination of groups. According to Linville (1982a) the H statistic "may be interpreted as the number of independent binary attributes needed to produce a trait sort equal in complexity to that of the subject" (p. 199; a more complete description of the application of this formula is provided by Scott, 1962).

Exploratory Questionnaire. A questionnaire consisting of items pertaining to various demographic factors, future career plans, parental occupations, sexual orientation, and gender composition of subjects' closest friends, was completed by all subjects. The questionnaire was included as an exploratory means of elucidating factors that might play a role in the adoption of each of the four sex-role orientations. The variables described above were selected because it seemed likely that they play an important role in the development of sex-role orientation. It was expected that some of these factors might be differentially correlated with the experimental groups. Although these factors are by no means exhaustive of those that probably mediate this process, the time constraints of the experimental session prohibited a more detailed investigation. It was, nevertheless, hoped that the information obtained from this exploratory component of the experiment would prove useful in informing future phases of the research. The questionnaire is included in Appendix E.

Procedure

Subjects were tested in mixed-sex groups of 1-5 individuals by a female graduate student. Upon arriving at the laboratory, they were greeted by the experimenter and seated at desks which were separated from one another by partitions. They were informed that the experiment involved perception of self versus perception of others, and that it consisted of five parts. First, subjects were required to complete the Bem Sex Role Inventory. Subjects were informed that their identities would remain anonymous and were encouraged to complete the questionnaire as honestly as possible.

Upon completion of the questionnaire, subjects participated in a five minute intervening task that consisted of a puzzle which contained words, embedded in a matrix of letters. A list of the words that were hidden in the matrix was printed in the margin of the puzzle (see Appendix F). Subjects were instructed to consult the list and to find as many of the words as they could. This task was included in the experiment in order to prevent subjects from rehearsing the items from the BSRI, since the next phase of the experiment involved an incidental recall task.

Next, subjects engaged in the incidental recall task, in which they were given five minutes to recall as many of the items from the BSRI as possible. Subjects were instructed to "try to recall as many of the words from the questionnaire that you filled out, as you can."

The fourth phase of the experiment consisted of the trait-sorting task. Half of the subjects performed trait sorts corresponding to females, the other half to males. Subjects were informed that this part of the experiment involved their perceptions of other people, particularly men or women (depending on condition). Subjects were instructed to "sort the traits on the index cards into piles that make sense to you, that seem to go together, in terms of describing different types of men (women). There are no right or wrong answers; form as many types as seem meaningful to you. Start by thinking of your first type and pull out the traits that apply to that type. List those traits in Column 1 on the sheet I've given you. But instead of writing out each word, if you look at the index cards, you'll notice that each one has a number printed in the upper-right-hand corner. You can write down the number of the card, rather than the actual word, in order to save some time. Then, replace the cards in the deck and think of your next type. Pull out the traits that apply to this type and list them in Column 2. Repeat this procedure until you've entered all your types on the sheet." Subjects were then prompted for questions. When all subjects comprehended the task they were instructed to begin.

Finally, when subjects had completed the trait-sorting task, they were given the exploratory questionnaire to complete. They were informed that this questionnaire was also anonymous and that it was being administered "in order to get some background information on subjects, in general."

Upon completion of the questionnaire, subjects were probed to see whether they had generated alternative hypotheses regarding the purpose of the experiment. All subjects were then fully debriefed.

Recall Scores

In order to test the memory hypotheses, the number of masculine and feminine words recalled were converted into the number of sex-consistent (e.g., feminine words recalled by a female subject) and sex-inconsistent (e.g., masculine words recalled by a female subject) words recalled, for each subject.

Type of Trait Sort

To test the complexity hypotheses, the type of trait sort performed by subjects (types of men vs. types of women) was categorized as either sex-consistent (e.g., males performing trait sorts for types of men) or sex-inconsistent (males performing trait sorts for types of women).

7. RESULTS

Supplementary analyses were conducted on the memory and complexity data, using quartile cutoffs rather than medians. Because the resultant cell N's were not large enough to fully analyze, these results are reported in Appendix G.

Memory

Figure 5 depicts the results of the incidental recall task. The present study did not compare predictions made by the three theories for differential recall of gender-related items compared to neutral ones; recall of neutral items are, therefore, not included in this figure. A supplementary analysis, however, revealed no effect for number of neutral attributes recalled as a function of sex-role orientation, F (3,186) < 1, ns. (Table 30, reported in Appendix H, presents the cell means for recall of sex-consistent, sex-inconsistent, and neutral attributes as a function of sex-role condition).

Within-subjects Recall. The number of sex-consistent and sex-inconsistent words recalled was subjected to a 4 X 2 X 2 repeated measures analysis of

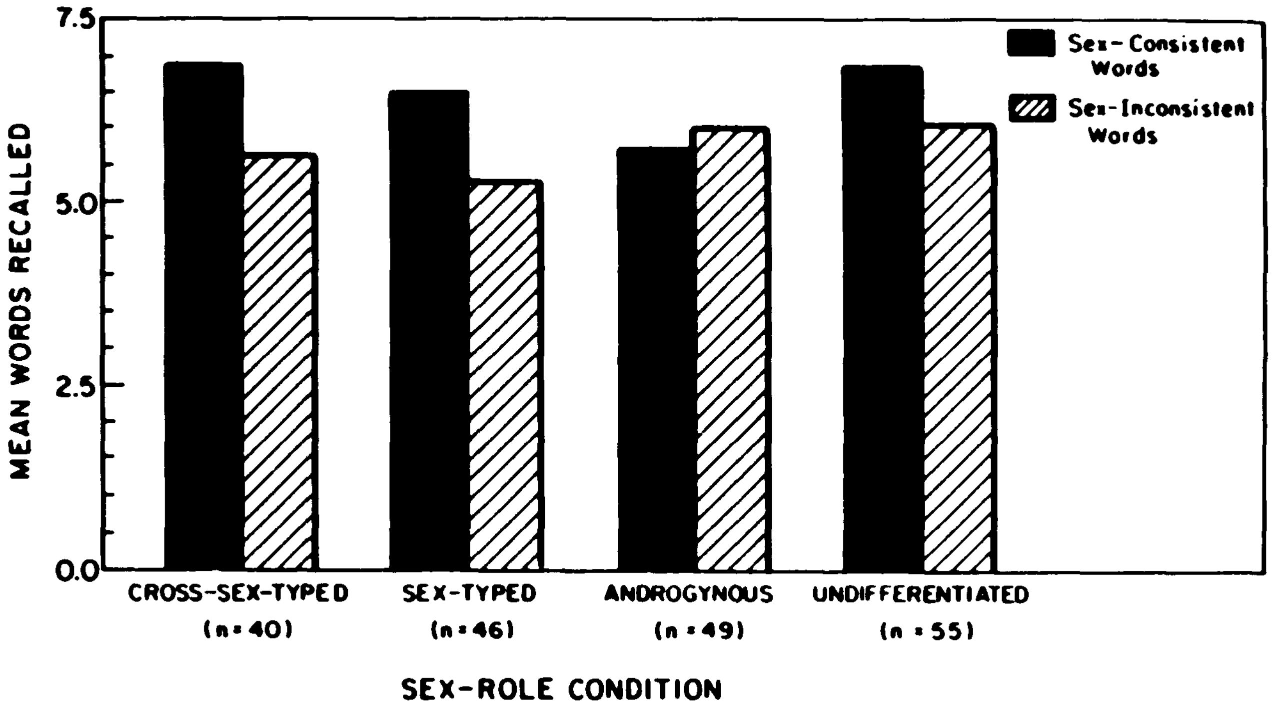

Figure 5 Differential recall as a function of sex-role condition.

variance (ANOVA), with sex-role condition (sex-typed vs. cross-sex-typed vs. androgynous vs. undifferentiated) and sex of subject (male vs. female) the between-subjects factors, and type of word recalled (sex-consistent and sex-inconsistent) the within-subjects factor. This analysis revealed a significant main effect for type of word recalled, F (1,182) = 17.73, p < .001, with a greater number of sex-consistent words (M = 6.49) recalled overall than sex-inconsistent words (M = 5.78). The interaction between sex-role condition and type of word recalled was also reliable, F (3,182) = 3.95, p = .009, and the interaction between sex of subject and type of word recalled proved marginally significant, F (1,182) = 3.35, p = .069. No other main effect or interaction approached significance. Table 4 presents the results of the 4 X 2 X 2 repeated measures ANOVA. As discussed previously, the present model, self-schema theory, and gender schema theory made similar predictions except for cross-sex-typed subjects (see Table 1, p. 57).

To evaluate the moderating role of sex-role condition, analyses of the simple effect of type of word recalled were performed separately for each sex-role condition. As depicted in Figure 5, the results

Table 4

Summary of 4 X 2 X 2 Repeated Measures Analysis of Variance for Sex-role Condition, Sex of Subject, and Type of Word Recalled on Subjects' Recall of Sex-consistent and Sex-inconsistent Attributes

Source of Variation	Sum of Squares	DF	Mean Square	F	p
BETWEEN-SUBJECTS EFFECTS					
Main effects					
Sex-role	22.53	3	7.51	.90	.443
Sex of subject	5.21	1	5.21	.62	.431
Two-way interaction					
Sex-role X Sex of subject	42.80	3	14.27	1.71	.167
Within cells	1521.63	182	8.36		
WITHIN-SUBJECTS EFFECTS					
Main effects					
Type of word	55.83	1	55.83	17.73	.000
Two-way interaction					
Sex-role X Type of word	37.28	3	12.43	3.95	.009

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Sex of subject X Type of word	10.54	1	10.54	3.35	.069
Three-way interaction					
Sex-role X Sex of subject X Type of word	4.35	3	1.45	.46	.710
Within cells	573.09	182	3.15		

for cross-sex-typed subjects support the present model, but they fail to confirm predictions made by self-schema theory or gender schema theory. That is, cross-sex-typed subjects recalled a greater number of sex-consistent words ($\underline{M}$ = 6.88) than sex-inconsistent words ($\underline{M}$ = 5.65), $\underline{F}$ (1,182) = 9.53, $\underline{p}$ = .002. This finding, however, opposes predictions made by both self-schema theory and gender schema theory. Self-schema theory predicted that cross-sex-typed subjects would recall more sex-inconsistent than sex-consistent items. Gender schema theory predicted equivalent recall of sex-consistent and sex-inconsistent information for cross-sex-typed subjects.

The results obtained for sex-typed, androgynous, and undifferentiated subjects support the predictions made by all three theories equally well. Sex-typed subjects recalled a greater number of sex-consistent ($\underline{M}$ = 6.52) than sex-inconsistent ($\underline{M}$ = 5.28) items, $\underline{F}$ (1,182) = 11.22, $\underline{p}$ = .001. Androgynous subjects showed no differential recall of sex-consistent ($\underline{M}$ = 5.73) versus sex-inconsistent ($\underline{M}$ = 6.02) items, $\underline{F}$ (1,182) < 1, ns. Somewhat unexpectedly, however, undifferentiated subjects demonstrated superior recall of sex-consistent ($\underline{M}$ = 6.85) words compared to sex-inconsistent (*M* = 6.07) words, *F* (1,182) = 5.34, *p* = .022. Tables 5-8 report the analyses of simple effects for each sex-role condition.

The result for undifferentiated subjects failed to confirm predictions made by all three theories. Specifically, both self-schema theory and gender schema theory would expect undifferentiated subjects to recall sex-consistent and sex-inconsistent items in equal proportion, since these individuals are considered aschematic for both dimensions of gender. The conceptualization of these subjects by the present model was more tentative. On the one hand, it seemed possible that their pattern of endorsements on the BSRI reflected a true absence of such information from their self-schema. Conversely, it was hypothesized that this pattern reflected a more active rejection (similar to that thought to operate for cross-sex-typed subjects). It is interesting that undifferentiated subjects reject sex-consistent attributes on the BSRI, yet manifest enhanced recall of sex-consistent compared to sex-inconsistent information on the incidental recall task. Since heightened recall is generally accepted as being indicative of schematic processing, it is possible that the within-subjects results obtained for

Table 5

Summary of Analysis of Simple Effect of Type of Word Recalled for Cross-sex-typed Subjects

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Type of word	30.01	1	30.01	9.53	.001
Within cells	573.09	182	3.15		

Table 6

Summary of Analysis of Simple Effect of Type of Word Recalled for Sex-typed Subjects

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Type of word	35.32	1	35.32	11.22	.001
Within cells	573.09	182	3.15		

Table 7

Summary of Analysis of Simple Effect of Type of Word Recalled for Androgynous Subjects

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Type of word	2.00	1	2.00	.64	.427
Within cells	573.09	182	3.15		

Table 8

Summary of Analysis of Simple Effect of Type of Word Recalled for Undifferentiated Subjects

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Type of word	16.81	1	16.81	5.34	.022
Within cells	573.09	182	3.15		

undifferentiated subjects reflects a correspondingly more complex and well-integrated schema for the sex-consistent than sex-inconsistent dimension.

With respect to the Sex of subject X Type of word recalled interaction, analyses of simple effects revealed that male subjects recalled a greater number of sex-consistent (M = 6.53) than sex-inconsistent (M = 5.44) items, F (1,182) = 16.16, p < .001. Females also recalled a greater number of sex-consistent (M = 6.46) than sex-inconsistent (M = 6.06) words, but this difference was not significant, F (1,182) = 2.67, p = .104. Table 9 presents the results of the simple effect analysis for male subjects; Table 10 presents the results of this analysis for females.

Between-subjects Recall. There was no effect for total number of words recalled as a function of sex-role condition, F (3,186) < 1, ns. In order to test the between-subjects predictions, 4 (sex-role condition) X 2 (sex of subject) ANOVA's were performed separately on recall for sex-consistent and sex-inconsistent information.

Sex-consistent Information. The predictions for sex-consistent information are summarized earlier in

Table 9

Summary of Analysis of Simple Effect of Type of Word Recalled for Male Subjects

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Type of word	50.88	1	50.88	16.16	.000
Within cells	573.09	182	3.15		

Table 10

Summary of Analysis of Simple Effect of Type of Word Recalled for Female Subjects

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Type of word	8.40	1	8.40	2.67	.104
Within cells	573.09	182	3.15		

Table 2 (p. 61). Table 11 presents the results of the 4 X 2 ANOVA for the sex-consistent dimension. As may be seen in Table 11, this analysis revealed a marginally reliable main effect for sex-role condition, F (3,182) = 2.56, $p < .06$. A post hoc analysis using the Duncan multiple range test indicated that cross-sex-typed (M = 6.88) and undifferentiated (M = 6.85) subjects remembered significantly more sex-consistent words than did androgynous (M = 5.73) subjects ($p < .05$; see Figure 5). The recall performance of sex-typed (M = 6.52) subjects did not differ significantly from that of any of the groups. The fact that cross-sex-typed subjects recalled the greatest number of sex-consistent words from the BSRI is consistent with predictions made by the present model, but it opposes those made by self-schema theory or gender schema theory.

The present model predicted that cross-sex-typed subjects would recall more sex-consistent items than would sex-typed and androgynous subjects, who, in turn, would recall more sex-consistent items than would undifferentiated subjects. Instead, the four sex-role conditions recalled sex-consistent words in the following rank order: 1) cross-sex-typed,

Table 11

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Subjects' Recall of Sex-consistent Attributes

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	41.27	3	13.76	2.56	.06
Sex of subject	.28	1	.28	.05	.82
Two-way interaction					
Sex-role X Sex of subject	10.24	3	3.41	.63	.59
Within cells	979.72	182	5.38		

2) undifferentiated, 3) sex-typed, and 4) androgynous. Thus, in terms of the ordering of the groups, the only departure from predictions made by the present model resulted from the data obtained from undifferentiated subjects. Instead of exhibiting the poorest recall of all groups, the recall performance of these individuals was comparable to that of cross-sex-typed subjects. The recall of sex-consistent words by sex-typed subjects did not differ significantly from that of cross-sex-typed and undifferentiated subjects; it also did not differ from that of androgynous subjects. The pattern of findings for the sex-consistent dimension, therefore, partially supports the hypothesis that the rejection of the sex-consistent dimension, by cross-sex-typed subjects, results in hypervigilance for sex-consistent information.

In contrast, self-schema theory predicted that sex-typed and androgynous subjects would recall more sex-consistent words than would cross-sex-typed and undifferentiated subjects. The results obtained from this part of the experiment clearly do not support this hypothesis. According to gender schema theory, sex-typed subjects should have displayed superior recall of sex-consistent information compared to the other three groups of subjects. On the contrary, this group of subjects placed third in rank order of recall on this dimension.

Sex-inconsistent Information. The predictions for the sex-inconsistent dimension are summarized previously in Table 3 (p. 63). Table 12 presents the results of the 4 X 2 ANOVA for the sex-inconsistent dimension. As may be seen in Table 12, the results failed to support predictions made by any of the models. Subjects' recall of sex-inconsistent information failed to vary as a function of sex-role condition, F (3,182) = 1.01, ns.

The results of the between-subjects analyses for the incidental recall task suggest that there is something involved in the processing of sex-consistent information, rather than sex-inconsistent information, that contributes to the process that underlies the present results. That is, cross-sex-typed subjects, although not proving hypovigilant for sex-inconsistent information, do seem to be hypervigilant with respect to sex-consistent information.

Table 12

Summary of 4 X 2 Analysis of Variance for Sex-Role Condition and Sex of Subject on Subjects' Recall of Sex-inconsistent Attributes

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	18.65	3	6.22	1.01	.39
Sex of subject	17.21	1	17.21	2.81	.10
Two-way interaction					
Sex-role X Sex of subject	36.91	3	12.30	2.01	.11
Within cells	1115.00	182	6.13		

Complexity

Within- and Between-subjects Complexity. The within- and between-subjects predictions made by the present model, self-schema theory, and gender schema theory are summarized earlier in Tables 1-3, and they parallel predictions made for the incidental recall task. To test these predictions, a 4 (sex-role condition) X 2 (type of trait sort) X 2 (sex of subject) ANOVA was performed on subjects' complexity scores. Table 13 reports the cell means associated with this analysis. Table 14 presents the results of the 4 X 2 X 2 ANOVA. As may be seen in Table 14, the only reliable effect to emerge involved the Sex of subject X Sex-role condition interaction, F (3,174) = 2.79, p = .04. A post hoc analysis using the Duncan multiple range test revealed that sex-typed (M = 3.94) and cross-sex-typed (M = 3.78) males produced significantly more complex trait sorts (for both the sex-consistent and sex-inconsistent dimensions) than did undifferentiated males (M = 3.20; p < .05). The complexity scores obtained from female subjects did not vary as a function of sex-role condition (p > .05). This Sex-role condition X Sex of subject interaction is

Table 13

Mean Complexity (H) Scores for Sex-consistent and Sex-inconsistent Trait Sorts as a Function of Sex-role Condition

Condition	Mean Complexity (H) Scores	
	Sex-consistent (n)	Sex-inconsistent (n)
CROSS-SEX-TYPED	3.66 (18)	3.69 (28)
SEX-TYPED	3.75 (23)	3.78 (17)
ANDROGYNOUS	3.71 (22)	3.62 (27)
UNDIFFERENTIATED	3.44 (27)	3.59 (28)

Table 14

Summary of 4 X 2 X 2 Analysis of Variance for Sex-role Condition, Sex of Subject, and Type of Trait Sort on Subjects' Mean Complexity (H) Scores

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	2.07	3	.69	1.22	.30
Sex of subject	.00	1	.00	.00	.97
Type trait sort	.02	1	.02	.04	.85
Two-way interactions					
Sex-role X Sex of subject	4.72	3	1.57	2.79	.04
Sex-role X Type trait sort	.27	3	.09	.16	.92
Sex of subject X Type trait sort	.88	1	.88	1.57	.21
Three-way interaction					
Sex-role X Sex of subject X Type trait sort	.87	3	.29	.51	.67
Within cells	98.27	174	.56		

not readily interpretable by any of the three theories, since it does not bear directly on the hypotheses advanced by them. That is, the interactions that are relevant to the competing predictions involve the type of trait sort performed (i.e., the present model expected cross-sex-typed and sex-typed males to yield more complex trait sorts for men than for women). It does not seem plausible to hypothesize that sex-typed and cross-sex-typed males have more complex schemata for both males and females than do androgynous and undifferentiated subjects.

Contrary to predictions made by any of the models, no other reliable effects or interactions emerged.

<u>Questionnaire</u>

Separate 4 (sex-role condition) X 2 (sex of subject) ANOVA's were conducted on the data from each item of the questionnaire that involved continuous variables; those items that were coded categorically were analyzed with separate Chi-Square's for each sex-role condition.

First, a 4 X 2 ANOVA for sex-role condition and sex of subject on subjects' mean age revealed a marginally significant main effect of sex-role condition, F (3,182) = 2.41, p < .07. The cell means associated with this analysis are presented in Table 15, and the results of this analysis are presented in Table 16. A post hoc analysis using the Duncan multiple range test indicated that cross-sex-typed (M = 20.85) subjects were significantly older than sex-typed (M = 19.35) and undifferentiated (M = 19.33) subjects (p < .05). This finding did not vary as a function of sex of subject. It is possible that sex-typed and undifferentiated subjects were relatively "unmolded" in terms of their gender identity compared to cross-sex-typed subjects. Alternatively, cross-sex-typed subjects might delay going to college relative to sex-typed and undifferentiated subjects.

In addition, number of female siblings emerged as a reliable difference between the sex-role conditions, F (3,182) = 3.55, p = .016. The interaction between sex-role condition and sex of subject proved marginally significant, F (3,182) = 2.33, p = .076. Table 17 reports the cell means, and Table 18 presents the results of this ANOVA. Post hoc analyses using the Duncan multiple range test revealed that sex-typed and androgynous subjects, of both sexes, have a greater number of sisters than do undifferentiated subjects

Table 15

Mean Age of Subjects as a Function of Sex-role Condition and Sex of Subject

	Mean Age	
Condition	Males	Females
CROSS-SEX-TYPED	21.32	20.43
SEX-TYPED	19.71	19.04
ANDROGYNOUS	20.68	19.37
UNDIFFERENTIATED	19.52	19.19

Table 16

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Subjects' Mean Age

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	2.12	3	.73	2.41	.07
Sex of subject	.79	1	.79	2.62	.11
Two-way interaction					
Sex-role X Sex of subject	.81	3	.27	.90	.44
Within cells	54.91	182	.31		

Table 17

Mean Number of Female Siblings as a Function of Sex-role Condition and Sex of Subject

	Mean Number of Sisters	
Condition	Males	Females
CROSS-SEX-TYPED	1.22	1.14
SEX-TYPED	1.10	2.08
ANDROGYNOUS	1.64	1.19
UNDIFFERENTIATED	.70	.91

Table 18

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Number of Female Siblings

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	18.07	3	6.02	3.55	.016
Sex of subject	1.55	1	1.55	.91	.341
Two-way interaction					
Sex-role X Sex of subject	11.87	3	3.96	2.33	.076
Within cells	309.22	182	1.70		

(p <.05). Separate post hoc analyses for male and female subjects, indicated that androgynous males have a greater number of sisters than do undifferentiated males ($p < .05$); sex-typed females have a significantly greater number of sisters than do subjects in the other three groups ($p < .05$).

Finally, separate Chi-Square's were performed for each sex-role condition on the country in which subjects' mothers were born (United States vs. elsewhere). Tables 19-22 present the results of these Chi-Square's. As may be seen in these tables, the mothers of sex-typed, androgynous, and undifferentiated subjects did not differ in the frequency with which they were born in the United States versus elsewhere. The mothers of cross-sex-typed subjects, however, were more frequently born in the United States than elsewhere, Chi-square (1,N = 40) = 6.40, $p = .01$. When data from male and female cross-sex-typed subjects were analyzed separately, this difference remained significant for the females, Chi-square (1,N = 22) = 6.55, $p = .01$, but not for the males Chi-square (1,N = 18) = .89, ns.

Table 19

Summary of Chi-Square for Cross-sex-typed Subjects on Country in Which Subjects' Mothers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	28	20	8.00
Outside U.S.	12	20	-8.00

Chi-Square	DF	p
6.40	1	.01

Table 20

Summary of Chi-Square for Sex-typed Subjects on Country in Which Subjects' Mothers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	24	23	1.00
Outside U.S.	22	23	-1.00

Chi-Square	DF	p
.09	1	.77

Table 21

Summary of Chi-Square for Androgynous Subjects on Country in Which Subjects' Mothers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	19	24.50	-5.50
Outside U.S.	30	24.50	5.50

Chi-Square	DF	p
2.47	1	.12

Table 22

Summary of Chi-Square for Undifferentiated Subjects on Country in Which Subjects' Mothers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	26	27.50	-1.50
Outside U.S.	29	27.50	1.50

Chi-Square	DF	p
.16	1	.69

Analyses of the data from all other items of the questionnaire failed to approach significance, and are reported in Appendix I.

Summary of Results for Cross-sex-typed Subjects

In support of the within-subjects predictions made by the present model, cross-sex-typed subjects exhibited enhanced memory for sex-consistent compared to sex-inconsistent items from the BSRI. Unexpectedly, undifferentiated subjects also displayed heightened memory for sex-consistent compared to sex-inconsistent information. For each sex-role condition, complexity for the sex-consistent dimension was equivalent to complexity for the sex-inconsistent dimension.

In addition, the between-subjects predictions made by the present model were partially confirmed. The rank order of the groups on the sex-consistent dimension supported the hypervigilance prediction. That is, cross-sex-typed subjects recalled a greater number of sex-consistent items than did subjects from the other groups. However, memory for sex-inconsistent items did not vary as a function of sex-role condition. The hypovigilance prediction made by the present model was, therefore, not supported. In terms of complexity, the four sex-role conditions did not differ from one another for either sex-consistent or sex-consistent information.

Data obtained from the exploratory questionnaire indicated that cross-sex-typed subjects were older than other subjects, and that their mothers were more frequently born in the United States than elsewhere.

8. DISCUSSION

Comparison of the Present Model, Self-schema Theory, and Gender Schema Theory

Memory. The data obtained from the memory phase of the experiment yielded results which provide stronger support for the present model than for either self-schema theory or gender schema theory. Consistent with the within-subjects predictions, cross-sex-typed subjects recalled a greater number of sex-consistent than sex-inconsistent items, lending support to the hypothesis that these subjects have a more memorable schema for the sex-consistent than sex-inconsistent dimension. In addition, sex-typed subjects recalled more sex-consistent than sex-inconsistent information, as predicted. Further, androgynous subjects recalled sex-consistent and sex-inconsistent items in equal proportion, confirming the conceptualization of them as being schematic for both dimensions of gender. Somewhat unexpectedly (for all three models), undifferentiated subjects displayed enhanced processing of sex-consistent compared to sex-inconsistent information. Predictions for this group, however, were advanced somewhat tentatively, since previously, little research has addressed these individuals.

In addition, the between-subjects predictions made by the present model for the sex-consistent dimension were partially supported. As discussed earlier, it was hypothesized that cross-sex-typed subjects define themselves, chiefly in terms of whom they would prefer not to be (i.e., the sex-consistent dimension). It was, therefore, hypothesized that cross-sex-typed subjects might pay careful attention to sex-consistent information and that this might result in hypervigilance for information pertaining to this dimension. The rank ordering of sex-role groups in terms of recall of sex-consistent information [1) cross-sex-typed, 2) undifferentiated, 3) sex-typed, and 4) androgynous] was consistent with the hypervigilance prediction. The fact that undifferentiated subjects placed second in terms of recall of sex-consistent information was not predicted by the present model (or by any of the models). The within- and between-subjects results for undifferentiated subjects will be discussed in greater detail in a subsequent section.

The hypothesis regarding hypovigilance for sex-inconsistent information, however, failed to be confirmed. It seems, therefore, that acceptance of sex-inconsistent attributes into the self-schema does not result in poorer recall of such information. In contrast, rejection of the sex-consistent dimension appears to result in heightened recall of information that is relevant to it.

Taken together, the results of the incidental recall task suggest that cross-sex-typed subjects have a more memorable schema for sex-consistent than sex-inconsistent information, and that it is hypervigilance for sex-consistent information, rather than hypovigilance for sex-inconsistent information, that mediates the recall process.

In contrast, Markus' self-schema theory would have difficulty interpreting the results obtained from the incidental recall task. In particular, because it views cross-sex-typed subjects as being self-schematic on the sex-inconsistent dimension and aschematic on the sex-consistent dimension, it cannot explain why the cross-sex-typed subjects demonstrated enhanced recall of sex-consistent compared to sex-inconsistent information.

In addition, self-schema theory, because it maintains that sex-typed and androgynous subjects are self-schematic for sex-consistent information, and that cross-sex-typed and undifferentiated subjects are aschematic with respect to this dimension, cannot explain why cross-sex-typed subjects manifested superior recall of sex-consistent information compared to other subjects.

Bem's gender schema theory also cannot readily interpret the results obtained from the incidental recall task. Because sex-typed subjects are the only group that are usually considered gender schematic, gender schema theory cannot explain why cross-sex-typed subjects manifested the effects of schema-based processing for sex-consistent information. Even if cross-sex-typed subjects were reconceptualized as being gender schematic, gender schema theory would seem to predict that they would show superior memory for sex-inconsistent, rather than sex-consistent information.

Moreover, gender schema theory cannot account for the superior recall of sex-consistent information on the part of cross-sex-typed subjects compared to subjects from the other groups. On the contrary, this model would predict that sex-typed subjects should display superior recall of sex-consistent information compared to other subjects. The recall performance of cross-sex-typed subjects for the sex-consistent dimension should be comparable to that of androgynous and undifferentiated subjects.

Complexity. The results from the complexity segment of the experiment failed to confirm predictions made by all three models. For each sex-role condition, the complexity scores of subjects who performed sex-consistent trait sorts were comparable to those of subjects who performed sex-inconsistent trait sorts. In addition, the four groups did not differ in complexity from one another for either sex-consistent or sex-inconsistent trait sorts.

Although the results from the trait-sorting task failed to confirm predictions made by any of the models, the memory data support both the within-subjects predictions, and the hypervigilance hypothesis advanced by the present model. On the contrary, the within- and between-subjects memory results oppose predictions made by both self-schema theory and gender schema theory.

Undifferentiated Subjects

All three models predicted that undifferentiated subjects would process sex-consistent and sex-inconsistent information equivalently, because they are considered non-schematic for gender-related information. It will be recalled that the present model expected sex-typed subjects to manifest superior processing of sex-consistent information because their pattern of self-endorsements lies in the socially normative direction. Cross-sex-typed subjects were expected to perform better on the sex-consistent than sex-inconsistent dimension, despite the fact that they are considered aschematic for the former, and schematic for the latter. It was hypothesized that even though they identify with sex-inconsistent attributes, it is probable that they have a relatively simple schema for the sex-inconsistent dimension. Conversely, although they reject sex-consistent attributes on the BSRI, it seems likely that they have a complex schema corresponding to this dimension. Androgynous subjects also identify with sex-inconsistent traits, but not in the context of accepting sex-consistent ones. The endorsement of sex-inconsistent items by androgynous subjects was thought to result from more extensive experience with and knowledge about this dimension, compared to cross-sex-typed subjects. Androgynous subjects, therefore, were expected to recall sex-consistent and sex-inconsistent items in equal proportion. Undifferentiated subjects reject sex-consistent traits on the BSRI, but in the context of also rejecting sex-inconsistent ones. The lack of endorsement of sex-consistent traits, although still socially "inappropriate," was thought to stem from a veritable absence of such information in their self-schema. Thus, subjects in this condition were also expected to recall sex-consistent and sex-inconsistent words in equal proportion.

Alternatively, it was hypothesized that undifferentiated subjects could be viewed as actively rejecting sex-consistent information from their self-schema, just as cross-sex-typed subjects do. After all, these two groups both reject socially desirable attributes on the BSRI. Given the tendency for individuals to succumb to pressures toward responding in a socially desirable manner, this, in itself, seems noteworthy.

The performance of the undifferentiated subjects on the incidental recall task suggest that the latter conceptualization of these subjects might be more accurate. That is, although they reject sex-consistent attributes on the BSRI, they nevertheless manifested the effects of schema-based processing on this dimension. Not only did they recall more sex-consistent than sex-inconsistent items from the BSRI, but they (along with cross-sex-typed subjects) recalled more sex-consistent items than did sex-typed or androgynous subjects (although this comparison proved significant only with respect to the androgynous subjects). It is possible, therefore, that undifferentiated subjects might also define themselves, primarily in the negative (i.e., in terms of whom they prefer not to be), and that this might result in hypervigilance for information relating to the rejected dimension.

Interpretation of Negative Findings for Complexity

There are several possible explanations for the failure of the complexity predictions to be confirmed. First, the BSRI and the trait-sorting task may have "tapped into" different concepts. In other words, subjects were categorized according to their self-perceptions on the trait dimensions of masculinity and femininity, but the trait-sorting task measured their perception of men and women, rather than masculinity and femininity per se. Second, the trait-sorting task may be an inadequate measure of cognitive complexity. Third, the effects of self-schematicity may be specific to the processing of information that pertains to the self. Fourth, differences in performance, both between and within groups, might be the result of motivational factors, but not complexity. Finally, the general model may be incorrect. That is, the differential patterns of self-endorsements and recall (both within and between groups) may not stem from differences in schematic complexity for sex-consistent versus sex-inconsistent information, or from motivational sources, but rather, from an entirely different factor or factors.

BSRI and Trait-sorting Task. Spence and Helmreich (cf., 1980; 1981) have provided criticisms of the BSRI which support the first explanation of the results (i.e., that the BSRI and the trait-sorting task measured different schematic concepts). They claim that the BSRI does not measure the global dimensions of masculinity and femininity, but rather, the specific personality traits of instrumentality and expressiveness. They contend that, although factor analytic studies of the masculine and feminine scales have yielded two independent factors, the items "masculine" and "feminine," load as a separate, bipolar factor. This suggests that these latter two items may be viewed differently by subjects than the other items on the BSRI.

If, in fact, the BSRI measures something other than masculinity and femininity, it could not be expected to predict results on tasks that were related to men and women. In retrospect, it might have been more appropriate to measure subjects' complexity for the dimensions of instrumentality and expressiveness in the present experiment, rather than masculinity and femininity. This could have been accomplished by providing half of the subjects with exclusively masculine trait terms, and half with feminine ones. Subjects could, then, have been instructed to sort the traits into piles that seem to go together, rather than into piles that correspond to specific types of men or women. Indeed, this procedure more closely parallels that used by Scott (e.g., 1962). In other words, the act of instructing subjects to think in terms of the concepts "men" and "women," may have diverted their attention from the dimensions of instrumentality and expressiveness.

Validity of Trait-sorting Task. Evidence from a study conducted by Hass, Katz, Rizzo, Bailey, and Eisenstadt (1989) pertains to the adequacy of the trait-sorting task as a measure of cognitive complexity. In this study, the Linville and Jones (1980; Linville, 1982a) complexity-extremity hypothesis was pitted against Katz's (1981) ambivalence-amplification model, for the domain of race. Subjects participated in a rigged trivia game show, in which their team captain (actually a black confederate) was responsible for either the team's success or failure in winning a prize. In the failure condition, the team's loss was the result of the captain's incompetence; in the success condition, the captain's competence strongly facilitated the team's performance. Following the success/failure manipulation, all subjects completed a questionnaire which required them to evaluate the team captain on a number of dimensions.

In an ostensibly unrelated second experiment, subjects then performed a trait sort for blacks, and completed Katz and Hass' (1988) Problack and Antiblack attitude scales for blacks. Results from this study indicated that white subjects' ambivalence scores predicted extremity of evaluations of the black confederate; complexity scores, however, failed to confirm predictions made by the complexity-extremity hypothesis. That is, complexity was found to be unrelated to extremity of evaluation in the success condition; and in the failure condition, where the complexity-extremity hypothesis would predict a negative relationship between complexity and evaluation of the confederate, a positive relationship was found.

In interpreting these results, Hass et al. questioned the validity of the trait-sorting task as a measure of cognitive complexity. For example, an item on the debriefing questionnaire which required subjects to indicate what they had in mind while performing the trait sort revealed that 2/3 of the subjects had been describing individual blacks they knew rather than types or categories of blacks. This sheds doubt on the notion that categorical complexity is what was measured by this task. In the present study, it is surprising that subjects did not differ at all in their complexity for males and females. This makes more sense, though, if they had performed the trait sorts with individual men and women in mind, rather than types of men and women. It seems reasonable to assume that, on average, people would know an equal number of males and females.

More recently, Linville, Fischer, & Salovey (1987, reported in Judd & Park, 1988; Linville, Salovey, & Fischer, 1986) have developed an exemplar model of the outgroup homogeneity effect (i.e., that individuals perceive outgroups as being less variable than ingroups) that makes predictions which are consistent with this interpretation. According to this theory, judgments of group variability are derived from information that has been encoded with respect to individual group members (exemplars). Thus, outgroups are often perceived as being more homogeneous than ingroups, since subjects usually have fewer stored exemplars for outgroups. As Linville et al. point out, though, it is likely that individuals have an equal number of ingroup and outgroup exemplars stored in memory for the domain of gender. Therefore, perceptions of the variability of the outgroup should parallel those for the ingroup. Linville et al. (1987) report results for gender that support this model, although other investigators have reported findings that contradict such an explanation (cf., Judd & Park, 1988).

Generalizability of Self-schemata to Information about Others for the Domain of Gender. Another interpretation of the negative findings is that the effects of self-schematicity in the domain of gender might be specific to the processing of information that is relevant to the person himself/herself, and that they do not generalize to the processing of information about others. This explanation is contradicted, however, by the results of studies that have obtained differential processing of information related to other people, as a function of subjects' sex-role orientation (e.g., Frable & Bem, 1985; Markus & Smith, 1981; Markus, Smith, & Moreland, 1985). For example, Markus et al. (1985), using a unitizing task, found that schematics segmented the schema-relevant portions of a film into larger units (i.e., larger "chunks") than did aschematics. In addition, when given instructions to attend to the details of the actor's behavior, schematics divided the film into smaller units, whereas the behavior of aschematics did not vary.

Motivation vs. Complexity. It is also possible that motivational factors, but not complexity, mediated the present results. Thus, individuals might defend against identifying with a given dimension, yet prove equally complex with respect to both the defended-against and the accepted dimension. In the present case, cross-sex-typed and undifferentiated subjects might have equally complex schemata for the sex-consistent and sex-inconsistent dimensions, yet recall a greater number of sex-consistent items due solely to the process of defense. Furthermore, defense against sex-consistent information might result in hypervigilance for the defended-against information, and this, in turn, could produce enhanced processing of that very information. Although in the original formulation, cognitive factors were thought to be most important, the negative results for complexity suggest that motivational factors may have played a greater role than previously thought.

The results from the memory portion of the experiment (particularly the support obtained for the hypervigilance hypothesis), taken together with the negative results for complexity, argue strongly for the role of defense as a mediator of the obtained results. Although it would be difficult to interpret all of the results in terms that did not include defense, the role of defense as a mediator, however, was not directly tested in this experiment.

Adequacy of Present Model. Finally, it is conceivable that the general model does not accurately reflect the underlying processes involved. That is, the results obtained in the present experiment might be due to factors entirely unrelated to either defense or complexity. This seems improbable, though, in light of the memory data. Differential recall of sex-consistent and sex-inconsistent information is a robust finding. It has been demonstrated by a number of researchers using different experimental procedures (e.g., Bem, 1981; Frable & Bem, 1985; Markus, Crane, Bernstein, & Siladi, 1982; Mills, 1983), as well as in pilot work conducted by the present author.

Further, within the area of social cognition, there is a general interpretation of heightened recall as being indicative of schematic processing, memory facilitation being one of the primary functions of schemata (e.g., Fiske & Taylor, 1984).

Conclusion. Although the results seem to suggest motivation as a mediator of the present results, if the performance of sex-typed subjects on the sex-consistent dimension is considered, it would be difficult to exclude cognitive explanations (e.g., complexity) of the results obtained in the present experiment. After all, these subjects could not be construed as defending against the sex-consistent dimension, yet they, too, recall a greater number of sex-consistent than sex-inconsistent items from the BSRI. As discussed above, enhanced recall is generally accepted as reflecting schematic processing.

The results of the present experiment, taken together with those of other research, suggest that both defense and complexity probably mediate the recall process, although their relative contributions remain unknown. The failure to obtain the predicted effects for complexity, in the present study, may also have resulted from difficulties with measuring complexity using the trait-sorting task, or with the instructions that were given to subjects for the trait-sorting task. It is possible that we have not yet developed adequate techniques for assessing complexity at this point in time. We should not, however, give up on the concept. Rather, we need to develop better means of testing it.

Exploratory Questionnaire

Analyses of the questionnaire data revealed differences between the groups on some of the demographic factors.

Mothers' Country of Origin. It was found that the country in which subjects' mothers were born differed for the groups. That is, mothers of cross-sex-typed subjects were more frequently born in the United States than elsewhere. It is conceivable that since women in the United States tend to be more independent and assertive than women in other cultures, these mothers may have provided more instrumental role models for appropriate feminine behavior than mothers of subjects in the other sex-role groups.

Age. In addition, the mean age of cross-sex-typed subjects was older than subjects in the other groups. This result is interpretable within the present model, as it is conceptualized as a developmental process. That is, cross-sex-typed individuals are hypothesized to reject sex-consistent attributes, and identify with sex-inconsistent ones as they come in contact with reference groups that prescribe norms which oppose those held by the more general society. It seems reasonable to conjecture that this process would tend to reach its height sometime during the college years, a time when students often encounter individuals from a broader range of backgrounds and values than they previously had. Further, at this time, students often begin to question some of the norms that they had been raised to believe were "givens." It is also possible, though, that cross-sex-typed subjects might postpone going to college compared to other groups of subjects.

Female Siblings. It is more difficult to interpret the differences that emerged for the number of female siblings that subjects had. It will be recalled that sex-typed and androgynous subjects had a greater number of female siblings than did undifferentiated subjects. In particular, androgynous males had a greater number of sisters than did undifferentiated males; sex-typed females had a greater number of sisters than did females from the other three groups. With respect to the females, sex-typed females might view themselves as being more traditionally feminine than other subjects, precisely because they have a greater number of sisters (i.e., their sisters might serve as role models for this aspect of their self-concept). Androgynous males might also benefit from such role models. However, such an explanation implies that the results for number of male siblings should parallel those for female siblings (i.e., we would expect to find a greater number of male siblings for sex-typed males and for androgynous females). The number of male siblings, though, did not vary as a function of sex-role condition or Sex-role condition X Sex of subject.

Conclusion. In sum, the results of the questionnaire are consistent with the notion that the adoption of the pattern exhibited by cross-sex-typed subjects is rooted in a developmental context, which accounts for the obtained age difference. The presence of nontraditional parental role models (particularly maternal models) might further guide the adoption of such a pattern of self-identification. Similarly, the number of same- and opposite-sex siblings that individuals have might influence how they perceive themselves in the domain of gender. The correlations obtained in this study, however, need to be replicated before any firm conclusions can be drawn.

Recent Theoretical Developments by Other Investigators

The current work has conceptualized rejected schemata as residing outside the self. Alternatively, they could be viewed as residing within the self, but at a deeper level of awareness than accepted self-schemata. Compared to two-dimensional models (e.g., Markus & Smith, 1981) this formulation has the advantage of being able to represent concepts that have been rejected and that are defended against by the individual. Indeed, a number of theorists have more recently shifted the focus of their conceptualizations away from purely structural/topographical models to more dynamic views of the self.

For example, Markus and Nurius (1986) have introduced the concept of "possible selves" which include individuals' ideals for what they would like to become, their fears of what they might become, and their notions of what they could become. Further progress in bridging the gap between cognition and affect with regard to the self has been provided by Markus and Wurf's (1987) model of the "dynamic self-concept." In this view, the self-concept (i.e., self-schemas, standards, strategies, production rules, and possible selves) is one component of the individual's affective-cognitive system. Representations are drawn from the self-concept (which is comprised of currently activated self-structures) as they are relevant for the individual. These activated representations, in turn, regulate ongoing intra- and inter-personal behavior.

Higgins (1987; Higgins, Bond, Klein, & Strauman, 1986; Higgins, Klein, & Strauman, 1985) proposed that there are three types of self-representations, reflecting individuals' conceptions of their: 1) "actual" self, 2) "ideal" self, and 3) "ought" self (which consists of the characteristics that the self and/or others believe an individual should possess). In the experiments reported by Higgins and his associates, conflicts between different combinations of self-representations were found to result in different negative affective states. Specifically, when the actual and ideal selves were incompatible, individuals were found to experience depression; discrepancies between the actual and ought selves, however, resulted in anxiety.

Although each of these theorists have expanded their views of the self to include more multifaceted aspects of it, the role of representations of undesired aspects of the self that have been rejected and that are defended against has thus far received little attention.

Future Directions for Research

Role of Motivation in the Gender Domain. Future research could benefit from an examination of the role of motivation in self-perception, and from attempts to assess whether schemata that are rejected and defended against remain influential in information processing.

Such an investigation might be facilitated by conceptualizing rejected schemata as being represented at a deeper level of awareness than self-schemata, as previously suggested. In this way, methods that have been employed to measure unconscious processing could be applied to the present work. Specifically, the automatic (i.e., unconscious) versus controlled (i.e., conscious) processing paradigm, developed by Shiffrin and Schneider (1977; Schneider and Shiffrin, 1977) in the area of cognition, and utilized in the area of social cognition by Bargh (cf., 1984; 1982; Bargh & Pietromonaco, 1982) could be employed to directly test the hypothesis that rejected schemata are processed outside of awareness.

For example, Bargh (1982) presented subjects who were schematic for the trait dimension "independence" with a dichotic listening task, in which independence-related trait adjectives were delivered to either the attended or the unattended channel. Subjects were required to shadow the contents of one channel, while ignoring the contents of the other. Intermittently, a probe light appeared, and subjects were instructed to respond to it as quickly as possible by pushing a button. When presented to the attended channel, independence-related words required less attentional processing than did neutral words (i.e., response latencies were shorter for the probe light when it occurred after independence-related words than when it occurred after neutral words). That is, independence-related items produced less interference with the probe light task when these words were shadowed. When presented to the unattended channel, however, independence-related words competed for attentional resources, despite the fact that subjects were unaware of the content of the stimuli in this channel (i.e., reaction times for the probe light were longer when it followed independence-related words than neutral words). In other words, even though subjects were not aware of the independence-related trait adjectives, these words commanded attention and, therefore, interfered with performance on the probe light task.

In addition to investigating automatic processing of a positively valued trait dimension (i.e., independence), Bargh and Pietromonaco (1982) have also demonstrated that automatic processing occurs for a negative trait concept (i.e., hostility). The latter study seems conceptually quite similar to predictions made by the present model. Hence, future research might present sex-typed, cross-sex-typed, androgynous, and undifferentiated subjects with a dichotic listening task, in which masculine, feminine, and neutral words are utilized. Subjects would be instructed to shadow the words in one channel, while ignoring the words delivered to the other channel. In the present analysis, if sex-consistent information is, in fact, processed automatically by cross-sex-typed subjects, response latencies for a probe light should decrease when it follows the presentation of sex-consistent words in the attended channel, and should increase when the probe light follows the presentation of sex-consistent words in the ignored channel. In other words, sex-consistent information should facilitate information processing when attended, and interfere with information processing when efforts are made to ignore it.

Reconciling Discrepant Findings. Although Markus, Crane, Bernstein, & Siladi (1982) did not analyze their data in terms of cross-sex-typed subjects, they did report that these subjects' results ran counter to those obtained in the present study (i.e., their cross-sex-typed subjects exhibited enhanced recall of sex-inconsistent information compared to sex-consistent information). There were two notable differences, however, between the procedure used in the present study and that used by Markus et al. It will be recalled that subjects in the present study engaged in an intervening task prior to the recall task. In contrast, subjects in the Markus et al. study were required to recall the items from the BSRI immediately following completion of the inventory. Furthermore, subjects in the Markus et al. study were given three minutes to recall the BSRI items, but those in the present study were given five minutes. Future research might systematically vary the presence versus absence of an intervening task, as well as the duration of the recall task, in order to clarify these discrepant findings.

Another inconsistency in the literature involves the materials used to measure differential recall. Several studies have used the BSRI and/or the PAQ to categorize subjects, but used Bem's (1981) independently normed masculine and feminine items as the recall stimuli (e.g., Deaux et al., 1985; Edwards et al., 1987, Payne et al., 1987). Studies that have used this procedure have failed to obtain differences in recall as a function of sex-role orientation. In contrast, studies that have used the items from the BSRI and/or PAQ as the basis for both categorization and recall (e.g., Markus et. al., 1982; the present study) have found systematic differences in recall as a function of sex-role orientation. It seems plausible that the items used in the Bem (1981) study measure subjects' tendency to partition information into the categories of masculinity and femininity (as the trait-sorting task, used in the present study, is likely to have done). If the BSRI and the PAQ measure instrumentality and expressiveness, though, they would not necessarily be good predictors of this tendency. In contrast, the BSRI and the PAQ would be expected to predict recall of information relating to the trait concepts of instrumentality and expressiveness. A study that used the BSRI or the PAQ as the basis for sex-role classification, but that varied the recall stimuli (i.e., BSRI or PAQ vs. Bem's (1981) stimuli) might clear up some of the confusion that has been created by these different procedures.

Generalizability of Present Model. The present model predicts that individuals possess several schemata that are complex, yet represented outside the self, or at a deeper level of awareness within the self, than their corresponding self-schemata. It should, therefore, be possible to identify dimensions other than gender that would be rejected from the self in order for individuals to then identify with those that they perceived as being socially desirable (or in Higgins' (1987) terms, those they perceived as belonging to their "ought" selves). For example, upwardly mobile individuals within a given racial, ethnic, or cultural group might reject the values associated with the group to which they belong in order to embrace white, middle-class ones. They would then appear to be "white self-schematic" (their self-schema would include white, middle-class values), and aschematic (without a self-schema) for attributes associated with the group to which they actually belong. Which schema, though, would prove to be more influential with respect to information processing--the one that is identified with or the one that is rejected and defended against? The present model would predict that the schema that had been rejected from the self would be the richer of the two.

Another domain of self-definition that would seem relevant is maturity-immaturity. For example, there is a great deal of pressure exerted upon teenagers to become "adult," in this society. Clearly, as they have not yet experienced the adult role, adolescents should know a lot more about immaturity than about what is actually involved in being an adult. Yet it seems likely that they would want to see themselves as being more adult, and less childish, than they actually are.

Support for this comes from the fact that the item, "childlike" on the BSRI received the second lowest mean endorsement from subjects in the present experiment. In other words, subjects seem to view this trait quite negatively (i.e., they confused "childlike" with "childish"). The item that corresponded to the sex-inconsistent sex-role (either "masculine" or "feminine") received the lowest mean endorsement. It is felt that the rejection of the item "childlike" reflects more than demand characteristics, but instead, a genuine belief on the part of these subjects that they are not childlike. The present model should apply equally well to dimensions of the self that are rejected, whether they are viewed by society as socially desirable or undesirable, if the individual has more experience in the rejected role than in the aspired-to one.

It would seem worthwhile to apply the present model to other dimensions of self-perception in order to test the limits of its generalizability; at the same time it would be desirable to apply it to domains where subjects could be randomly assigned to experimental condition, and in which a true experimental intervention could be employed. Research along these lines is currently in progress.

Appendix A

Bem Sex Role Inventory

Sex_____

How well do each of these characteristics describe you?

1	2	3	4	5	6	7
Never True or Almost Never True						Always True or Almost Always True

1. Self-reliant_____
2. Yielding_____
3. Helpful_____
4. Defends Own Beliefs_____
5. Cheerful_____
6. Moody_____
7. Independent_____
8. Shy_____
9. Conscientous_____
10. Athletic_____
11. Affectionate_____
12. Theatrical_____
13. Assertive
14. Flatterable_____
15. Happy_____
16. Strong Personality_____
17. Loyal_____
18. Unpredictable_____
19. Forceful_____
20. Feminine_____
21. Reliable_____
22. Analytical_____
23. Sympathetic_____
24. Jealous_____
25. Competitive_____
26. Loves Children_____
27. Truthful_____
28. Ambitious_____
29. Understanding_____
30. Secretive_____
31. Makes Decisions Easily_____
32. Compassionate_____
33. Sincere_____
34. Self-sufficient_____
35. Eager to Soothe Hurt Feelings_____
36. Conceited_____
37. Dominant_____
38. Soft-Spoken_____
39. Likable_____
40. Masculine_____
41. Warm_____
42. Solemn_____
43. Willing to Take a Stand_____
44. Tender_____
45. Friendly_____
46. Aggressive_____
47. Gullible_____
48. Inefficient_____
49. Acts as a Leader
50. Childlike_____
51. Adaptable_____
52. Individualistic_____
53. Does Not Use Harsh Language_____
54. Unsystematic_____
55. Has Leadership Abilities_____
56. Sensitive to the Needs of Others_____
57. Tactful_____
58. Willing to Take Risks_____
59. Gentle_____
60. Conventional_____

Appendix B

Analyses Based on Combined Medians for Male and Female Subjects (Masculinity Cutoff =4.95; Femininity Cutoff = 5.05)

Table 23

Summary of 4 X 2 Repeated Measures Analysis of Variance for Sex-role Condition and Type of Word Recalled on Subjects' Recall of Sex-consistent and Sex-inconsistent Attributes: Combined Medians

Source of Variation	Sum of Squares	DF	Mean Square	F	p
	BETWEEN-SUBJECTS EFFECTS				
Main effects					
Sex-role	13.51	3	4.50	.56	.641
Within cells	1522.20	190	8.01		
	WITHIN-SUBJECTS EFFECTS				
Main effects					
Type of word	49.12	1	49.12	15.78	.000
Two-way interaction					
Sex-role X Type of word	32.41	3	10.80	3.47	.017
Within cells	591.50	190	3.11		

Table 24

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Type of Word Recalled on Subjects' Mean Complexity (H) Scores: Combined Medians

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	1.19	3	.40	.68	.563
Type trait sort	.02	1	.02	.03	.861
Two-way interaction					
Sex-role X Type trait sort	.19	3	.06	.11	.955
Within cells	94.98	186	.58		

Appendix C

Preprinted Form For Complexity Task

Columns

#1	#2	#3	#4	#5	#6	#7	#8	#9

Appendix D

Trait Terms Used For Complexity Task

1. Shy
2. Talkative
3. Sensitive
4. Self-centered
5. Materialistic
6. Snobbish
7. Quiet
8. Bitchy
9. Manipulative
10. Cold
11. Dependent
12. Caring
13. Cruel
14. Helpful
15. Pushy
16. Assertive
17. Ambitious
18. Loving
19. Parental
20. Giving
21. Self-conscious
22. Hardworking
23. Chauvinistic
24. Unemotional
25. Dependable
26. Timid
27. Outgoing
28. Phony
29. Passive
30. Confident
31. Innocent
32. Intelligent
33. Friendly
34. Insecure
35. Immature
36. Demanding
37. Kind
38. Unintelligent
39. Deceitful
40. Understanding
41. Stubborn
42. Uncaring
43. Humorous
44. Aggressive
45. Independent
46. Easygoing
47. Honest
48. Emotional
49. Loud
50. Considerate
51. Domineering
52. Daring
53. Tough
54. Conceited
55. Athletic
56. Domestic
57. Submissive
58. Sweet
59. Jealous
60. Gentle

Appendix E

Exploratory Questionnaire

1. Age________?

2. Sex________?

3. Marital Status (Married, Single, or Divorced)________?

4. How many brothers do you have________?

5. How old are they? 1.____ 2.____ 3.____ 4.____ 5.____ 6.____ 7.____ 8.____

6. How many sisters do you have________?

7. How old are they? 1.____ 2.____ 3.____ 4.____ 5.____ 6.____ 7.____ 8.____

8. Mother's Age________?

9. Father's Age________?

10. Mother's Occupation__________?

11. Father's Occupation__________?

12. What country were you born in__________?

13. What country was your mother born in__________?

14. What country was your father born in__________?

15. What kind of job or career are you planning to pursue after completing college____________?

16. At what point in the future do you plan to get married (Please circle one)? a) already married b) 1 - 4 years c) 5 - 8 years d) 9 - 12 years e) 13 - 16 years f) more than 16 years g) never

17. At what point in the future do you plan to have children (Please circle one)? a) already have children b) 1 - 4 years c) 5 - 8 years d) 9 - 12 years e) 13 - 16 years f) more than 16 years g) never

18. What is the sex of each your five closest friends? (Enter an "M" or "N" for each)
1.____ 2.____ 3.____ 4.____ 5.____

19. Would you consider these friends traditional or nontraditional in terms of sex-roles? (Enter a "T" or "N" for each)
1.____ 2.____ 3.____ 4.____ 5.____

20. How many serious opposite-sex romantic relationships have you had, if any________?

21. For approximately how long did each one last? (Enter a duration for each)
1.____ 2.____ 3.____ 4.____ 5.____ 6.____
7.____ 8.____ 9.____ 10.____

22. How many serious same-sex romantic relationships have you had, if any________?

23. For approximately how long did each one last?
1.____ 2.____ 3.____ 4.____ 5.____ 6.____
7.____ 8.____ 9.____ 10.____

Appendix F

__Puzzle Used For Intervening Task__

ACTOR
(NURSE) AIDE
BARTENDER
CADDIE
CAMP
(SALES) CLERK
CLOWN
COACh
COMEDIAN
DANCER
DENTIST
DIRECTOR
DISPATCHER
DOCTOR
FIRST AID
FOREMAN
GOLF
INTERPRETER
LAWYER
MAGICIAN
MESSENGER
MINISTER
MODEL
NURSE
ORDERLY
PAWNBROKER
PERSONNEL
(TEAM SPORTS) PLAYER
PROBATION
PSYCHOLOGIST
RABBI
RECEPTIONIST
SALESMAN
SECRETARY
SINGER
SPEECH
STAGE
STREET
TAXI
TEACHER
TELEPHONE
(BANK) TELLER
TRANSLATOR
TRAVEL
WAITER

We The People

T	K	R	E	L	C	B	A	R	T	E	N	D	E	R	S
I	U	D	E	E	P	A	W	N	B	R	O	K	E	R	F
K	I	D	U	N	N	I	B	B	A	R	N	G	F	I	F
A	O	H	I	N	H	A	J	C	G	R	N	W	R	L	N
M	D	E	F	O	R	E	M	A	N	E	P	S	O	R	A
M	I	N	I	S	T	E	R	S	S	Y	T	G	E	L	I
T	S	O	D	R	J	W	N	S	E	A	B	C	E	T	C
N	P	H	A	E	N	U	E	O	I	L	E	V	P	A	I
R	A	P	N	P	R	M	C	D	V	P	A	R	R	X	G
O	T	E	C	S	M	O	N	E	T	R	A	S	O	I	A
T	C	L	E	G	A	T	S	I	T	N	E	D	B	N	M
A	H	E	R	C	E	S	O	D	A	Z	R	T	A	T	S
L	E	T	H	A	W	N	W	D	R	O	E	I	T	E	E
S	R	Y	C	X	I	A	O	A	T	E	D	D	I	R	C
N	P	H	L	S	D	C	I	C	R	E	L	R	O	F	R
A	E	E	T	R	T	P	E	T	M	R	E	L	N	R	E
R	B	V	E	O	E	R	S	O	E	Y	K	O	E	E	T
T	M	G	R	C	I	D	C	R	W	R	C	Y	E	T	A
P	M	A	C	D	H	E	R	A	S	S	I	N	G	E	R
L	F	T	S	I	G	O	L	O	H	C	Y	S	P	R	Y

Appendix G

Analyses Based on Combined Quartiles for Male and Female Subjects

Table 25

Mean Number of Sex-consistent and Sex-inconsistent Words Recalled as a Function of Sex-role Condition: Combined Quartiles

	Mean Number of Words Recalled	
Condition (n)	Sex-consistent	Sex-inconsistent
CROSS-SEX-TYPED (8)	8.13	6.63
SEX-TYPED (20)	6.35	4.85
ANDROGYNOUS (15)	5.47	5.40
UNDIFFERENTIATED (11)	5.82	4.63

Table 26

Summary of 4 X 2 Repeated Measures Analysis of Variance for Sex-role Condition and Type of Word Recalled on Subjects' Recall of Sex-consistent and Sex-inconsistent Attributes: Combined Quartiles

Source of Variation	Sum of Squares	DF	Mean Square	F	p
	BETWEEN-SUBJECTS EFFECTS				
Main effects					
Sex-role	52.16	3	17.39	2.05	.119
Within cells	424.58	50	8.49		
	WITHIN-SUBJECTS EFFECTS				
Main effects					
Type of word	27.14	1	27.14	6.63	.013
Two-way interaction					
Sex-role X Type of word	10.18	3	3.39	.83	.485
Within cells	204.78	50	4.10		

Table 27

<u>Summary of Analysis of Simple Main Effects for Sex-role Condition on Mean Number of Sex-consistent and Sex-inconsistent Words Recalled: Combined Quartiles</u>

Source of Variation	Sum of Squares	DF	Mean Square	F	p
WITHIN-SUBJECTS EFFECTS					
Two-way interaction					
Sex-role X Type of word	10.18	3	3.39	.83	.485
Cross-sex-typed	9.00	1	9.00	2.20	.145
Sex-typed	22.50	1	22.50	5.49	.023
Androgynous	.03	1	.03	.01	.928
Undifferentiated	7.68	1	7.68	1.88	.177
Within cells	204.78	50	4.10		

Table 28

Mean Complexity (H) Scores for Sex-consistent and Sex-inconsistent Trait Sorts as a Function of Sex-role Condition: Combined Quartiles

	Mean Complexity (H) Scores	
Condition	Sex-consistent (n)	Sex-inconsistent (n)
CROSS-SEX-TYPED	3.94 (5)	3.40 (3)
SEX-TYPED	4.00 (10)	3.72 (10)
ANDROGYNOUS	3.93 (8)	3.63 (7)
UNDIFFERENTIATED	3.20 (3)	3.26 (8)

Table 29

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Type of Word Recalled on Subjects' Mean Complexity (H) Scores: Combined Quartiles

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	2.56	3	.85	1.45	.240
Type trait sort	.79	1	.79	1.35	.252
Two-way interaction					
Sex-role X Type trait sort	.38	3	.13	.22	.885
Within cells	27.03	46	.59		

Appendix H

Memory for sex-consistent, sex-inconsistent, and neutral attributes

Table 30

Mean Number of Sex-consistent, Sex-inconsistent, and Neutral Words Recalled as a Function of Sex-role Condition

	Mean Number of Words Recalled		
Condition (n)	Sex-consistent	Sex-inconsistent	Neutral
CROSS-SEX-TYPED (40)	6.88	5.65	5.24
SEX-TYPED (46)	6.52	5.28	5.30
ANDROGYNOUS (49)	5.73	6.02	5.67
UNDIFFERENTIATED (55)	6.85	6.07	5.15

Appendix I

Summary of Analyses from Exploratory Questionnaire

Table 31

Summary of Chi-Square on Subjects' Marital Status

Marital Status	Cases Observed	Expected	Residual
Single	184	63.33	120.67
Married	3	63.33	- 60.33
Divorced	3	63.33	- 60.33

Chi-Square	DF	p
344.853	2	.000

Table 32

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Number of Male Siblings

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	.93	3	.31	.15	.93
Sex of subject	.12	1	.12	.06	.81
Two-way interaction					
Sex-role X Sex of subject	9.22	3	3.07	1.50	.22
Within cells	372.54	182	2.05		

Table 33

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Age of Male Siblings

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	4.40	3	1.47	1.18	.32
Sex of subject	.01	1	.01	.01	.92
Two-way interaction					
Sex-role X Sex of subject	2.65	3	.88	.71	.55
Within cells	226.56	182	1.24		

Table 34

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Age of Female Siblings

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	1.61	3	.54	.43	.00
Sex of subject	3.00	1	3.00	2.43	.12
Two-way interaction					
Sex-role X Sex of subject	3.11	3	1.04	.84	.47
Within cells	224.29	182	1.23		

Table 35

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Age of Mothers

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	225.64	3	75.21	1.66	.18
Sex of subject	2.05	1	2.05	.05	.83
Two-way interaction					
Sex-role X Sex of subject	185.56	3	61.85	1.37	.26
Within cells	8243.07	182	45.29		

Table 36

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Age of Fathers

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	223.89	3	74.63	1.23	.30
Sex of subject	1.85	1	1.85	.03	.86
Two-way interaction					
Sex-role X Sex of subject	301.72	3	100.57	1.65	.18
Within cells	8243.07	182	45.29		

Table 37

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Level of Mothers' Occupation

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	6.79	3	2.26	1.06	.37
Sex of subject	.16	1	.16	.07	.79
Two-way interaction					
Sex-role X Sex of subject	3.11	3	1.04	.49	.69
Within cells	387.80	182	2.13		

Table 38

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Level of Fathers' Occupation

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	13.94	3	4.65	1.95	.12
Sex of subject	1.71	1	1.71	.72	.40
Two-way interaction					
Sex-role X Sex of subject	1.06	3	.35	.15	.93
Within cells	432.81	182	2.38		

Table 39

Summary of Chi-Square for All Subjects on Country in Which Subjects Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	147	95.00	52.00
Outside U.S.	43	95.00	-52.00

Chi-Square	*DF*	*p*
56.93	1	.00

Table 40

Summary of Chi-Square for Cross-sex-typed Subjects on Country in Which Subjects Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	34	20	14.00
Outside U.S.	6	20	-14.00

Chi-Square	DF	p
19.60	1	.00

Table 41

Summary of Chi-Square for Sex-typed Subjects on Country in Which Subjects Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	36	23	13.00
Outside U.S.	10	23	-13.00

Chi-Square	DF	p
14.70	1	.00

Table 42

Summary of Chi-Square for Androgynous Subjects on Country in Which Subjects Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	35	24.50	10.50
Outside U.S.	14	24.50	-10.50

Chi-Square	DF	p
9.00	1	.003

Table 43

Summary of Chi-Square for Undifferentiated Subjects on Country in Which Subjects Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	42	27.50	14.50
Outside U.S.	34	27.50	-14.50

Chi-Square	DF	p
15.291	1	.000

Table 44

Summary of Chi-Square for All Subjects on Country in Which Fathers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	94	20.00	.50
Outside U.S.	93	20.00	-.50

Chi-Square	DF	p
.005	1	.942

Table 45

Summary of Chi-Square for Cross-sex-typed Subjects on Country in Which Fathers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	27	20.00	7.00
Outside U.S.	13	20.00	-7.00

Chi-Square	DF	p
4.90	1	.027

Table 46

Summary of Chi-Square for Sex-typed Subjects on Country in Which Fathers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	23	23.00	.00
Outside U.S.	23	23.00	.00

Chi-Square	DF	p
.00	1	1.00

Table 47

Summary of Chi-Square for Androgynous Subjects on Country in Which Fathers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	19	24.00	-5.00
Outside U.S.	29	24.00	5.00

Chi-Square	DF	p
2.08	1	.149

Table 48

Summary of Chi-Square for Undifferentiated Subjects on Country in Which Fathers Were Born

Country Born	Cases Observed	Expected	Residual
In U.S.	25	26.50	-1.50
Outside U.S.	28	26.50	1.50

Chi-Square	DF	p
.17	1	.68

Table 49

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Level of Job Aspiration

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	2.22	3	.74	.38	.77
Sex of subject	.33	1	.33	.17	.68
Two-way interaction					
Sex-role X Sex of subject	1.31	3	.44	.22	.88
Within cells	357.85	182	1.97		

Table 50

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Age at Which Subjects Plan to Marry

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	4.97	3	1.66	1.41	.24
Sex of subject	.11	1	.11	.09	.76
Two-way interaction					
Sex-role X Sex of subject	.50	3	.17	.14	.93
Within cells	213.24	182	1.17		

Table 51

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Age at Which Subjects Plan to Have Children

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	4.92	3	1.64	1.13	.34
Sex of subject	1.83	1	1.83	1.27	.26
Two-way interaction					
Sex-role X Sex of subject	1.92	3	.64	.44	.72
Within cells	262.93	182	1.44		

Table 52

Summary of Chi-Square for All Subjects on Gender Composition of Subjects' Peer Group

Gender Composition	Cases Observed	Cases Expected	Residual
Mostly Sex-consistent	66	63.33	2.67
Mixed	114	63.33	50.67
Mostly Sex-inconsistent	10	63.33	-53.33

Chi-Square	DF	p
85.56	2	.00

Table 53

Summary of Chi-Square for Cross-sex-typed Subjects on Gender Composition of Subjects' Peer Group

Gender Composition	Cases Observed	Cases Expected	Residual
Mostly Sex-consistent	12	13.33	-1.33
Mixed	26	13.33	12.67
Mostly Sex-inconsistent	2	13.33	-11.33

Chi-Square	DF	p
21.80	2	.00

Table 54

Summary of Chi-Square for Sex-typed Subjects on Gender Composition of Subjects' Peer Group

Gender Composition	Cases Observed	Cases Expected	Residual
Mostly Sex-consistent	17	15.33	1.67
Mixed	27	15.33	11.67
Mostly Sex-inconsistent	2	15.33	-13.33

Chi-Square	DF	p
20.65	2	.00

Table 55

Summary of Chi-Square for Androgynous Subjects on Gender Composition of Subjects' Peer Group

Gender Composition	Cases Observed	Cases Expected	Residual
Mostly Sex-consistent	14	16.33	-2.33
Mixed	32	16.33	15.67
Mostly Sex-inconsistent	3	16.33	-13.33

Chi-Square	DF	p
26.25	2	.00

Table 56

Summary of Chi-Square for Undifferentiated Subjects on Gender Composition of Subjects' Peer Group

Gender Composition	Cases Observed	Cases Expected	Residual
Mostly Sex-consistent	23	18.33	4.67
Mixed	29	18.33	10.67
Mostly Sex-inconsistent	3	18.33	-15.33

Chi-Square	DF	p
20.22	2	.00

Table 57

Summary of Chi-Square for All Subjects on

Sex-role Orientation of Subjects' Peer Group

Sex-role Orientation	Cases Observed	Cases Expected	Residual
Mostly Traditional	105	63.33	41.67
Mixed	65	63.33	1.67
Mostly Nontraditional	20	63.33	-43.33

Chi-Square	DF	p
57.11	2	.00

Table 58

Summary of Chi-Square for Cross-sex-typed Subjects on Sex-role Orientation of Subjects' Peer Group

Sex-role Orientation	Cases Observed	Cases Expected	Residual
Mostly Traditional	21	13.33	7.67
Mixed	15	13.33	1.67
Mostly Nontraditional	4	13.33	-9.33

Chi-Square	DF	p
11.15	2	.004

Table 59

Summary of Chi-Square for Sex-typed Subjects on Sex-role Orientation of Subjects' Peer Group

Sex-role Orientation	Cases Observed	Cases Expected	Residual
Mostly Traditional	25	15.33	9.67
Mixed	17	15.33	1.67
Mostly Nontraditional	4	15.33	-11.33

Chi-Square	DF	p
14.65	2	.001

Table 60

Summary of Chi-Square for Androgynous Subjects on Sex-role Orientation of Subjects' Peer Group

Sex-role Orientation	Cases Observed	Cases Expected	Residual
Mostly Traditional	26	16.33	9.67
Mixed	18	16.33	1.67
Mostly Nontraditional	5	16.33	-11.33

Chi-Square	DF	p
13.76	2	.001

Table 61

Summary of Chi-Square for Undifferentiated Subjects on Sex-role Orientation of Subjects' Peer Group

Sex-role Orientation	Cases Observed	Cases Expected	Residual
Mostly Traditional	33	18.33	14.67
Mixed	15	18.33	-3.33
Mostly Nontraditional	7	18.33	-11.33

Chi-Square	DF	p
19.35	2	.00

Table 62

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Number of Opposite-sex Relationships

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	1.50	3	.50	.26	.85
Sex of subject	3.80	1	3.80	1.97	.16
Two-way interaction					
Sex-role X Sex of subject	10.90	3	3.63	1.89	.13
Within cells	350.72	182	1.93		

Table 63

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Number of Months Spent in Opposite-sex Relationships

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	3313.08	3	1104.50	1.76	.16
Sex of subject	989.37	1	989.37	1.58	.21
Two-way interaction					
Sex-role X Sex of subject	2618.48	3	872.83	1.39	.26
Within cells	114269.27	182	627.85		

Table 64

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Number of Same-sex Relationships

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	.59	3	.20	1.10	.35
Sex of subject	.04	1	.04	.21	.65
Two-way interaction					
Sex-role X Sex of subject	.03	3	.01	.06	.98
Within cells	32.56	182	.18		

Table 65

Summary of 4 X 2 Analysis of Variance for Sex-role Condition and Sex of Subject on Mean Number of Months Spent in Same-sex Relationships

Source of Variation	Sum of Squares	DF	Mean Square	F	p
Main effects					
Sex-role	1.70	3	.57	.73	.54
Sex of subject	1.68	1	1.68	2.15	.14
Two-way interaction					
Sex-role X Sex of subject	2.44	3	.81	1.04	.37
Within cells	141.77	182	.78		

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