A COMPARISON OF MEASURES OF MASCULINITY/FEMININITY IN
PREDICTING INSTRUMENTAL BEHAVIORS

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By

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The development of measures of masculinity/femininity in psychology has reflected historical interest in categorizing gender differences. Recent measures have characterized masculinity as instrumental/agentic behavior. In this study, a traditional measure (the Minnesota Multiphasic Personality Inventory Masculinity/femininity scale) was pitted against a more recent measure (the Personal Attributes Questionnaire) in predicting instrumental behavior of mixed sex dyads in laboratory sex stereotyped tasks. Neither measure effectively predicted instrumental behavior. Rather, females performed better on the more complex but feminine stereotyped task, and males performed better on the masculine stereotyped task. The outcome of this study supports the need to view gender differences as dynamic phenomena influenced by individual choice, situational pressures, and interactional characteristics.
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A COMPARISON OF MEASURES OF MASCULINITY/FEMININITY IN PREDICTING INSTRUMENTAL BEHAVIORS

Masculinity and femininity have been areas capturing human interest since recorded history. Historically, myths and beliefs about masculinity and femininity have been reflected in the writings of poets, philosophers, religious leaders and other scholars; these notions have been both descriptive and prescriptive. Since its inception, psychology has demonstrated an awareness of gender differences in attitude and performance as well as an interest in measuring for the influence of these variables. Among early psychological measures of masculinity/femininity are the Minnesota Multiphasic Personality Inventory (MMPI: Hathaway & McKinley, 1943), the Strong Vocational Interest Blank (SVIB; Strong, 1936; Campbell, 1966, 1969), the California Psychological Inventory (Gough, 1966), and the Terman-Miles Attitude Interest Analysis Test (Terman & Miles, 1936). Recently, a number of scales purporting to measure masculinity and femininity as separate dimensions have been developed; among these are the Bem Sex Role Inventory (BSRI; Bem, 1974), the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978), the PRF ANDRO Scale (Berzins, Welling, & Wetter, 1978), and the Masculinity-Femininity scales of the Adjective Check List (ACL; Heilbrun, 1976). These more recent scales
conceptualize masculinity as agency/instrumentality and femininity as communality/expressivity. Behavioral correlates of instrumentality presumably measured by the Masculinity Scale of the Personal Attributes Questionnaire have not been well studied. The ability of the Masculinity-Femininity Scale (Mf Scale) of the MMPI to predict instrumental behavior in a laboratory setting will be compared to that of the Masculine and Feminine Scales of the PAQ in this study.

The evolution of the recent measures of masculinity and femininity was spurred by Constantinople's (1973) criticisms of the more traditional measures. Constantinople's challenge of traditional measures of the masculine and feminine constructs rested on an objection to the underlying assumptions of these metrics. Implicated assumptions were the bipolar nature of masculinity/femininity; the unidimensional nature of masculinity/femininity; and the reliance of sex differences in item responses for definitional purposes. She stated that

... there is no ... body of data which indicates that M-F, or M or F alone, is consistently related to other variables in predictable ways (except whether the subject is male or female!) (p. 289).

Constantinople also criticized the terms masculinity and femininity as being muddy concepts borrowed from popular usage by the scientific community without clarification. Consequently, these abstract concepts lack clear definition by the scientific community as well as "unexceptionable"
criteria for their measurement. In a similar vein, existing measures were criticized for confounding items on sex role identity, preference and adoption and thus prohibiting clarification of the relationships among these aspects. Antedating Constantinople's criticisms of the bipolar nature of M/F measures were conceptions of masculinity/femininity as dualistic traits on separate continua which could be possessed in varying degrees by males and females. Such was Freud's "polymorphous perversity" (Freud, 1965). So also was Jung's conceptualization of animus and anima. Similarly, Bakan (1966) proposed traits of agency and communion as characteristic of all living organisms.

Responding to Constantinople's criticisms, a number of researchers developed new measures of masculinity/femininity utilizing the Jung-Bakan dualistic notion of M/F (Bem, 1974; Brezens, Welling, & Welter, 1978; Kelly & Worrel, 1977; Heilbrun, 1976; Spence & Helmreich, 1974, 1978). These scales conceptualize masculinity and femininity as two different dimensions, characterized variously as instrumental and expressive, and agency and communion; theoretically, there is no dependence between these. The separate measurement of masculine and feminine traits allows for identification and classification of individuals in a crossed classification scheme such as High in both; High M Low F; High F Low M; and Low in both. Bem's M and F scales are composed of items deemed to be socially desirable for males and females.
respectively, but not necessarily undesirable for either. Spence's M and F scales are composed of items which are socially desirable in both sexes but are deemed to be more characteristic of one sex than the other; in addition, Spence's scale includes a third category of items which are considered desirable for one sex but undesirable in the opposite sex (the M-F scale). Spence interprets the low but positive correlation between her Masculinity and Femininity scales to support a dualistic notion of masculinity/femininity and the M-F scale's high positive correlation with M and lower but negative correlation with F to support the bipolar conception of masculinity/femininity.

From the dualistic philosophical stance, the concept of androgyny arose. An androgynous male is characterized as possessing primarily agentic/instrumental traits but also having well developed communal/expressive abilities. Similarly, the androgynous female may be characteristically communal/expressive but also possesses well-developed agentic/instrumental abilities. Conceptually, Bem (1975) suggests that an androgynous person is able to function more flexibly in a wider variety of situations than is stereotypically sex-typed individual.

Studies Using Recently Developed Measures of Masculinity-Femininity

A number of studies have been conducted using the dualistic notion of masculinity/femininity. For example, levels
of self-esteem have been found to be highest for androgynous individuals, followed by masculine sex-typed, feminine sex-typed and undifferentiated persons (Bem, 1977; O'Connor, Mana, & Bardwick, 1978; Spence, Helmreich & Stapp, 1975; Wetter, 1975). Androgynous men are described as being more flexible in interpersonal relationships and androgynous women as being typically masculine in interpersonal behavior (Wiggins & Holzmuller, 1978). Androgynous individuals seem to be more achievement oriented than traditionally sex-typed individuals (Spence & Helmreich, 1978). In contrast to the traditionally sex-typed female, the androgynous woman tends to engage more in competitive sports; masculine sex-typed individuals of both sexes are also frequent competitors (Myers & Lips, 1978). While all are aware of sex role stereotypes, traditionally sex-typed persons tend to give greater attention to males than females, while androgynous individuals are more egalitarian in their interactions (Deaux & Major, 1977). In the area of self-disclosure, traditionally sex-typed individuals disclose more to females while androgynous individuals disclose equally to both sexes (Deaux, 1977). Ickes has shown that mixed sex dyads have more difficulty interacting if both members are traditionally sex-typed than any other possible pairing (Ickes, 1977, 1978).

Studies Using the MMPI Mf Scale

Dahlstrom, Welsh and Dahlstrom (1972) report several studies using the MMPI Mf Scale. In a 1952 study by Hathaway
and Meehl, peers of high Scale 5 men in the normal population characterized them as being sensitive and prone to worry, sociable and curious, idealistic and peaceable, and as having general aesthetic interests; high Scale 5 women were characterized as adventurous. The self views of high Scale 5 men tended to be consistent with others' appraisal of them. High Scale 5 men have been judged to be psychologically complex and inner directed, intellectually capable, self-aware, socially perceptive and verbally fluent. Descriptive adjectives of the high Scale 5 men are numerous and include clever, ambitious, mature, organized, sensitive, effeminate, curious, sharp-willed, submissive and tolerant. Low Scale 5 men were characterized as independent, cheerful, self-confident, practical and balanced; low Scale 5 women were judged to be sensitive, responsive, grateful, modest, and wise. Low Scale 5 men have been judged to be stereotypic and lacking organization in their approach to problems; they prefer action to contemplation, are self-indulgent, lack insight and awareness of their own social stimulus value, and have a narrow range of interests. Adjectives describing these low Scale 5 men are hasty, coarse, commonplace, humorous, jolly, reckless, and unaffected. Low Scale 5 men tend to be less adept at tolerating sensory deprivation than are their high Scale 5 counterparts. Dahlstrom et al. note that, while the scoring is almost completely reversed for the sexes, a simple reversal of interpretation is inadequate; they suggest further studies to clarify the nature of sex differences.
Issues and Criticisms in the Measurement of Masculinity/Femininity

Numerous criticisms have been levelled at recently developed sex role measures. In addition, criteria for future studies have been suggested. The issues and criticisms reflect the prophetic wisdom of Mead's cautions concerning difficulties encountered as members of a culture attempt to separate out the variable contributions of culture and gender to the behavior of males and females.

In critiquing the Bem Sex Role Inventory and the Personal Attributes Questionnaire, Bernard (1981) notes that these scales do support a notion of independent masculine/feminine scales. He further acknowledges an association between these scales and other traits which is stronger in the case of masculinity than femininity. He notes that they continue to rely on the same underlying dimensions of masculinity and femininity which Constantinople had referred to as being muddy. Furthermore, noting the vast accumulation of data associated with such traditional measures as the MMPI Mf Scale, he suggested revision of these scales via analysis of their underlying supposed multidimensional scales rather than absolute rejection of them. Both Bernard as well as Orlofsky (1981) suggest a gain in predictive utility to be made through multidimensional analysis as opposed to the current bidimensional analysis.
Kelly, Furman and Young (1978) have investigated the interscale comparability among recently developed measures of masculinity/femininity. They found that, while correlations among the raw scores was reasonably high, a majority of subjects (61%) were categorized discrepantly by different pairs of inventories. Such discrepant categorization leads to limited comparability of research findings. In addition, the use of categorization rather than scores leads to losses in predictive utility. Moreover, the scales vary in assumptions about androgyny, item selection, item content and format, and instructions to respondents (Kelly & Worrell, 1977; Spence & Helmreich, 1978). Thus, there is a difference in validity of sex role constructs due to the use of incompatible definitions of androgyny from one study to another and the use of different measures of the criterion variable (Kelly & Worrell, 1977).

Citing the failure of self-esteem to discriminate between androgynous and masculine typed individuals, Kelly and Worrell (1977) suggest continued evaluation of the social utility of masculinity-femininity scale characteristics. It is possible that high self-esteem associated with masculinity reflects the greater social desirability of stereotypically masculine than feminine traits described in earlier studies of college students and mental health workers as well as the greater intrinsic satisfaction associated with stereotypically masculine tasks (Broverman, Vogel, Broverman, Clarkson & Rosenkratz,
The social desirability bias may also account for Bem's finding that feminine typed women are not consistently more expressive, nurturant, or affectionate in situations designed to evoke these responses; these women may endorse characteristics which they feel that they ought to possess in order to be adequate females rather than endorsing dominant response dispositions. A similar response bias may be operating in the case of the "well-meaning liberal male" (Gackenbach, 1981) and may partially explain the lack of correlation between measures of sex role and Attitudes Toward Women (AWS; Spence & Helmreich, 1978) as well as the lack of relationship between measures of sex role and response towards sexist humor (Gravely, 1981). Further exploration of the relative contribution of masculinity/femininity to the performance of the androgynous individual is suggested. Currently, it seems likely that the presence of masculine behaviors with their greater social desirability leads to the "better" appearance of the androgynous individual on other measures.

An additional weakness described by Kelly and Worrell (1977) is the absence of negatively valued sex-correlated attributes. They suggest that negatively valued attributes may interact in some way with other sex role attributes to produce differences in outcome.

Citing Spence's findings that androgynous and sex-typed individuals fail to differ appreciably in their sex role
attitudes or many of their social behaviors, Orlofsky (1981) suggests the need to assess sex-typed traits, attitudes, and social roles/behavior separately. A preliminary investigation of the relationship between these variables by the author tended to support his thesis of general independence between these variables.

Many authors cite the need to use multiple act criteria (Jaccard, 1974, 1977) as well as to consider the interaction between personality factors and situational or contextual variables (Bem & Allen, 1974; Bem & Funder, 1978; Mednick & Weisman, 1976; Weisstein, 1976). In this vein, some research suggests that perceived expectations may affect individuals' self presentations (Skrypnek & Snyder, 1982; von Baeyer, Sherk, & Zanna, 1979; Zanna & Pack, 1975).

While retention of the MMPI Mf Scale in research involving masculinity/femininity is advised by some investigators, potential problem areas in research application have been identified by others. For example, a preliminary study by Betz and Bander (1981) suggests that androgynous and undifferentiated subjects may be indistinguishable from one another on traditional measures such as the MMPI Mf Scale.

In summary, sex role research continues to be marked by controversy. Limitations of current research endeavors are attributable in part to a lack of conceptual clarity related to masculinity/femininity. Further, the influence
of cultural forces, especially in terms of the social value of particular self-attributions and behavioral manifestations continues to confound the interpretation of results. Similarly, the influence of negatively valued attributions/behaviors has not been examined. Further, there is a need to distinguish between gender identity, role preference and role adoption. The interaction between psychological attributes and contextual attributes also warrants clarification.

Research Questions

Current measures were developed based on the presumed inadequacy of the earlier measures of masculinity/femininity. A potential strength of one of these early measures, the Minnesota Multiphasic Personality Inventory Masculinity/Femininity Scale (MMPI Mf Scale), is its underlying multi-factorial structure as well as its' inclusion of both negatively and positively valued attributes. While criticisms have been levied against the MMPI Mf Scale, studies pitting its ability to predict behavior in a given situation have not been done.

The following hypotheses were investigated in this study:
A) The MMPI Mf Scale is a more accurate predictor of in laboratory sex-typed behavior than the Masculinity and Femininity Scales of the Personal Attributes Questionnaire (PAQ: Eta for main effect and interactions involving typing by MMPI Mf greater than PAQ Eta); B) Subjects undifferentiated by the PAQ will have the greatest differential between levels
of participation in sex-typed laboratory tasks; C) Subjects scoring above the median on both the Masculine and Feminine Scales of the PAQ will have the greatest summed participation level on the two tasks; and D) Subjects with high (top 1/3) MMPI Mf scores will have the greatest summed participation level on the two tasks.

Method

Subjects

Students enrolled in introductory psychology courses November, 1983, through February, 1984, were asked to take the Personal Attributes Questionnaire (PAQ) and the Minnesota Multiphasic Personality Inventory Masculinity femininity and Ego Strength Scales (MMPI Mf & ES Scales, see Appendix A). Students were assured that their performance would be known only by the examiner and that, should they prefer not to participate, this would in no way adversely affect their class standing. The consent of the students to serve as participants was implied by their continued participation. Respondents were told that many of them could expect to be contacted to request further participation in the study at a later date.

From this group, a total of 60 subjects were obtained. These subjects were placed in Spence classifications based upon a median split by sex rather than the traditional combined subject median split approach. The study medians conformed to Spence's reported medians of 21 and 23 for Masculine
and Feminine, respectively (see Table 1 for medians used and used Spence medians). The sample, therefore, consisted of six males and eight females whose scores on the PAQ placed them in the Masculine category, eight males and eight females whose scores placed them in the Feminine category, nine Androgynous males and females and seven Undifferentiated males and five Undifferentiated females.

Table 1

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**Apparatus**

Two stereotypically sex-typed tasks were chosen for study purposes. The experimental room was approximately 4 x 6 meters; it was equipped with a sink and counter unit. In the stereotypically feminine task, the Fabric Task, a piece of fabric 1 1/2 meters x 1 meter and dressmaker pattern pieces (Butterick No. 6036) were placed on a table by a sink. The following written instructions were placed on the table by the fabric:
These pieces are to be arranged on the fabric as closely as possible. You are to use all pattern pieces. The goal is to use the least amount of fabric. Work as quickly as you can.

Scoring:
- 20 points—under two minutes
- 10 points—two to four minutes
- 5 points—under six minutes

The stereotypically masculine task, the Erector Task, was placed on a card table nearby. This task consisted of Erector Set pieces (Penney's Catalog No. XU652-0431-A) for model construction which were laid out in a standardized pattern on a plain sheet of typing paper. A constructed model of the finished product was placed directly behind the sheet of typing paper. The following instructions for the Erector Task were also placed on the table:

These are parts of a construction model building set. This task requires the ability to manipulate parts in space in order to replicate a three dimensional model.

You are to use all the parts on the sheet of paper to make an exact copy of this model. In this container are more than enough fasteners.

Work as quickly as you can, but be careful not to make any errors. Remember your copy must be exactly like the model in every way.

Do you have any questions?

Ready: Go:
Scoring Directions:
1 point for each of the 22 fasteners being correctly placed. If the head of the bolt does not face "out," the fastener is not correctly placed.
Bonus points for time of performance as follows:
20 points under two minutes
10 points two to four minutes
5 points under six minutes
Bonus points are awarded only if the basic Gestalt of the model is replicated.
Scoring sheets (Appendix A) were used to tally instrumental behaviors. Lines denoting distances of one foot intervals were made in the carpet using masking tape. Chairs to be used by the observer(s) were placed in a distant corner of the room.

Questionnaires

The PAQ and the MMPI Mf scale were administered to all participants. In addition, all subjects took the Ego Strength Scale (ES) of the MMPI as a measure of adjustment as a potential confounding variable to be examined in an ex post facto manner.

The Personal Attributes Questionnaire. Spence, Helmreich and Stapp (1974, 1975) developed the PAQ using items from the Sex Role Stereotype Questionnaire of Rosencrantz, Vogel, Bee, Broverman and Broverman (1978; typical male, typical female, and ideal individual, sex unspecified). Students in
introductory psychology courses were asked to rate each item as characterizing the typical individual of either gender. Through this process, 55 items were selected as differentiating typical males from typical females. Ratings of the "ideal" male and female on each of items led to the derivation of three scales: Masculine (M); Feminine (F); and Masculine-Feminine (M-F). The M scale is a 23 item scale consisting of socially desirable characteristics found in the ideal individual of both sexes but considered to be more typically found in males. Similarly, the F scale consists of 18 items which are perceived to be characteristic of the ideal individual of either sex but which are more typically found in females. Finally, the M-F scale is a 14 item "sex-specific" scale containing characteristics which are desirable in one sex but undesirable in the opposite sex.

Respondents are asked to rate themselves on a five point scale on each of the items. Scores are obtained by summing the values indicated by the respondent on each of the items assigned to the three dimensions. The median value for M and F dimensions is obtained for the total sample. Individuals are then designated as M, F, Androgynous, or Undifferentiated based on the median split method. Individuals who score above the median in Masculinity and below the median on Femininity are designated Masculine typed. Individuals who score above the median on the F scale and below the median on the M scale are designated Feminine typed. Those who score above the
median on both M and F scales are designated Androgynous and those scoring below the median on both scales are categorized as Undifferentiated.

The short form which will be used in this study consists of eight items from each of these scales which were selected on the basis of the part whole correlation of the item with the scale to which it belonged. Reported correlations for the short form with the full scale were .93, .94, and .91 for M, F, and M-F respectively. Cronbach alphas are reported to be .85, .82, and .78 for M, F, and F-F respectively, thus, the short form has satisfactory reliability.

The MMPI Mf Scale. According to Marks et al., (1974) the 60 item Mf scale was developed from responses of 13 homoerotic male inverts who were screened and selected on the basis of relative freedom from signs of psychopathology. Items retained for use on the scale were those which were answered differently by criterion subjects than by laymen in general. For either sex, a high T score represents interest patterns similar to the opposite sex while a low T score represents an interest pattern characteristic of the same sex. Items cover several broad areas of interest and behavior, hobbies, kinds of work, personal sensitivities, and sexual proclivities. The reliability of the Mf Scale is reported to be .64 (Dahlstrom, Welsh, & Dahlstrom, 1972).

The Ego Strength Scale (Es). The Ego Strength Scale (Es) is a 68 item subscale of the MMPI developed by Baron. This
scale is a measure of personality variables facilitating an individual's ability to adapt to life stresses as well as to profit from support and psychological insight. It correlates with measures of ego control and ego resilience and seems to differentiate between those who have good psychological adjustment as opposed to those suffering from emotional disturbance or psychiatric disorders. High Es subjects are able to tolerate greater intensities in heat, cold, and noise and to manifest greater ranges of autonomic reaction to brief stressors; they manifest greater cross situational control of their own behavior and greater adaptive capacity than low Es subjects.

Procedure

Check list data with embedded questions on the Masculinity and Femininity scales of the Personal Attributes Questionnaire (PAQ) and the Masculinity/femininity scales of the Minnesota Multiphasic Personality Inventory (MMPI Mf) were initially gathered from students in introductory psychology classes during November 1983 through February 1984 (Appendix B). Subsequently, students were contacted by telephone by the researchers and their further participation in a study concerning "Problem Solving Tasks in Analogues of Everyday Life" was requested; additional extra credit points were offered for continued participation. They were assured that the tasks were common ones and were in no way disclosing or embarrassing in nature. A total of 60 subjects was thus obtained.
Students were met at an appointed time at the experimental room and given a modified form of the Shipley Institute of Living Scale (Appendix C) to increase their achievement motivation. These mixed sex dyads were then led into the experimental room where they were shown the two tasks which they were to collaborate on completing. Instructions for the stereotypically masculine task (Erector Task) and stereotypically feminine task (Fabric Task) were pointed out to them. Order of task presentation was balanced. Subsequently, students were observed by the examiners during task completion. Instrumental behaviors including distance from task, verbalizations, and physical manipulation of materials were recorded on score sheets by the observers during task performance (see Appendix C). Questions posed to the observers by the students during task performance were met with non-directive responses such as "Whatever you like," or "Whatever you think best." Time was kept by the observers and task performance was stopped at the end of a 10 minute period per task. Students were thanked for their participation.

Results

Data were rendered readable by automated data processing equipment. The Statistical Package for the Social Sciences (Hull, C. H., Jenkins, J. G., Steinbrenner, K., & Bent, D. H., 1975) was used to compute the analysis. Instrumental ratings were standardized within each task.

Two multiple regression equations using simultaneous solutions were employed in investigation of Hypothesis A, that
that the Minnesota Multiphasic Personality Inventory Masculinity/femininity (MMPI Mf) Scale is a more accurate predictor of sex-typed laboratory behavior than the Masculinity and Femininity Scales of the Personal Attributes Questionnaire (PAQ). The independent variables were as follows: (a) raw score on MMPI Mf scale, (b) raw score on Spence Masculinity Scale (c) raw score on Spence Femininity Scale, (d) pair-number, (e) sex, (f) sex by Spence Masculinity Scale interaction term, and (g) sex by Spence Femininity Scale interaction term (see Cohen & Cohen, 1975). The dependent variables were (a) the sum of instrumental behaviors on the masculine Erector Task and (b) the feminine Fabric test.

Discriminant analysis was used for investigation of the remaining hypotheses. The group membership variables used in investigation of Hypothesis B, that subjects undifferentiated have the greater differential between levels of participation in sex-typed laboratory tasks, were the Spence Classification variables (Masculinity or Femininity or Androgynous or Undifferentiated); the discriminating variable in this analysis was the difference score between levels of participation for the two sex-typed tasks. The difference score was computed by subtracting the standardized rating on the instrumental task stereotypically associated with the sex other than a subject’s sex from the standardized instrumental rating stereotypically associated with the subject's own sex.
In investigation of Hypothesis C, that individual's scoring above the median on both the Masculine and Feminine Scales of the PAQ would have the greater summed participation level on the two tasks, separate analyses were conducted examining the relationship of Spence Classification to Summed Standardized Instrumental Ratings on the two tasks and the instrumental performance on the two tasks independently.

Finally, the Hypothesis D, that subjects with high MMPI Mf scores (i.e., strong opposite sex gender identification) would have the greatest summed participation level on the two tasks was investigated by classifying males and females into high, middle, and low MMPI Mf scores based upon tertiles and examining the relationship of group membership to the discriminant variables of instrumental behaviors on the two sex-typed tasks.

In addition, the validity of sex-typing of the two tasks was investigated using discriminant analysis. The group membership variable was subject gender and the discriminant variables were instrumental behaviors on the two sex-typed tasks.

**Hypothesis A.** The Minnesota Multiphasic Personality Inventory Masculinity/femininity scale is a more accurate predictor of sex-typed laboratory behavior than the Masculinity and Femininity Scales of the Personal Attributes Questionnaire. Simultaneous multiple regression analysis failed to support this hypothesis. There were no significant differences
between the two measures predicting performance on sex-typed laboratory tasks. Neither measure successfully predicted laboratory performance.

**Hypothesis B.** Subjects undifferentiated by the Personal Attributes Questionnaire will have the greatest differential between levels of participation in sex-typed tasks. Discriminant analysis failed to support this hypothesis. There were no significant differences between levels of participation on sex-typed tasks using Spence classification as the independent variable.

**Hypothesis C.** Subjects scoring above the median on both the Masculine and Feminine scales of the Personal Attributes Questionnaire (PAQ) will have the greatest summed participation level on the two tasks. Discriminant analysis failed to support this hypothesis. There were no significant differences between the Spence Classifications on summed instrumental behaviors on the two tasks nor in the two tasks viewed independently.

**Hypothesis D.** Subjects with high (top 1/3) MMPI Mf scores will have the greatest summed participation level on two tasks. Discriminant function analysis failed to support this hypothesis.

**Laboratory Task Validity.** The discriminant function of subject gender by performance scores on the Erector and Fabric Tasks obtained statistical significance (Lambda = .898; Chi-square = 6.0983; df = 2; p = .047) with males scoring -.33 (on the end of the discriminant function marked by the
Erector Task). Female subjects scored +.33 (on the end of the discriminant function marked by the Fabric Task). This supports the supposition that these tasks would be perceived by subjects as having sex-role related characteristics.

Discussion

Although the Masculinity Scale of the Personal Attributes Questionnaire (PAQ M Scale) has been defined as being a measure of instrumental behaviors (Spence & Helmreich, 1978) and has been described as being superior to the Minnesota Multiphasic Personality Inventory Masculinity-femininity scale (MMPI Mf Scale), neither the PAQ nor the MMPI Mf scale were effective in predicting instrumental behaviors in laboratory sex stereotyped tasks in mixed sex dyads. Thus these results fail to cross-validate these previous studies and suggest that if, in fact, predict actual behavior, they do so only in trivial ways. Subjects undifferentiated by the PAQ did not have significantly larger difference scores on instrumental behaviors on sex stereotyped tasks than did masculine, feminine, or androgynous subjects; this finding suggests problems with these scales or with this conceptualization of masculine, feminine, or androgynous behavior. The finding that androgynous subjects did not have significantly higher summed scores on instrumental behaviors across tasks than did masculine, feminine, or undifferentiated subjects also casts doubts upon these scales or these conceptualizations. Finally, these results failed to support the
hypothesis that subjects with the highest (top 1/3) MMPI Mf scores, and thus closer to the opposite sex-role stereotype in personality, would have the highest summed participation level on the two tasks.

The sex stereotyping of selected tasks was supported by the differential performance of males and females on an Erector Task and a Fabric Task. Female subjects had higher scores on the Fabric Task and lower scores on the Erector Task. The reverse was true of males. While this finding did not show a strong association, it was of the size typical of much personality research ($R = .32$).

Numerous explanations may be offered for the failure of either measure to yield a significant relationship to instrumental behaviors in a mixed sex dyad in a laboratory setting. Among these is the possibility of insufficient interrater reliability. However, finding a significant relationship between sex of subject and instrumental behaviors on sex-stereotyped tasks suggests that there was at least sufficient interrater reliability to make this discrimination. While this is in itself a trivial result, it does allow the construction of the negative findings for the hypotheses to be interpreted.

It is also possible that students failed to take the check list questionnaire seriously and that the scores on this measure were unreliable in reflecting their self-attributions. However, the manner of questionnaire presentation did not
differ significantly from that of previous studies using these measures. Failure to find positive results may also have been related to the size of the sample. The sample size reported by Spence and Helmreich (1978) was substantially larger.

The finding of negative results may not have been due to experimental error. More likely explanations for the lack of a significant relationship between these measures of masculinity/femininity and instrumental behaviors on these sex stereotyped laboratory tasks were offered by an analysis of the experimental arrangement and discussion in recent literature.

Construct validity for Masculine, Feminine, Androgynous and Undifferentiated classifications based upon the PAQ was established using solitary single act measures. This study departs from the approach of other studies in that dyadic male/female behaviors rather than solitary behaviors were studied. This suggests that, while the PAQ may accurately predict behavior in relatively isolated single act situations, predictive utility is lost in the more common interactive situation.

The construct of instrumental behaviors studied can be seen as the performance achievement typically described as a masculine trait. This performance was embedded in stereotypically masculine and feminine trappings (i.e., erector sets and dress-making). The choice of these as study tasks,
and the choice of having the tasks performed in mixed sex dyads, was based on Deaux's (1984) observation that "situations that are more interactive in nature are more likely to show sex differences than will less social, more individualistic tasks" (1984, p. 114). Further, Bem has noted that, although boys score significantly higher on mathematical aptitude tasks, girls' performance is improved if the problems are reworded to deal with cooking and gardening even though the abstract reasoning is the same (Bem, 1976). The predictive validity of the PAQ and MMPI scales studied may be only strong enough to operate in specific laboratory situations. Problems may appear in other laboratory and non-laboratory situations. The role of personality attributes reflected in the PAQ and MMPI Mf scales in explaining the function of behavior, as well as the influence of the setting upon this role, warrants further exploration.

Some of the effects of situation were shown by Skyrpnck and Snyder (1982). They found that females were more likely to choose stereotypically feminine tasks when their partners believed them to be female than when their partners believed them to be male. This held even when they were blind to the expectation of their partners. During the present study, males frequently pointed to the Fabric Task saying to the female, "This is your area." On occasion, females approached the Erector Task saying, "I've never done anything like this before."
From a cognitive standpoint, women tended to do better than men in solving the more complex task. The model provided in the Erector Task required analysis and synthesis for completion; students were asked only to replicate the model. In the Fabric Task, students were asked to solve the problem with no idea of what the final product was to look like, i.e., derive a unique solution. Although males have been typically described as having better visuospatial abilities, on this task, women were superior to men. That women tended to score better on this more complex but stereotypically feminine task and performed more poorly on the less visuospatially complex but stereotypically masculine task suggested the strength of social expectancy in the performance of women and men. One hypothesis that arose from these findings is that the aspects of personality controlling in social and sex-role related tasks is different from those controlling in questionnaire and less social tasks. This is partially supported by this study's replication of Spence and Helmreich's (1978) median scores on the PAQ when these subjects completed the questionnaire on their own.

Chessler (1973) also suggests that it is more acceptable for females to assume the characteristics of the male than for males to assume the characteristics of the female. The superior performance of females on the stereotypically feminine task may be evidence in support of Chessler's thesis.
Another fruitful area of investigation might be derived from contrasting behavior from an individual versus dyadic in same-sex versus mixed-sex groups on measures of masculinity and femininity arising from social sex-role measures and questionnaires and relating these to measures of personal adaptation and adjustment. Since one study (Klienke & Henrichs, 1983) has suggested more difficulty adapting to the social demands of college life and a higher acknowledgement of drinking to relieve social pressures in masculine females, this type of inquiry might well assist us in understanding the cost to the individual, if any, in behaving contrarily to his or her self-concept but consistently with the expectations of the cultural situation.

Assumptions about gender differences have been stated throughout recorded history (e.g., the etymology of the disorder "hysteria"). These assumptions have served as a basis for decision-making and role prescriptions concerning men and women. Role prescriptions, naturally proceeding from our assumptions, may serve to limit the realization of individual potential. While stereotypes aid in simplifying our expectations about other members in society, and thus our understanding of our situations, inappropriately restrictive ones may cost us, and society, more than we gain from simplification.

The societal costs of limiting sex role expectations based on assumed gender differences can be exceedingly high.
Failure to realize human potential is one outcome. A second may be seen in the comparatively high rate of psychiatric treatment and psychiatric hospitalization for women. A third may be the shorter life span and high incidence for cardio-vascular disease for men. Society's stance in sex role expectations is similar to the overadequate-inadequate dyad seen in families; in society as in families, the nature of this relationship produces negative outcomes. What society has described as biological gender differences may be more likely attributable to roles which developed of the growth of scientific and technological development. Sherfey (1976) contends that woman's sexuality was willfully subjugated in order that the family and modern society could emerge. She states that

Should the hypothesis be true that one of the requisite cornerstones upon which all modern civilizations were founded was coercive suppression of women's sexuality, one looks back over the long history of women and their relationships to men, children, and society since the Neolithic revolution with a deeper, almost awesome, sense of the ironic tragedy in the triumph of the human condition (p. 281).

Indeed, Chessler (1976) suggests that the emotionality of women is a product of ensuing slave psychology. Most measures of femininity are heavily weighted with items related to emotionality (expressivity). In Chessler's view, this is a product of woman's sociocultural status.
That the embryo is morphologically female suggests that there may be considerable overlapping in the biopsychosocial potential of women and men. It is no longer socially economical to continue to maintain dichotomous views of the nature and abilities of women and men. This and other studies suggest that previous beliefs about gender differences should be viewed as social artifacts. Further studies to clarify the nature of gender differences (if any other than reproductive abilities exist) should be conducted by women and men. These findings can then be taught to college students who comprise a large portion of the trend setting decision makers of subsequent generations. That ultimately our new understandings will result in social change is, indeed, a hopeful view.

Psychology's interest in this area has been reflected in the development of numerous scales purported to measure masculinity and femininity, and in a recent proliferation of articles as well as the development of new journals devoted to this area. While the PAQ of Spence and Helmreich (1980) was developed in response to Constantinoples' (1973) criticism of earlier measures, they have recently reviewed the literature and have found only limited relationships between the PAQ or the Bem Sex Role Inventory (BSRI) and other sex role attitudes and behaviors. Thus, a narrower interpretation of the masculinity and femininity scales as related only to instrumental and expressive behavior respectively has been
proposed. However, this study fails to support the relationship between masculinity and instrumental behaviors. Perhaps Constantinople's criticisms of masculinity and femininity as murky concepts warrants further recognition through studies directed toward concept clarification. Deaux (1984) suggests the need for a conceptual shift in the study of sex related issues. The outcome of this and other studies supports Deaux's thesis that

Views of gender as a static category must give way, or at least be accompanied by, theories that treat sex related phenomena as a process—a process that is influenced by individual choices, molded by situational pressures, and ultimately understandable only in the context of social interaction (1981, p. 115).
Appendix A

INSTRUMENTAL BEHAVIORS

TALLY SHEET

1. Distance:
   1 ft. = +5
   2 ft. = +4
   3 ft. = +3
   4 ft. = +2
   5 ft. = +1

2. Verbal
   Read instructions
   Makes identifying or directive statements, e.g., "I think this is . . ."); "This looks like it should go here . . ."
   Requests help
   Gives suggestions

3. Behavioral
   Handles materials
Appendix B

The tests which follow are part of a research study. The goal of this research is to better understand human behavior. Since these tests are experimental, in fact part of what we are studying, we cannot interpret your individual results back to you. However, if you wish to know the results of the whole study, write your mailing address below and write "Results."

If you wish us to inform your instructor of your participation as a subject, write his or her name below and the course number of name.

Participation in this study is completely voluntary. If you choose not to participate, you may discontinue at any time by not returning this material. If you choose to volunteer for this study, the filling out of the following material will show your consent to serve as a subject.

Thank you for your participation in our study. You have greatly helped two graduate students.

If you have any questions, please contact:

Leon Peek, Ph.D.
Roz Roesel
Psychology Department, NTUS
Appendix B—Continued

Would you be kind enough to supply the following information about yourself?

Name:___________________________________________________________

Address:_________________________________________________________________

Phone:_________________________________________________________________

For the following information, please write the appropriate number in the space preceding each item.

1. _____ My age is (1) 16-19 (2) 20-25 (3) 26-29 
   (4) 30-35 (5) 36+

2. _____ My sex is (1) female (2) male

3. _____ My race is (1) Hispanic (2) Am. Indian
   (3) Black (4) Caucasian (5) Jewish
   (6) Other

4. _____ The geographical area in which I grew up is
   (1) Southwest (2) Southeast (3) Northeast
   (4) Northwest

The items below inquire about what kind of person you think you are. Each item consists of a pair of characteristics, with the letter A - E in between. For example:

Not at all Artistic A...B...C...D...E Very Artistic

Each pair described contradictory characteristics -- that is, you cannot be both at the same time, such as very artistic and not at all artistic. The letters form a scale between the two extremes. You are to choose a letter which describes where you fall on the scale. For example, if you think you have no artistic ability, you would choose A. If you think you are pretty good, you might choose D. If you are only medium, you might choose C, and so forth. Write the appropriate letter in the space before the pair of characteristics.

5. _____ Not at all aggressive A...B...C...D...E Very aggressive

6. _____ Not at all independent A...B...C...D...E Very independent
7. ____ Not at all emotional
A...B...C...D...E
Very emotional

8. ____ Very submissive
A...B...C...D...E
Very dominant

9. ____ Not at all excitable in a major crisis
A...B...C...D...E
Very excitable in a major crisis

10. ____ Very passive
A...B...C...D...E
Very active

11. ____ Not at all able to devote self completely to others
A...B...C...D...E
Able to devote self completely to others

12. ____ Very rough
A...B...C...D...E
Very gentle

13. ____ Not at all helpful to others
A...B...C...D...E
Very helpful to others

14. ____ Not at all competitive
A...B...C...D...E
Very competitive

15. ____ Very home oriented
A...B...C...D...E
Very worldly

16. ____ Not at all kind
A...B...C...D...E
Very kind

17. ____ Indifferent to others' approval
A...B...C...D...E
High needful of others' approval

18. ____ Feelings not hurt easily
A...B...C...D...E
Feelings hurt easily

19. ____ Not at all aware of others' feelings
A...B...C...D...E
Very aware of others' feelings

20. ____ Can make decisions easily
A...B...C...D...E
Has difficulty making decisions

21. ____ Gives up very easily
A...B...C...D...E
Never gives up easily

22. ____ Never cries
A...B...C...D...E
Cries very easily

23. ____ Not at all self-confident
A...B...C...D...E
Very self-confident

24. ____ Feels very inferior
A...B...C...D...E
Feels very superior
### Appendix B--Continued

25. ___ Not at all understanding of others A...B...C...D...E Very understanding of others

26. ___ Very cold in relations with others A...B...C...D...E Very warm in relations with others

27. ___ Very little need for security A...B...C...D...E Very strong need for security

28. ___ Goes to pieces under pressure A...B...C...D...E Stands up well under pressure

Please circle T (true) or F (false) to each statement as it refers to you.

1. My worries seem to disappear when I get into a crowd of lively friends T F

2. I think I would like the work of a librarian T F

3. Whenever possible I avoid being in a crowd T F

4. I like mechanics magazines T F

5. I would certainly enjoy beating a crook at his own game T F

6. When I take a new job, I like to be tipped off on who should be gotten next to T F

7. I have had some very unusual religious experiences T F

8. I would like to be a singer T F

9. One or more members of my family is very nervous T F

10. I feel that it is certainly best to keep my mouth shut when I am in trouble T F

11. I am attracted by members of the opposite sex T F

12. When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing T F

13. The man who had most to do with me when I was a child (such as my father, stepfather, etc.) was very strict with me T F
Appendix B—Continued

14. I am very strongly attracted by members of my own sex  

15. Christ performed miracles such as changing water into wine  

16. I used to like drop the hankerchief  

17. I pray several times a week  

18. I have often wished I were a girl. (or if you are a girl) I have never been sorry that I am a girl  

19. I feel sympathetic towards people who tend to hang on to their troubles and griefs  

20. I enjoy reading love stories  

21. I am afraid of finding myself in a closet or small closed place  

22. I like poetry  

23. Dirt frightens or disgusts me  

24. My feelings are not easily hurt  

25. I think Lincoln was greater than Washington  

26. I think I would like the kind of work a forest ranger does  

27. In my home we have always had the ordinary necessities (such as enough food, clothing, etc).  

28. I sometimes tease animals  

29. I am made nervous by certain animals  

30. I would like to be a florist  

31. I feel tired a good deal of the time  

32. It takes a lot of argument to convince most people of the truth  

33. I never attend a sexy show if I can avoid it  

34. I would like to be a nurse
35. If I were an artist I would like to draw children  
36. I like to go to parties and other affairs where there is lots of fun  
37. I sometimes feel that I am about to go to pieces  
38. I frequently find it necessary to stand up for what I think is right  
39. I have often been frightened in the middle of the night  
40. I believe in a life hereafter  
41. I very much like horseback riding  
42. I enjoy a race or a game better when I bet on it  
43. My skin seems to be unusually sensitive to touch  
44. Most people are honest chiefly through fear of being caught  
45. I feel weak all over much of the time  
46. My table manners are not quite as good at home as when I am out in company  
47. I have no difficulty in keeping my balance in walking  
48. I like dramatics  
49. I like to flirt  
50. I like collecting flowers or growing houseplants  
51. I believe my sins are unpardonable  
52. I have never indulged in any unusual sex practice  
53. I frequently find myself worrying about something  
54. At times my thoughts have raced ahead faster than I could speak them  
55. I like science  
56. I like to cook
Appendix B--Continued

57. I like to talk about sex
58. I would like to be a soldier
59. I get mad easily and then get over it soon
60. I used to keep a diary
61. I brood a great deal
62. I do not have a great fear of snakes
63. I dream frequently about things that are best kept to myself
64. I am worried about sex matters
65. My way of doing things is apt to be misunderstood by others
66. My hands have not become clumsy or awkward
67. I have had blank spells in which my activities were interrupted and I did not know what was going on around me
68. I daydream very little
69. I can be friendly with people who do things which I consider wrong
70. If I were a reporter I would very much like to report news of the theatre
71. If I were an artist I would like to draw flowers
72. I would like to be a journalist
73. When I leave home I do not worry about whether the door is locked and the windows closed
74. In walking I am very careful to step over sidewalk cracks

(KP: cc 76 = 3, cc 77-80) ___ ___ ___ ___)
Appendix B—Continued

1. At times I hear so well it bothers me  T  F
2. I have never had any breaking out on my skin that has worried me  T  F
3. Often I cross the street in order not to meet someone I see  T  F
4. I frequently find myself worrying about something  T  F
5. I have strange and peculiar thoughts  T  F
6. I think I would like the work of a building contractor  T  F
7. Sometimes I enjoy hurting persons I love  T  F
8. I like science  T  F
9. Sometimes some unimportant thought will run through my mind and bother me for days  T  F
10. I very much like hunting  T  F
11. I am not unusually self conscious  T  F
12. Some of my family have habits that bother and annoy me very much  T  F
13. I am embarrassed by dirty stories  T  F
14. I should like to belong to several clubs or lodges  T  F
15. I try to remember good stories to pass them on to other people  T  F
16. I like to talk about sex  T  F
17. I have a good appetite  T  F
18. I have been disappointed in love  T  F
19. I have diarrhea once a month or more  T  F
20. I believe there is a Devil and Hell in afterlife  T  F
21. At times I have fits of laughing and crying that I cannot control  T  F
Appendix B—Continued

22. I like to be with a crowd who plays jokes on one another  
   T  F

23. I find it hard to keep my mind on a task or job  
   T  F

24. I was a slow learner in school  
   T  F

25. I have had very peculiar and strange experiences  
   T  F

26. If I were an artist I would like to draw flowers  
   T  F

27. I have a cough most of the time  
   T  F

28. It does not bother me that I am not better looking  
   T  F

29. I seldom worry about my health  
   T  F

30. I am entirely self confident  
   T  F

31. My sleep is fitful and disturbed  
   T  F

32. I have often felt that strangers are looking at me critically  
   T  F

33. When I am with people I am bothered by hearing very queer things  
   T  F

34. Most people make friends because friends are likely to be useful to them  
   T  F

35. I am in just as good physical health as most of my friends  
   T  F

36. Once in a while I feel hate toward members of my family whom I usually love  
   T  F

37. Everything is turning out just like the prophets of the Bible said it would  
   T  F

38. If I were a reporter I would very much like to report sporting news  
   T  F

39. Parts of my body often have feelings like burning, tingling, crawling, or like "going to sleep"  
   T  F

40. I like "Alice in Wonderland" by Lewis Carroll  
   T  F

41. I am easily downed in an argument  
   T  F
Appendix B—Continued

42. I wish I were not bothered by thoughts about sex  T  F
43. I do many things which I regret afterwards (I regret things more or more often than others seem to)  T  F
44. I think that I feel more intensely than most people do  T  F
45. I go to church almost every week  T  F
47. There never was a time in my life when I liked to play with dolls  T  F
48. Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right  T  F
49. I like collecting flowers or growing house plants  T  F
50. I like to cook  T  F
51. During the past few years I have been well most of the time  T  F
42. I have never had a fainting spell  T  F
53. When I get bored I like to stir up some excitement  T  F
54. My hands have not become clumsy or awkward  T  F

(KP: cc 76 = 4, cc 77-80:  ___  ___  ___)
Appendix C

Name:_______________________________

Complete the following. Each dash (___) calls for either a number or a letter to be filled in. Every line is a separate item. Take the items in order, but don't spend too much time on any one.

start here

(1) 1 2 3 4 5 ___
(2) white black short long down ___ ___
(3) AB BC CD D ___
(4) Z Y X W V U ___
(5) 12321 23432 34543 456 ___ ___
(6) NE/SW SE/NW E/W N/ ___
(7) escape scape cape ___ ___
(8) oh ho rat tar mood ___ ___ ___
(9) A Z B Y C X D ___
(10) tot tot bard drab 537 ___ ___
(11) mist is wasp as pint in tone ___ ___
(12) 57326 73265 32657 26573 ___ ___ ___ ___
(13) knit in spud up both to stay ___ ___
(14) Scotland landscape scapegoat ___ ___ ee
tee
(15) surgeon 1234567 snore 17635 rogue ___ ___ ___ ___
(16) tam tan rib rid rat raw hip ___ ___
(17) tar pitch throw saloon bar rod fee tip end plank ___ ___ ___ meals
(18) 3124 82 73 154 46 13 ___
(19) lag leg pen pin big bog rob ___ ___
(20) two w four r one o three ___
References


