

SEX-ROLE AND NEED CONFIGURATION

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ABSTRACT

This study examined configurations of needs for various sex-role typologies. 134 undergraduates completed the BSRI and the Adjective Check List. Based upon median splits of the Masculine and Feminine scales, subjects were assigned to one of four sex-role categories: Androgynous, Masculine, Feminine, and Undifferentiated. Within each sex-role category, the t-scores for the 15 need scales were factor analyzed using a varimax rotation. In each case, a four-factor solution appeared most meaningful. Additionally, coefficients of congruence were calculated between factors for each sex-role pair, and a procedure devised to test the statistical significance of factor structure similarity between groups. As hypothesized, the Androgynous and Undifferentiated individuals were most dissimilar whereas the Feminine and Undifferentiated were most similar. The results confirm the findings of previous studies that have examined personality attributes in isolation. Discussion of the factor structures of the need scales is presented.

INTRODUCTION

The differentiation of sex-role into typological quadrants based on masculinity and femininity as independent and thus complementary and orthogonal dimensions (Bem, 1974; Berzins, Welling & Wetter, 1978; Heilbrun, 1976; Spence, Helmreich & Stapp, 1975) has led to a vigorous search for the adjustive — personality dimensions associated with the different typologies. In general, the research indicates that androgynous and masculine individuals possess greater degrees of adaptability and flexibility, while feminine sex-typed or undifferentiated (low-low scorers) individuals are less adaptable when behavior not subsumed by their sex-role is necessary.

More specifically, a balance of masculine and feminine traits has been strongly related to psychological health (Cristall & Dean, 1976; Nevill, 1977), flexibility in engaging in tasks irrespective of their being masculine or feminine (Bem & Lenney, 1976) and self-esteem (Spence et al., 1975). The relationship of self-esteem and sex role is equivocal; Spence found sex-typed individuals to display intermediate levels of self-esteem, with androgynous persons having the highest and undifferentiated the lowest levels, while Bem (1977) reported no differences between androgynous and masculine subjects. Recently, Erdwins, Small & Gross (1980) also found that masculine and androgynous individuals did not differ significantly on a number of measured aspects of self-concept, and

consistently obtained more positive scores than feminine and undifferentiated individuals. While the undifferentiated group clearly differed significantly from the androgynous and masculine groups on many variables, they differed only once from the feminine group. Also of interest in the Erdwins et al. study was that masculine persons reported significantly less anxiety than the other three sex-role groups. While the research is unequivocal concerning masculinity and self-esteem, with consistently strong positive relationships found, it is equivocal concerning femininity and self-esteem, with correlations ranging from slightly positive to slightly negative (cf. Spence & Helmreich, 1978). Despite this, the research indicates that the undifferentiated group fares the poorest in many areas of psychological adjustment (e.g., Baucom & Brown, 1979; Bem, 1977; Cristall & Dean, 1976; Erdwins et al., 1980; Nevill, 1977; Small, Gross, Erdwins & Gesner, 1979b; Spence et al., 1975).

While it is usually androgynous persons who are found to have more positive psychological attributes, this is not always the case. Jones, Chernovetz & Hansson (1978), using measures of neurosis, introversion, helplessness, and sexual maturity, among others, found that masculinity was most closely associated with their measures of psychological adjustment. Though there are some differing findings, there is a remarkable consistency across numerous studies. Considering that the median-split procedure limits generalizability and that the BSRI is not a factorially "pure" instrument (Gross, Batlis, Small & Erdwins, 1979); consistency of results between studies is especially salient. Hence, Kelly, Furman & Young (1978) and Small, Erdwins & Gross (1979a) concluded that due to poor classification agreement across measures that the personality or social characteristics related to a particular sex-role may be limited in its validity to the scale for which the relationship is found.

This study took a slightly different focus than many of the above studies. Whereas quantitative measures of psychological attributes are important, in this study the investigators were interested in examining the configuration of needs by sex-role, this method allowing a closer examination of the personality makeup between sex-role types. Since androgynous and undifferentiated individuals have consistently been found to differ from each other on a wide variety of measures, it was hypothesized that these two types would be most dissimilar in their configuration of needs. Also, because the feminine and undifferentiated groups usually do not differ from each other in these same studies, it was expected that these two groups would show a close congruency in the configuration of needs.

METHOD

SUBJECTS AND PROCEDURE

The subjects were 52 males and 84 females, with a mean age of 21.4 years, enrolled in undergraduate courses at a state university. All subjects were given the Bem Sex-Role Inventory (BSRI; Bem, 1974) and the Adjective Check List (ACL; Gough & Heilbrun, 1965), which consists of 300 adjectives. Standard instructions were utilized for both measures.

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Medians for the masculine and feminine scales of the BSRI were derived for males and females separately; subjects were assigned to one of four sex-role categories based upon these median splits. Male subjects whose scores fell at or above the median on the Masculine ($Mdn = 5.30$) and Feminine ($Mdn = 4.64$) scales were classified as Androgynous, those with scores above the Masculine but below the Feminine scale median were classified as Masculine, those above the Feminine but below the Masculine median were classified as Feminine, and those scoring below the median on both scales were classified Undifferentiated. The same procedure was followed for female subjects, using a Masculine scale median of 4.70 and a Feminine scale median of 4.95. Male and female subjects were combined for all further analyses. The number of subjects within each category were: Androgynous, $n = 40$; Masculine, $n = 33$; Feminine, $n = 31$; Undifferentiated, $n = 30$.

RESULTS AND DISCUSSION

For each of the four sex-role categories, ACL T-scores for the 15 different need scales were factor-analyzed with R^2 s entered as initial estimates of communality and using a varimax rotation. In each case, a four-factor solution appeared most meaningful with percentages of common variance accounted for being 97.56% for the Androgynous group, 93.77% for the Masculine group, 92.88% for the Feminine group, and 93.18% for the Undifferentiated group. Variables were considered definers of a factor if they loaded highest on that factor with a loading of .40 or greater. Factor loadings of the need scales for each sex-role group are presented in Tables 1 through 4.

Table 1
FACTOR LOADINGS OF ACL NEED-SCALES
FOR ANDROGYNOUS SEX-ROLE GROUP¹

Need-scale	Factor			
	I	II	III	IV
Achievement	.81	.30	.24	-.24
Dominance	.62	.44	.37	-.47
Endurance	.96	.04	.15	-.09
Order	.94	.05	.05	.10
Intracception	.76	-.02	.31	.06
Nurturance	.74	-.18	.62	-.09
Affiliation	.57	.07	.66	-.24
Heterosexuality	.37	.29	.78	-.14
Exhibition	.15	.68	.53	-.30
Autonomy	.08	.87	.21	-.23
Aggression	.11	.94	.07	-.01
Change	.14	.47	.75	-.09
Succorance	-.56	-.03	-.30	.63
Abasement	.01	-.35	-.11	.93
Deference	.23	-.69	-.09	.55

¹Bold type indicates defining variables.

Table 2
 FACTOR LOADINGS OF ACL NEED-SCALES
 FOR MASCULINE SEX-ROLE GROUP¹

Need-scale	Factor			
	I	II	III	IV
Achievement	.15	.89	-.02	.16
Dominance	.53	.72	.09	.01
Endurance	-.15	.87	-.01	-.14
Order	-.26	.91	-.12	-.13
Intrapeption	-.52	.22	.61	.07
Nurturance	-.35	.02	.88	.12
Affiliation	-.13	.07	.84	.18
Heterosexuality	.11	-.05	.74	-.00
Exhibition	.83	-.10	.24	.03
Autonomy	.74	.03	-.49	.07
Aggression	.68	-.05	-.63	-.05
Change	.04	-.12	.20	.98
Succorance	-.18	-.58	-.19	.06
Abasement	-.82	-.33	.17	.05
Deference	-.81	-.05	.36	-.07

¹Bold type indicates defining variables.

Table 3
 FACTOR LOADINGS OF ACL NEED-SCALES
 FOR FEMININE SEX-ROLE GROUP¹

Need-scale	Factor			
	I	II	III	IV
Achievement	.23	.78	.29	.37
Dominance	.58	.66	.17	.35
Endurance	.19	.90	.23	.23
Order	-.06	.95	.07	.06
Intrapeption	.08	.68	.50	.11
Nurturance	-.04	.43	.78	.35
Affiliation	.09	.38	.59	.50
Heterosexuality	.08	.25	.05	.57
Exhibition	.70	.09	-.17	.53
Autonomy	.88	-.01	-.27	-.02
Aggression	.40	-.17	-.76	.32
Change	.51	.02	.08	.11
Succorance	-.66	-.43	-.45	.16
Abasement	-.87	-.33	-.18	-.15
Deference	-.91	-.03	.29	-.02

¹Bold type indicates defining variables.

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Table 4
 FACTOR LOADINGS OF ACL NEED-SCALES
 FOR UNDIFFERENTIATED SEX-ROLE GROUP¹

Need-scale	Factor			
	I	II	III	IV
Achievement	.52	.40	.61	.16
Dominance	.82	.24	.43	.18
Endurance	-.01	.39	.86	-.26
Order	-.09	.05	.78	-.05
Intracception	-.13	.70	.30	.36
Nurturance	-.17	.93	.18	.15
Affiliation	.04	.90	.13	.21
Heterosexuality	.31	.33	-.17	.69
Exhibition	.83	-.03	-.08	.31
Autonomy	.85	-.30	-.13	.09
Aggression	.57	-.79	-.12	.07
Change	.66	-.04	-.15	.57
Succorance	-.29	-.74	-.13	.23
Abasement	-.88	-.26	-.16	.13
Deference	-.86	.30	.09	-.06

¹Bold type indicates defining variables.

Coefficients of congruence (Harman, 1967) were computed for each possible pair of factors within each possible two-group combination (See Tables 5 through 10). Although no tests of statistical significance are appropriate for these coefficients, they did facilitate the "matching" of factor for pairs of sex-role groups.

Table 5
 COEFFICIENTS OF CONGRUENCE (r^c) FOR FACTORS
 OBTAINED FOR THE ANDROGYNOUS AND
 UNDIFFERENTIATED SEX-ROLE GROUPS¹

Androgynous Factors	Undifferentiated Factors			
	I	II	III	IV
I	.22	.70	.84	.30
II	.92	.25	.01	.44
III	.54	.58	.20	.78
IV	.80	.34	.22	.11

¹Bold type indicates factor matches for the purpose of analyzing differences between respective factor loadings.

Table 6
 COEFFICIENTS OF CONGRUENCE (r^c) FOR
 FACTORS OBTAINED FOR THE ANDROGYNOUS
 AND MASCULINE SEX-ROLE GROUPS¹

Androgynous Factors	Masculine Factors			
	I	II	III	IV
I	.10	.82	.43	.09
II	.85	.20	.28	.30
III	.22	.27	.67	.56
IV	.71	.45	.05	.11

¹Bold type indicates factor matches for the purpose of analyzing differences between respective factor loadings.

Table 7
 COEFFICIENTS OF CONGRUENCE (r^c) FOR
 FACTORS OBTAINED FOR THE ANDROGYNOUS
 AND FEMININE SEX-ROLE GROUPS¹

Androgynous Factors	Feminine Factors			
	I	II	III	IV
I	.27	.96	.63	.62
II	.85	.18	.40	.52
III	.52	.53	.48	.81
IV	.87	.43	.24	.41

¹Bold type indicates factor matches for the purpose of analyzing differences between respective factor loadings.

Table 8
 COEFFICIENTS OF CONGRUENCE (r^c) FOR
 FACTORS OBTAINED FOR THE MASCULINE
 AND UNDIFFERENTIATED SEX-ROLE GROUPS¹

Masculine Factors	Undifferentiated Factors			
	I	II	III	IV
I	.89	.35	.15	.13
II	.31	.45	.93	.09
III	.18	.84	.14	.53
IV	.35	.10	.15	.63

¹Bold type indicates factor matches for the purpose of analyzing differences between respective factor loadings.

Table 9

COEFFICIENTS OF CONGRUENCE (r^c) FOR
FACTORS OBTAINED FOR THE MASCULINE
AND FEMININE SEX-ROLE GROUPS¹

Masculine Factors	Feminine Factors			
	I	II	III	IV
I	.85	.03	.45	.11
II	.36	.93	.40	.34
III	.15	.38	.80	.51
IV	.30	.01	.65	.21

¹Bold type indicates factor matches for the purpose of analyzing differences between respective factor loadings.

Table 10

COEFFICIENTS OF CONGRUENCE (r^c) FOR
FACTORS OBTAINED FOR THE FEMININE
AND UNDIFFERENTIATED SEX-ROLE GROUPS¹

Feminine Factors	Undifferentiated Factors			
	I	II	III	IV
I	.95	.06	.12	.26
II	.27	.67	.91	.30
III	.17	.97	.48	.13
IV	.52	.42	.33	.66

¹Bold type indicates factor matches for the purpose of analyzing differences between respective factor loadings.

FACTOR INTERPRETATIONS FOR THE ANDROGYNOUS GROUP

Factor I appears to represent a dimension of "Sensitivity and Purposiveness," and accounts for 36.32% of the common variance. The defining variables for this dimension include Achievement, Dominance, Endurance, Order, Intraception, and Nurturance. Individuals high on this dimension would seem to be resourceful

and goal-centered, yet alert to and considerate of others' needs and qualities. Ambition tempered with empathy is another way to characterize high-scores on Factor I.

Factor II, accounting for 24.98% of the common variance, could best be termed "Assertive Individualism" since high scores on the positive defining variables (Exhibition, Autonomy, and Aggression) combined with low scores on the negative definer (Deference) reveal forceful independence in the service of one's objectives. An individual who obtained a high score on this dimension would probably tend to be strong-willed, competitive, and desirous of a dominant role in his/her relationships.

"Spontaneous Affection" is the label chosen to represent Factor III, which accounts for 20.49% of the common variance. Defining variables include: Affiliation, Heterosexuality, and Change. High scorers tend to be warm, expressive, and to derive satisfaction from initiating numerous relationships.

Factor IV, accounting for 15.77% of the common variance, is defined by only two need-scales, Abasement and Succorance. This has been labeled an "Inferiority" dimension in that high scorers gravitate toward self-criticism and emotional immaturity. Low scorers, on the other hand, could be described as self-confident and less dependent on sympathetic support

FACTOR INTERPRETATIONS FOR THE MASCULINE GROUP

Factor I represents the same "Assertive Individualism" as Factor II for the Androgynous group; the coefficient of congruence for these two factors was .85, the highest coefficient for any pair of factors across the Androgynous/Masculine groups. Accounting for 30.97% of the common variance, Factor I includes all the definers of Factor II for the Androgynous group plus Abasement (negative loading). The inclusion of Abasement would seem to underscore the self-confident attitude of someone scoring high on this dimension.

Accounting for 27.35% of the common variance, Factor II is quite similar to "Sensitivity and Purposiveness" (Factor I) in the Androgynous group ($r^c = .82$). Intraception and Nurturance did not emerge as defining variables, however; given the absence of an interpersonal sensitivity aspect, this dimension was consequently labeled "Self-reliant Goal-directedness."

Factor III (26.74% of the common variance) is clearly an "Empathy" dimension; defining variables include Nurturance, Affiliation, Heterosexuality, and Intraception. High-scorers appear to be individuals who are alert to the feelings/ qualities of others and who purposefully seek out meaningful relationships characterized by emotional sharing.

The last factor accounted for only 8.68% of the common variance and was defined by only one need-scale, Change. Only in the Masculine group did a distinct "Change" dimension emerge. For members of this sex-role category, the need to seek new experiences is an important drive *per se* and is not necessarily tied to interpersonal or achievement needs.

FACTOR INTERPRETATION FOR THE FEMININE GROUP

Factor I, accounting for the greatest percentage of common variance² among the four (32.37%), was labeled "Independence vs. Submissiveness." Of the six defining variables, Autonomy, Exhibition, and Change represent a self-assured venturesomeness; the remaining definers (Deference, Abasement, and Succorance, negative loadings) are indicative of a dependence bred of perceived inferiority. It is interesting to note that in the Androgynous group, independence (Factor II) and inferiority (Factor IV) emerged as uncorrelated dimensions; thus it would be possible for Androgynous individuals to express themselves in an assertive, independent manner while maintaining serious doubts as to their true worth and ability to function without extensive emotional support. Within the Feminine group, however, a bipolarity exists such that expressions of individualistic outgoingness contraindicate expressions of timidity and vice-versa.

The second factor accounted for 30.53% of the common variance; since it is almost identical to Factor I in the Androgynous group, it was given the same label of "Sensitivity and Purposiveness." The coefficient of congruence between Factors II and I for the Feminine and Androgynous groups respectively was .85. Nurturance did not serve as a definer for Feminine Factor II, however, indicating that this need dimension is less characterized by sentiment and benevolence than is Androgynous Factor I.

Factor III represents an "Affection" dimension for the Feminine group; it accounts for 18.59% of the common variance and is defined by Nurturance, Affiliation, and Aggression (negative loading). In both the Androgynous and Masculine groups, Aggression loaded highest on an "Assertive Individualism" dimension; i.e., the socially more positive aspects of the Aggression need-scale are predominant. For the Feminine sex-role group, the *opposite* of Aggression appears to be socially positive (forgiving, tolerant, etc.) while Aggression *per se* is perceived as socially undesirable. Thus, a bipolarity similar to that in Factor I exists: high scorers tend to be caring, tolerant, and friendly, while low-scorers are hostile, arrogant, and disruptive.

The last factor accounted for 11.39% of the common variance and was defined by only one need-scale, Heterosexuality. It should be noted that in the Androgynous and Masculine groups, this need-scale loaded on the same factor as Affiliation, while in the Feminine group, it appears to represent a "Compartmentalized Sexuality."

FACTOR INTERPRETATIONS FOR THE UNDIFFERENTIATED GROUP

Factor I accounts for 36.48% of the common variance and appears quite similar to the "Independence vs. Submissiveness" dimension within the Feminine group ($r^c = .95$). Four of the six defining variables represent self-confident assertiveness (Dominance, Exhibition, Autonomy, and Change) while the remaining two (Abasement and Deference, negative loadings) are indicative of self-deprecation and withdrawal.

The second factor, accounting for 30.53% of the common variance, was labeled "Mature Empathy." Defining variables with positive loadings included Nurturance, Affiliation, and Intraception; those loading negatively were Aggression and Succorance. This dimension is most similar to the "Affection" factor for the Feminine group ($r^c = .91$); however, the inclusion of Intraception places greater emphasis on understanding instead of "gut-level" supportiveness.

Factor III represents a "Purposiveness" dimension for the Undifferentiated group; it accounts for 16.44% of the common variance and is defined by Endurance, Order, and Achievement. High scorers on this factor would tend to evidence a methodical persistence in the attainment of personal objectives. The similarity to Factor II in the Masculine category should be noted ($r^c = .93$); however, the self-reliant/independent aspects of goal pursuit are decidedly less important. Hence, a high-scorer on Masculine Factor II tends to be a *self-reliant go-getter*, while a high-scorer on Undifferentiated Factor III tends to be just a go-getter.

The last factor was defined by only the Heterosexuality variable and accounts for 9.72% of the common variance. As in the Feminine group, this dimension appears to represent "Compartmentalized Sexuality."

ANALYSIS OF SIMILARITY OF FACTOR STRUCTURES FOR SEX-ROLE GROUPS

No established technique exists for determining the statistical significance of factor-structure similarity between groups. In an effort to provide some such measure, the following procedure was devised:

1. For each two-group combination, z-tests were performed for each pair of loadings on matching factors. Since loadings in the factor-structure matrix may be interpreted as correlations between variables and factors (Mulaik, 1972), it is possible to convert loadings to Fisher z' coefficients and test for significant differences.

2. The ratio of statistically significant differences to possible differences (60 for each intergroup comparison) was computed. The greater this ratio, the most dissimilar would be the factor structures of the two groups under consideration.

3. The ratio of each pair of groups was tested against that of every other pair to ascertain whether significant differences in dissimilarity existed (z-tested for differences in proportions, Bruning & Kintz, 1968). Results of these tests between ratios are presented in Table 11.

As anticipated, the Feminine and Undifferentiated groups were quite similar in terms of the ACL need-scale factor structures. In both groups, a factor emerged on which Autonomy, Exhibition, and Changed loaded positively and Deference and Abasement loaded negatively. It might be hypothesized that for individuals in these sex-role classifications, there exists a tendency to be either assertive and independent or self-deprecating and yielding. For subjects classified as Androgynous, however, it would be possible to score high on an Inferiority dimension (Factor IV), yet still manifest assertiveness and poise in dealing with others (Factor II). It might further be hypothesized that the capacity to deal simultaneously with these two seemingly contradictory facets of one's

Table 11

**TESTS OF DIFFERENCES BETWEEN PROPORTIONS
(OF SIGNIFICANT DIFFERENCES ON RESPECTIVE
FACTOR LOADINGS) FOR SEX-ROLE PAIRS**

Sex-role Pair	Proportion of Significant Differences	z's for Differences Between Proportions				
		A/U	A/M	A/F	M/U	M/F
Androgynous/Undifferentiated	.33					
Androgynous/Masculine	.27	1.13				
Androgynous/Feminine	.21	2.03*	0.91			
Masculine/Undifferentiated	.13	3.78**	2.62**	1.71		
Masculine/Feminine	.15	3.40**	2.44*	1.34	0.37	
Feminine/Undifferentiated	.07	5.44**	4.37**	3.45**	1.72	2.08*

* $p < .05$ ** $p < .01$

personality is a key to the adaptability and psychological health associated with a balance of masculine and feminine traits (Bem & Lenney, 1976; Crisall & Dean, 1976; Nevill, 1977).

One striking similarity between the Feminine and Undifferentiated groups was the emergence of a dimension of Compartmentalized Sexuality; for subjects falling into either of these sex-role categories, the need to "seek the company of and derive emotional satisfaction from interactions with opposite-sexed peers (Gough & Heilbrun, 1965, p. 10)" remains relatively isolated from a more general affiliative need. In this respect, Androgynous and Masculine men and women are very much alike, with the need for opposite-sexed interactions being only part of an overall interpersonal adaptability.

In terms of the ratio of significant to possible differences between loadings, the Androgynous/Undifferentiated pair proved significantly more dissimilar than any other except the Androgynous/Masculine pair where no statistically significant difference was obtained. The Androgynous/Masculine pair, in turn, appeared significantly more dissimilar than three of the others (Masculine/Undifferentiated, Masculine/Feminine, and Feminine/Undifferentiated). The Androgynous/Feminine pair proved significantly more dissimilar than only the Feminine/Undifferentiated comparison.

Again in terms of significant to possible factor-loading differences, the Feminine/Undifferentiated comparison achieved a significantly lower dissimilarity index than four of the other five sex-role group comparisons. Put

another way, the Feminine/Undifferentiated pair could be interpreted as the most *similar* two-group combination and the Androgynous/Undifferentiated pair as the most *dissimilar*.

Again, as expected, the study found that the Androgynous and Undifferentiated individuals showed a clustering of traits that among all of the comparisons of sex-role typologies, was most dissimilar. While there are some exceptions, a consistent finding in the literature is that this group is clearly different from the Androgynous group on a number of adjustive dimensions (Baucom & Brown, 1979; Bem, 1977; Cristall & Dean, 1976; Erdwins et al., 1979; Nevill, 1979; Small et al., 1979; Spence et al., 1975). While much of the research into the characteristics of the sex-role typologies has revolved around an examination of personality attributes, this study involved the examination of a personality trait clusters, a method which encompasses, builds upon and confirms the other approach.

FOOTNOTES

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² All variance percentages cited refer to the rotated solution.

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