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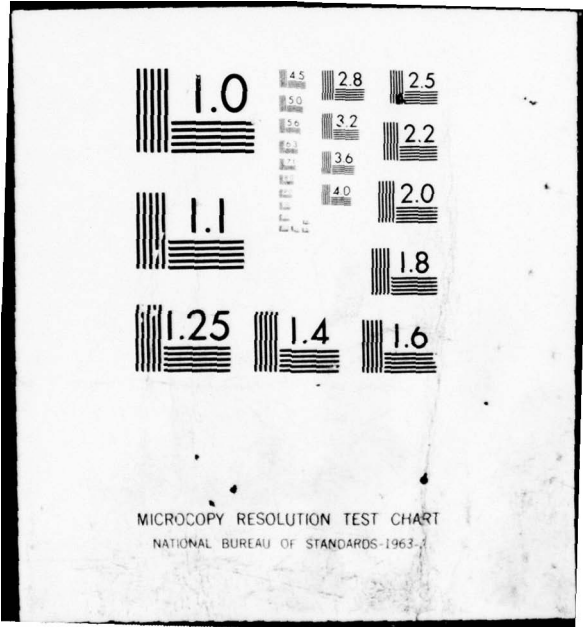
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PSYCHOLOGICAL ANDROGYNY
IN A WORKING POPULATION WITH COMPARISON
TO A COLLEGE SAMPLE

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The research reported investigated sex role orientations in a working population with comparison to a college sample. The working sample of 124 women and 104 men include 44 first line supervisors and 134 of their subordinates in the Bell Telephone Company of Pennsylvania. The college sample included 56 women from Bryn Mawr College and 48 men from Haverford College. The Bem Sex-Role Inventory (BSRI), with additional work-related and personal interaction items, was administered to the two		

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samples as a self-description scale, and to the working sample as a target attribution scale to describe male and female co-workers. When BSRI scores were classified according to median splits for the industrial sample, men tended to be classified as masculine and undifferentiated (low on both masculine and feminine dimensions) more frequently than women. Women were more frequently classified as feminine. Among members of the college sample, there was no statistically significant relationship between sex and sex role orientation, and no significant difference between men's and women's mean scores on the masculinity or femininity scales. The college and industrial samples differed with respect to both the level and distribution of BSRI scale scores and the factor structure of their self-ratings. This raises the question of the generalizability of conclusions based on sex-role research using college students to non-college populations. The relationship of sex role orientation and several background variables was explored. The deletion of boundary cases, when using median splits to define the four sex role categories, is suggested as a means of clarifying relationships. Androgynous sex role orientation was found to be associated with education, environmental opportunity, and economic security.

Sex role orientation was weakly associated with favorable perceptions of opposite sex co-workers, Androgynous (high on both masculine and feminine dimensions) and masculine men, and androgynous and feminine women assigned the most favorable ratings to both same and opposite sex co-workers.

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PREFACE

The Office of Naval Research has sponsored research by the University City Science Center into issues pertinent to the utilization of women in the Navy. The purpose of the research is to investigate, in a population similar to the enlisted force in the Navy, differences between men and women in perceptions and attitudes that could have an impact on their efficiency and satisfaction on the job. The research program has investigated:

- Sex differences in attributions of success and failure (Kipnis & Kidder, 1977)
- Multidimensional scaling (Tzeng & Landis, 1977)
- Psychological androgyny in a working population
- Working relationships between men and women (Good, Kirkland & Grissom, 1979)
- Sex differences with respect to family and career values in a working population (Good & Kirkland, 1979a)
- Sex differences in attitudes toward job characteristics (Good & Kirkland, 1979b)

The research described in this report investigated sex role orientations in a working population.

INTRODUCTION

The concept of psychological androgyny (Bem, 1974) offers new perspectives on individual differences, sex differences and relationships between men and women in work settings. Psychological androgyny refers to the extent to which an individual's self-concept accommodates both stereotypically masculine and stereotypically feminine characteristics (Bem, 1974). By describing masculinity and femininity as independent clusters of personality characteristics rather than as opposite points on a continuum, proponents of psychological androgyny have challenged the notion that psychological health is characterized by the presence in the personality of sex-appropriate traits and the exclusion of attributes associated with the opposite sex. Bem's hypothesis is that the lives of "masculine" men and "feminine" women are constricted by a need to keep their behavior consonant with an internalized sex role standard and that androgynous individuals of both sexes enjoy a broader range of affect and behave effectively in wider ranges of situations (Bem, 1975b).

Bem's hypothesis has implications for advocates of more liberal definitions of sex roles, for opponents of sex role stereotyping in school texts, and for organizations attempting to integrate men and women more fully into management cadres and work forces. The research described in this report investigated attitudes and relationships among members of mixed sex and single sex work groups supervised by men and by women. The sample was drawn from blue-collar workers and their supervisors employed by the Bell Telephone Company of Pennsylvania. A group of students from Bryn Mawr and Haverford Colleges was used to provide a basis for comparing the responses of Bell Telephone workers with the type of population on which most previous research on androgyny has been done.

The Bem Sex-Role Inventory (BSRI) (Bem, 1974) consists of sixty personality characteristics distributed equally among three scales, Masculinity, Femininity and Social Desirability (Table 1). The twenty characteristics in the Masculinity scale were all judged to be significantly more desirable in American society for men than for women by panels of college students; the twenty Femininity items were rated as more desirable for women than for men.

TABLE 1
ITEMS ON THE MASCULINITY, FEMININITY AND SOCIAL
DESIRABILITY SCALES OF THE BSRI

<u>Masculine Items</u>	<u>Feminine Items</u>	<u>Neutral Items</u>
Acts as a Leader	Affectionate	Adaptable
Aggressive	Cheerful	Conceited
Ambitious	Childlike	Conscientious
Analytical	Compassionate	Conventional
Assertive	Does Not Use Harsh Language	Friendly
Athletic	Eager to Soothe Hurt Feelings	Happy
Competitive	Feminine	Helpful
Defends Own Beliefs	Flatterable	Inefficient
Dominant	Gentle	Jealous
Forceful	Gullible	Likable
Has Leadership Abilities	Loves Children	Moody
Independent	Loyal	Reliable
Individualistic	Sensitive to the Needs of Others	Secretive
Makes Decisions Easily	Shy	Sincere
Masculine	Soft Spoken	Solemn
Self-Reliant	Sympathetic	Tactful
Self-Sufficient	Tender	Theatrical
Strong Personality	Understanding	Truthful
Willing to Take a Stand	Warm	Unpredictable
Willing to Take Risks	Yielding	Unsystematic

Subjects rated themselves using a 7-point scale on the degree to which each characteristic was true about them. Classification of individual subjects as having masculine, feminine, androgynous, or undifferentiated sex role orientations was accomplished by comparing the masculinity and femininity scale scores of each subject with the median masculinity and femininity scale scores for the sample as a whole (Bem and Watson, 1976). Subjects are classified as follows:

		<u>Masculinity Score</u>	
		<u>Above Median</u>	<u>Below Median</u>
<u>Above Median</u>	<u>Femininity Scale</u>	Androgynous	Feminine
<u>Below Median</u>		Masculine	Undifferentiated

These classifications may be used in data analysis, or the masculinity and femininity scale scores may be used directly (Bem, 1977).

Antecedents of Androgyny

The origin of sex role orientations has been conceptualized as the product of an identification process (Freud, 1949; Maccoby, 1959; Mussen & Distler, 1959) and as the outcome of a social learning process involving modeling, reinforcement and culturally approved behaviors (Bandura & Walters, 1963; Heilbrun, 1973). Most recently, research into the cerebral functioning of men and women (McGuinness and Pribram, in press) suggests that differences in the neurological constitution of the brain may partially account for sex differences in verbal and visual-spatial skills.

Recent work with college students (Kelly & Worell, 1976) has indicated that androgynous individuals differ from their sex-typed and undifferentiated peers in their descriptions of parental behaviors. Androgynous men reported high levels of affection from both their mothers and their fathers. Androgynous women described their parents as encouraging intellectual development and achievement more often than did sex-typed or undifferentiated women. Androgynous men and women reported higher levels of warmth and of support for cognitive independence, curiosity and competence from both their parents than did their undifferentiated peers. The authors conclude that "the presence of parents who model and reinforce cross-typed characteristics is related to nontraditional roles in children. The likelihood of an androgynous orientation is especially enhanced when the same-sex parent exhibits cross-typed characteristics " (p. 849).

Behavioral Consequences of Androgyny

Spence et al. (1975) working with a sample of several hundred college students, found that androgynous individuals were highest in self-esteem and undifferentiated subjects were lowest, with sex-typed persons occupying the middle range. The authors also reported that androgynous individuals received more honors and awards, dated more, and had a lower incidence of childhood illness than those whose masculinity and femininity scores were low. An independent study by Bem (1977) found that self-esteem was positively correlated with masculinity and femininity scores in women, but only with masculinity scores in men.

Other investigators have found that androgynous individuals give evidence of greater maturity in their moral judgments (Block, 1973) and have achieved greater role consistency (Heilbrun, 1976). Bem (1975a; Bem, Martyna & Watson, 1976) has conducted a series of experiments involving the observation of college students performing various sex-typed tasks. She found that androgynous individuals of both sexes were more successful in resisting pressures to conform, more playful in interacting with a kitten, and capable of expressive and nurturant behavior in interacting with an infant or a distressed student. In summary, her findings suggested that, for both men and women, strong sex-typing serves to restrict the individual's behavioral repertory in either the instrumental or expressive domain and thus serves to diminish personal and social effectiveness.

Most recently, Ickes & Barnes (1978) reported that androgynous individuals were more at ease talking with people they had never met; they talked, gestured, smiled and looked at each other more frequently than sex-typed individuals. The androgynous individuals interacted more effectively and more often said that they liked the persons they had met.

Finally, in a study relating sex role classifications to personality dimensions, Berzins (Berzins et al., 1978) found that androgynous and undifferentiated persons emerged as polar opposites in social poise and intellectuality. Androgynous individuals of both sexes scored highest and undifferentiated persons lowest in social poise and intellectuality. Masculine and feminine individuals were at opposite ends of the dependency and defensiveness continua. Masculine-typed individuals of both sexes had the lowest dependency scores and the highest defensiveness while feminine-typed individuals had the highest dependency and lowest defensiveness. Androgynous and undifferentiated subjects occupied the middle ground.

The research described above suggests that a four-part sex role classification permits distinctions among individuals who have internalized masculine or feminine characteristics in varying degrees and combinations. Furthermore, there is evidence that, at least among college students, androgynous individuals have a wider repertory of behavioral responses at their disposal and hence are better able to perform effectively and comfortably in a wide range of situations requiring both sex-appropriate and cross-sex behaviors.

The purpose of the research described in this report is to begin the exploration of the following issues:

- Incidence, origins, and consequences of sex role orientation in individuals beyond college age and among blue-collar workers.
- The usefulness of the BSRI in understanding interpersonal perceptions in an adult working population.
- Relationships between sex role orientation and perceptions of co-workers of the same and opposite sex.

METHOD

A sample of college students and a sample of industrial workers were asked to rate themselves using the BSRI. The members of the industrial sample were also asked to use a modified version of the BSRI to rate same and opposite sex peers and either subordinates or supervisors.

Subjects

The college sample consisted of 56 Bryn Mawr College women and 48 Haverford College men selected at random from a pool of volunteers. Both schools have high academic standards. The students in the sample came predominantly from families of high socioeconomic status in which both parents had attended college.

The industrial sample consisted of 44 first line supervisors and 184 of their subordinates in the Bell Telephone Company of Pennsylvania. Respondents worked in both single sex and mixed sex work group and in various types of jobs (see Tables 2 and 3).

TABLE 2

DISTRIBUTION OF INDUSTRIAL SAMPLE BY WORK GROUP TYPE							
Sex of Supervisor	Male	Male	Male	Female	Female	Female	
Sex of Subordinates	Male	Mixed	Female	Male	Mixed	Female	Total
Supervisors	11	7	6	2	9	9	44
Male Subordinates	32	20	0	6	22	0	80
Female Subordinates	0	19	18	0	36	31	104
Total Respondents	43	46	24	8	67	40	228

TABLE 3

DISTRIBUTION OF INDUSTRIAL SAMPLE BY SEX AND JOB TYPE					
	Administration	Outside Craft	Inside Craft	Clerical	Other Non-Craft
Men	28	31	24	6	15
Women	26	0	15	48	35

The sample included 94 white men, 94 white women, 8 black men and 27 black women. Their ages ranged from twenty to fifty-nine, with a median of 32 (Table 4).

TABLE 4

DISTRIBUTION OF INDUSTRIAL SAMPLE BY AGE GROUP AND SEX			
Age Group	Men	Women	Total
20-25	18	33	51
26-30	27	25	52
31-40	24	31	55
41-50	26	22	48
50-59	9	12	21

Most (61%) of the respondents in the industrial sample were married. Of those not married most (74%) expected to marry within the next ten years. Sixty-five percent of those who were married had working spouses. Nearly all were high school graduates (Table 5).

TABLE 5

DISTRIBUTION OF INDUSTRIAL SAMPLE BY EDUCATION AND SEX

Education Completed	Men	Women	Total
Grades 9 - 11	0(0%)	7(6%)	7(3%)
High School Graduate	57(55%)	78(63%)	135(59%)
Some College	40(38%)	31(25%)	71(31%)
College Graduate	7(7%)	7(6%)	14(6%)

The sample represented an extremely stable work force. The mean number of years worked at Bell was 12.7 while the mean number of years worked altogether was only 14.7. Of those expecting to be employed five years hence, 95% said they expected to remain with Bell.

Procedure

The BSRI was administered to the college students in a group setting and returned to a research assistant. For the industrial sample, each subject received a questionnaire and a stamped envelope addressed to the principal investigator. Bell Telephone provided company time for the subjects to complete the questionnaire. Of the 280 workers and supervisors who received the form, 228 (81%) completed and returned it.

RESULTS

Cross-Sample Comparison

The sex role classifications for the male and female subjects in both samples are shown in Table 6.

TABLE 6

SEX ROLE CLASSIFICATION FOR COLLEGE AND INDUSTRIAL SAMPLES

Sample	Sex of Respondents	Androgynous	Masculine	Feminine	Undifferentiated
College	Men	14(29%)	11(23%)	10(21%)	13(27%)
	Women	16(29%)	15(27%)	16(29%)	9(16%)
Industrial	Men	25(24%)	34(33%)	7(7%)	38(37%)
	Women	35(28%)	15(12%)	50(40%)	24(19%)

The most striking finding shown by this table is that, for the college sample, there was no statistically significant relationship between biological sex and sex role classification (chi-square = 2.26, df = 33, $p = .52$). Among those who were sex-typed there were nearly as many subjects who were cross-typed ($N = 25$) as were typed in accordance with their sex ($N = 27$). For the industrial sample, there was a significant relationship between sex and sex role classification (chi-square = 43.21, df = 3, $p < .001$) with many fewer instances of cross-sex typing.

Table 7 shows the mean and standard deviation of the masculinity, femininity and social desirability scale scores.

TABLE 7
SCALE SCORES BY SEX WITHIN SAMPLE

Scale	College			Industrial		
	Males (N=48)	Females (N=56)	t	Males (N=104)	Females (N=124)	t
Masculinity						
Mean	484	476	.58	521	493	3.10*
SD	67.6	71.8		63.4	72.9	
Femininity						
Mean	461	473	1.02	458	503	6.36**
SD	51.1	64.2		54.6	51.5	
Social Desirability						
Mean	496	499	.31	534	539	.76
SD	50.5	49.3		45.3	53.5	

* $p < .01$; ** $p < .001$ (two-tail)

There were no significant differences between males' and females' mean scale scores for the college sample, while industrial men scored significantly higher than women on the masculinity scale and industrial women higher than men on the femininity scale. Cross-sample comparisons indi-

cate that industrial men rated themselves significantly higher than did college men on the masculinity scale ($t = 3.20, p < .01$); the mean difference between industrial women and college women on the femininity scale was also significant ($t = 3.45, p < .001$). Industrial subjects of both sexes scored significantly higher than their college counterparts on the social desirability scale ($p < .001$).

Table 8 indicates the intercorrelations between the scales.

TABLE 8
INTERCORRELATIONS OF MASCULINITY, FEMININITY, AND SOCIAL
DESIRABILITY BY SEX WITHIN SAMPLES

	College				Industrial			
	Males (N=48)		Females (N=56)		Males (N=104)		Females (N=124)	
	Fem.	Soc. Des.	Fem.	Soc. Des.	Fem.	Soc. Des.	Fem.	Soc. Des.
Masculinity	.07	.39**	-.13	.39**	.16*	.33***	.02	.35***
Femininity	-	.35**	-	.16	-	.40***	-	.22**

* $p < .05$; ** $p < .01$; *** $p < .001$

The correlations between masculinity and femininity for the college and industrial samples as a whole were $-.06$ and 0 respectively. These data are consistent with previous findings (e.g., Bem, 1974; Spence et al., 1975) that masculinity and femininity are independent personality dimensions.

The dimensions between samples in sex role classifications by sex (Table 6) and in the mean scales scores for masculinity and femininity (Table 7) suggest more traditional sex role orientations among the members of the industrial sample. The level of endorsement of culturally sex-appropriate characteristics was significantly higher for both men and women in the industrial sample; the two samples were similar in their self-ratings on stereotypically opposite sex characteristics. In this instance, the more androgynous group (i.e., the college sample, whose sex role orientations were statistically unrelated to biological sex) did not reflect higher levels of opposite-sex characteristics but rather lower levels of sex-appropriate characteristics than the less androgynous group. If these self-ratings accurately reflect actual differences in psychological makeup, they suggest that the members of the college group may be no more effective in situations calling for cross-sex behaviors than those in the industrial sample, and less effective in situations requiring stereotypically sex-appropriate behavior.

Content Dimensions of the BSRI

Factor analysis of the BSRI masculinity and femininity scales were conducted to explore the underlying dimensions of the scales for the college and working samples. Principal components factoring was followed by varimax rotation for ten factors with eigenvalues greater than 1.0 (65% of the variance) for the working sample, and for twelve factors (72% of the variance) for the college sample. Seven factors for the industrial sample and nine factors for the college sample were interpreted.

The research reported by Berzins et al. (1978) on psychological androgyny included a factor analysis of the BSRI femininity and masculinity scales for 1,155 undergraduates at the University of Kentucky. The eight factors (accounting for 56% of the variance) discussed by Berzins include four defined exclusively by BSRI masculinity scale items and three defined exclusively by BSRI femininity items. The eighth factor, referring to biological gender, included only the items Masculine and Feminine with opposite signs. There was substantial overlap between the factor structures found by Berzins and the factor structures for our college and industrial samples.

Gender Factor. Complete agreement existed for our two samples and the Berzins sample with regard to the gender factor. Only Masculine and Feminine loaded saliently on this dimension, indicating that biological gender is independent of the psychological dimensions tapped by the remaining items of the BSRI. Loadings were of the order of .90, and had opposite signs.

Nurturance Factor. Substantial agreement existed across samples for the Nurturance factor, composed exclusively of items from the BSRI femininity scale. The factor was identical for the two college samples (Table 9). (Blanks have been left for non-salient loadings.)

TABLE 9

NURTURANCE FACTOR LOADINGS

BSRI Item	Industrial Sample	College Sample
Warm	.79	.79
Tender	.74	.76
Compassionate	.72	.79
Sympathetic	.78	.80
Affectionate	.64	.73
Understanding	.61	.77
Sensitive to Others	.69	.75
Eager to Soothe Hurt Feelings	.69	.66
Gentle	---	.77
Yielding	.55	---
Cheerful	.63	---

For the industrial and college samples, Nurturance was the only factor composed solely of BSRI femininity scale items. Berzins found two other factors composed exclusively of items from the femininity scale - Introversion (Shy, Soft Spoken) and Self Subordination (Childlike, Gullible, Flatterable).

Autonomy and Intellectual Ascendancy Factors. Two identical factors defined the dimensions of personal autonomy and intellectual ascendancy for our college sample and Berzins' college sample. A combination of the items from the Autonomy and Intellectual Ascendancy factors, and including loyalty, defined a single factor for the industrial sample. Whereas the two factors were orthogonal in the college samples, they were combined to reflect the broader concept of integrity in the working sample. (Table 10).

TABLE 10

AUTONOMY AND INTELLECTUAL ASCENDANCY FACTOR LOADINGS		
BSRI Item	Industrial Sample	College Sample
	Integrity	Autonomy
Independent	.73	.79
Individualistic	.60	.75
Self-Sufficient	.76	.74
Self-Reliant	.81	.62
		Intellectual Ascendancy
Willing to Take a Stand	.52	.81
Defends Own Beliefs	.52	.67
Loyal	.53	

Leadership and Personal Ascendancy Factors. Two distinct factors, leadership and personal ascendancy existed in the college and industrial samples which were combined in the Berzins sample. The zeroes in Table 11 indicate items which had no salient loadings on any factor for the population indicated.

TABLE 11

LEADERSHIP AND PERSONAL ASCENDANCY FACTOR LOADINGS		
BSRI Item	Industrial Sample	College Sample
		Leadership
Acts as a Leader		.88
Has Leadership Abilities	0	.72
	Personal Ascendancy	
Aggressive	.76	
Forceful	.71	0
Dominant	.67	0
Willing to Take Risks	.58	

While the members of the Berzins sample defined one broad social ascendancy dimension (including salient loadings on all of the items in Table 12 as well as Assertive and Strong Personality) our college sample defined a very specific leadership dimension consisting of the two leadership items alone. The industrial sample, on the other hand, defined a more specific - personal ascendancy dimension including willingness to take risks but excluding both leadership items.

The remaining three interpreted factors defined by the industrial sample and four factors defined by the college sample overlap somewhat with each other but not with the factors discussed by Berzins. Two BSRI masculine items. Competitive and Ambitious, loaded on the same factor for the two samples. The total configurations, however, were distinct. (Table 12).

TABLE 12

COMPETITIVENESS FACTOR LOADINGS

BSRI Item	Industrial Sample	College Sample
Competitive	.65	.77
Ambitious	.68	.50
Loves Children	.55	
Aggressive		.68
Flatterable		.62

The competitiveness dimension for the industrial sample represents beneficent ambition and being a good provider. The college sample's inclusion of Flatterable, on the other hand, suggests a more self-serving concept of competition and ambition.

As with competitiveness, the two samples defined factors with Analytical which reflect different concepts. The industrial sample's analytical dimension included engagement with others, while the college sample defined a cool, distant concept of the analytical dimension (Table 13).

TABLE 13

ANALYTICAL FACTOR LOADINGS

BSRI Item	Industrial Sample	College Sample
Analytical	.57	.74
Assertive	.56	0
Loves Children		-.62

The factor which included the item Shy defined a dimension of personal ineffectualness for the industrial sample. For the college sample, shyness was associated with indecisiveness (Table 14).

TABLE 14

SHYNESS FACTOR LOADINGS

BSRI Item	Industrial Sample	College Sample
Shy	.55	-.77
Gullible	.59	
Does Not Act as a Leader	.74	
Makes Decisions Easily		.62

The remaining factors for the college sample included positive loadings for Athletic (.71) and Willing to Take Risks (.59) defining a dimension of physical daring.

The factor analyses of the BSRI masculinity and femininity scales suggest three general conclusions.

- Biological gender is not strongly associated with the psychological dimensions tapped by the BSRI.
- Both the masculinity and the femininity scales of the BSRI are multidimensional. (This finding and the former substantiate the findings of Berzins.)
- Three factors for the industrial sample and three for the college sample (excluding the Gender Factor) combined BSRI masculine and feminine scale items in the same factor, unlike the factor structure discussed by Berzins. While most factors were defined exclusively by BSRI masculine or feminine items, these overlapping factors indicate that the two scales do not define totally independent sets of attributes.

Differences by Sex in Self-Ratings

Analysis of responses to individual BSRI scale items in the industrial sample revealed that women's self-ratings were significantly higher than men's on ten feminine items while men's self-ratings were significantly higher on only three masculine items. Women rated themselves significantly higher than men on Independent, a masculine trait and men rated themselves more Shy (Table 15).

The finding that there were few differences by sex with respect to stereotypically masculine traits suggests that, within the industrial work force, assertiveness, dominance, and ambitiousness were perceived to be equally characteristic of themselves by both men and women. The assumption of masculine traits is particularly evident among the younger women: the correlation between age and masculinity scale score for the women in the sample was significant ($r = -.23$, $p < .01$). Most of the differences in this set of analyses resulted from male workers rating themselves lower than women on expressive (feminine) characteristics.

TABLE 15

BSRI MASCULINE AND FEMININE ITEMS SHOWING SIGNIFICANT
DIFFERENCES BY SEX OF RESPONDENT

Masculinity Scale	Highest Self-Rating By	t	Sig. Level (one-tail except as noted)
Athletic	Men	4.23	.001
Competitive	Men	3.38	.001
Independent	Women	1.96	.05*
Masculine	Men	29.23	.001
<u>Femininity Scale</u>			
Warm	Women	2.99	.005
Yielding	Women	2.69	.005
Sympathetic	Women	3.45	.001
Tender	Women	4.39	.001
Gullible	Women	2.43	.01
Shy	Men	2.05	.05*
Understanding	Women	2.27	.01
Affectionate	Women	1.78	.05
Compassionate	Women	1.82	.05
Gentle	Women	2.79	.005
Feminine	Women	29.47	.001

* two-tail test

Background Variables and Sex Role Orientation

Analyses of the relationships between sex role classification and background variables were conducted separately for male and female industrial subjects. No relationship was found between sex role orientation and any of the following variables:

- Area of origin (i.e., urban, suburban, small town or rural)
- Whether the subject's mother worked
- Family's economic condition during the subject's childhood
- Parents' education level
- Marital status
- Career importance
- Hours per week spent with family
- Job type

Education level was related to sex role orientation for women (chi-square = 19.95, df = 9, $p < .05$), with more Masculine and Androgynous women having attended college than Feminine women. Education level and sex role orientation were not related for men.

Analyses involving subjects assigned to sex role categories on the basis of a median split are confounded, in part, by boundary cases - individuals whose score on the masculinity or femininity scales is very close to the sample median. Their placement is unstable in the sense that very slight changes in their self-ratings on a few items would shift them into a different sex role classification. In order to determine whether these boundary cases were masking relationships which might emerge if the analysis involved a "purer" typology, the boundary cases were dropped. (All subjects whose scores on either the masculinity or femininity scale fell within .15 standard deviations of the median scale score were excluded.) This reduced the effective sample size by 22% to 94 women and 84 men (Table 16).

TABLE 16

SEX ROLE CLASSIFICATION BY SEX FOR INDUSTRIAL SAMPLE
WITH BOUNDARY CASES DELETED

	Androgynous	Masculine	Feminine	Undifferentiated
Men	21(25%)	29(34%)	3(4%)	31(37%)
Women	30(32%)	12(13%)	35(37%)	17(18%)

When the analyses described above were performed using this purified sample, several significant relationships emerged which had been obscured by the boundary cases in the earlier computations.

- Education level, for women (chi-square = 24.4, $df = 9$, $p < .005$). Masculine and Androgynous women reported completing more years of formal schooling than Feminine women. Undifferentiated women also reported relatively high education levels.
- Area of origin, for women (chi-square = 16.9, $df = 9$, $p < .05$). Androgynous and Masculine women came most often from suburban and urban areas, respectively, while Feminine and Undifferentiated women tended to come from small towns.
- Family economic condition during childhood, for men (chi-square = 20.8, $df = 12$, $p < .06$). Androgynous and Masculine men remember their families of origin as being more comfortable financially than did Undifferentiated and Feminine men.
- Age, for women (chi-square 20.5, $df = 12$, $p < .06$). Androgynous and Masculine women tended to be younger than Feminine and Undifferentiated women.

Youth, extensive education, and the diversity of influences typical of urban or suburban childhoods under conditions of comparative financial comfort are associated with androgynous and masculine sex role orientations in the industrial sample. These circumstances were characteristic of the backgrounds of most of the members of the college sample. If these conditions encourage androgynous and masculine sex role orientations, then the higher incidence of androgynous and cross-sex orientations in the college sample than in the industrial sample is partially explained. These findings constitute a provocative, circumstantial case that richness of background experience encourages the development of multifaceted personalities - Bem's androgynous people.

Sex Role Orientation and Acceptance of Co-Workers

There is theoretical and empirical support for the hypothesis that androgynous individuals function more effectively than sex-typed persons in social settings. The relevant research, described above, involved college students interacting with infants (Bem, Martyna & Watson, 1976) and other college students (Bem, Martyna & Watson, 1976; Ickes & Barnes, 1978). The relationship between androgyny and self-esteem (Bem, 1977; Spence et al., 1975) suggests that androgynous individuals may be less defensive and more accepting of others. Accordingly, the hypothesis was postulated that favorableness of perceptions of co-workers is related to sex role orientation, and that androgynous persons would have the most favorable perceptions.

Workers' attributions to same sex and opposite sex co-workers of nine items related to job competence and personal interaction were examined to test the hypothesis. Subjects rated their male and female co-workers on a set of characteristics, using a 7-point scale ranging from 1 (never or almost never) to 7 (always or almost always). Ratings by male subordinates are presented in Table 17 and by female subordinates in Table 18.

TABLE 17

MALE SUBORDINATES' ATTRIBUTIONS TO MALE AND FEMALE CO-WORKER TARGETS
BY SEX ROLE ORIENTATION OF RESPONDENT

Attributed Characteristic	Sex of Target Person	Sex Role Orientation of Respondent			
		Androgynous (N=19)	Masculine (N=23)	Feminine (N=7)	Undifferentiated (N=31)
Friendly	M	5.89	5.74	5.29	5.32
Sensitive to Others*	M	5.26	4.61	3.57	4.16
Expert	M	4.79	4.70	4.00	4.26
Similar to Me	M	4.63	4.57	4.14	3.61
Works Well With Me	M	6.11	5.70	5.29	5.23
Able to Get Job Done	M	5.84	5.70	5.29	5.29
Easy to Meet	M	5.84	5.61	5.57	5.06
Compatible Co-Worker	M	6.00	5.87	5.14	5.42
Not Distractable	M	4.68	4.96	4.14	4.35
Sensitive to Others	F	5.00	5.13	4.29	4.39
Friendly	F	5.53	5.70	5.00	4.90
Expert	F	3.74	4.30	3.71	3.42
Similar to Me	F	3.16	3.48	2.71	2.84
Works Well With Me	F	4.63	5.22	4.14	4.71
Able to Get Job Done	F	5.11	5.30	4.86	4.68
Easy to Meet	F	5.00	5.61	5.00	4.65
Compatible Co-Workers	F	5.00	5.35	4.43	4.71
Not Distractable	F	4.63	5.00	3.57	4.13

* ANOVA $F = 2.96$, $df = 3,76$; $p < .05$. None of the group means were significantly different by Tukey's Honestly Significant Difference Test.

TABLE 18

FEMALE SUBORDINATES' ATTRIBUTIONS TO MALE AND FEMALE CO-WORKER TARGETS
BY SEX ROLE ORIENTATION OF RESPONDENT

Attributed Characteristic	Sex of Target Person	Sex Role Orientation of Respondent			
		Androgynous (N=31)	Masculine (N=11)	Feminine (N=44)	Undifferentiated (N=18)
Sensitive to					
Others	M	4.71	4.64	4.61	3.94
Friendly	M	5.87	6.00	5.61	4.94
Expert	M	4.39	4.45	4.32	3.39
Similar to Me	M	3.87	3.09	3.50	2.78
Works Well With Me**	M	5.81a	6.00a	5.18a,b	4.06b
Able to Get Job					
Done	M	5.90	5.27	5.36	4.61
Easy to Meet	M	5.61	5.73	5.05	4.33
Compatible					
Co-Worker*	M	5.35	5.91	5.45	4.17
Not Distractable	M	5.10	4.64	4.66	3.89
Sensitive to					
Others	F	5.06	5.82	4.93	4.94
Friendly	F	5.48	6.27	5.52	5.22
Expert	F	4.00	5.55	4.05	4.50
Similar to Me	F	3.48	5.18	3.75	3.61
Works Well With Me	F	5.39	6.36	5.36	5.00
Able to Get Job					
Done	F	5.29	6.27	5.27	5.22
Easy to Meet	F	5.35	6.09	5.25	5.28
Compatible					
Co-Worker	F	5.35	6.45	5.36	5.22
Not Distractable	F	4.35	5.36	4.41	4.33

* ANOVA $F = 3.03$; $df = 3,100$; $p < .05$. No significant difference between group means (Tukey).

** ANOVA $F = 4.95$; $df = 3,100$; $p < .005$. Subscripts indicate groups having significantly different mean scores at the .05 level using Tukey's Honestly Significant Difference Test.

The pattern of men's attributions to their co-workers is interesting, despite the lack of statistical significance for individual items. When rating male co-workers, the mean attributions by Masculine and Androgynous men were typically close, as were those by Feminine and Undifferentiated men. In all instances Masculine and Androgynous men rated their co-workers higher than did Feminine and Undifferentiated men.

While the differences between Androgynous and Masculine men were slight, the Androgynous men had consistently more positive perceptions of male co-workers than did Masculine men. (The sole exception was the slightly more favorable ratings by the Masculine men on Not Distractable.) Mean ratings by Androgynous men were significantly more favorable than the combined mean ratings for the other three sex role categories for three of the nine items - Sensitive to Others, Works Well With Me and Easy to Meet - by one-tail t -tests at the .05 level of significance.

When men's attributions to female co-workers were examined, the Masculine men invariably had the most favorable perceptions of their opposite-sex co-workers. Androgynous men gave female co-workers the second most favorable ratings on every variable except one. Mean ratings of female co-workers by Masculine men were significantly more favorable than the combined mean ratings by the other three sex role categories for four of the nine items - Friendly, Expert, Easy to Meet and Not Distractable - by one-tail t -tests at the .05 level of significance.

Women's attributions to male co-workers were statistically related to sex role orientation in two instances. Each suggests that Undifferentiated women find men less compatible and more difficult to work with than do their same sex peers. Mean ratings of male co-workers by Undifferentiated women were significantly less favorable than the combined mean ratings by women in the other three sex role categories on all nine items, by one-tail t -tests at the .05 level of significance. The ratings given by Feminine, Masculine, and Androgynous women varied from item to item but their means were typically close.

Masculine women gave higher ratings to men than did other women on compatibility attributes (Friendly, Works Well with Me, Easy to Meet, Compatible Co-Worker). Yet they found men to be less similar to themselves than did Androgynous and Feminine women, and they did not rate men as high on competence attributes (Able to Get Job Done, Not Distractable) as did Feminine and Androgynous women. Androgynous and Feminine women accorded somewhat higher scores to men on job competence attributes (Expert, Able to Get Job Done, Not Distractable), and on Sensitive to Others.

Women's attributions to their same sex co-workers revealed a very different pattern. Masculine women rated female co-workers substantially higher; group means for ratings by Androgynous, Feminine and Undifferentiated women were considerably lower and similar to each other. Mean ratings of female co-workers by Masculine women were significantly more favorable than the combined mean for the other three sex role categories for all items except Friendly, and Easy to Meet by one-tail t -tests at the .05 level of significance.

Comparisons of differences between perceptions of same sex and opposite sex co-workers by respondents in each sex role classification are shown in Table 19. Scores for each subject were obtained by subtracting his/her attribution to a female co-worker from his/her attribution to a male co-worker on each characteristic. Positive difference scores reflect higher ratings for male co-workers; negative scores reflect higher ratings for female co-workers.

TABLE 19

DIFFERENCE SCORES (MALE-FEMALE) ON ATTRIBUTIONS TO MALE AND
FEMALE CO-WORKERS BY SEX AND SEX ROLE ORIENTATION

Attributed Characteristic	Sex of Respondent	Sex Role Orientation of Respondent			
		Androgynous	Masculine	Feminine	Undifferentiated
Sensitive to					
Others	M	.26	-.52	-.71	-.23
Friendly	M	.37	.04	.29	.42
Expert	M	1.05	.39	.29	.84
Similar to Me	M	1.47	1.09	1.43	.77
Works Well With Me	M	1.47	.48	1.14	.52
Able to Get Job					
Done	M	.74	.39	.43	.61
Easy to Meet	M	.84	0	.57	.42
Compatible					
Co-Worker	M	1.00	.52	.71	.71
Not Distractable	M	.05	-.04	.57	.23
Sensitive to					
Others	F	-.35	-1.18	-.32	-1.00
Friendly	F	.39	-.27	.09	-.28
Expert***	F	.39a	-1.09a,b	.27a	-1.11b
Similar to Me**	F	.39a	-2.09b	-.25a,b	-.83a,b
Works Well With					
Me**	F	.42a	-.36a,b	-.18a,b	-.94b
Able to Get Job					
Done**	F	.61a	-1.00b	.09a,b	-.61a,b
Easy to Meet	F	.26	-.36	-.20	-.94
Compatible					
Co-Worker	F	0	-.55	.09	-1.06
Not Distractable*	F	.74	-.73	.25	-.44

Positive scores indicate male co-worker rated higher; negative scores indicate female co-worker rated higher.

* ANOVA \bar{F} significant at .10.

** ANOVA \bar{F} significant at .05.

*** ANOVA \bar{F} significant at .01; subscripts indicate group means which are significantly different at the .05 level by Tukey's Honestly Significant Difference Test.

Several patterns are evident in these data. First, sex role orientation is a more predictive variable in relation to differences in attributions to same and opposite sex co-workers for female respondents than for males. No significant relationships were found for male raters; five of nine were significant for women. Second, men tend to favor male co-workers over female co-workers. Third, Androgynous individuals of both sexes favor male peers over female peers; the difference scores are most pronounced in the case of Androgynous men. Fourth, Masculine and Undifferentiated women show the strongest preference for female co-workers over male co-workers. It is important to interpret these findings in relation to the data presented in Tables 17 and 18.

Appropriately sex-typed individuals (i.e., Masculine men and Feminine women) generally had the smallest difference scores, suggesting that they perceived the smallest differences between same sex and opposite sex co-workers. Cross-sex typed persons (Feminine men and Masculine women) tend to prefer their own sex. An example is the pattern of ratings on the Similar to Me item; cross-sex typed individuals were more extreme than their peers in rating same sex co-workers as similar to themselves. Masculine women were notably more extreme than other women in regarding themselves as more similar to female co-workers than to males.

With respect to the general hypothesis that androgynous people would perceive their co-workers more favorably than persons with other sex role orientations, the data are equivocal. Because of small cell sizes, the findings in this section are only suggestive. The patterns identified might be used as the basis for future research.

Masculinity and Femininity in Acceptance of Co-Workers

The subordinate respondents in the preceding analysis who had the most favorable attitudes toward co-workers were those classified as masculine or androgynous. Common to both groups were high scores on the BSRI masculinity scale. To determine whether relationships existed between high or low scores on the masculinity or femininity scales and perceptions of co-workers, multiple regression analyses using masculinity and femininity scale scores as independent variables were conducted. The analyses included:

- Male subordinates' masculinity and femininity scores regressed upon ten dependent variables: perceptions of the extent to which female co-workers are Able to Get Job Done, Compatible Co-Workers, Sensitive to Others, Similar to Me and Friendly, and perceptions of the difference between male and female co-workers on each of these five items;
- Female subordinates' masculinity and femininity scores regressed upon the same ten items.

For the analyses involving male respondents the beta coefficients for the Femininity scale scores were not significantly different from zero for any of the ten dependent variables. The beta coefficient for the masculinity score reached significance only once. A higher masculinity score predicted to perceptions of the friendliness of female co-workers as the

dependent variable ($R = .22$, $B = .22$, $F(1,77) = 4.00$, $p < .05$). Results regarding female respondents were similar. Of the twenty beta coefficients derived by the regression, only one was significantly different from zero. High femininity scale scores by women were associated with the perception that men were better Able to Get the Job Done ($R = .24$, $B = .238$, $F(1,101) = 6.08$, $p < .05$).

We concluded from these results that masculinity and femininity scale scores fail to predict to perceptions of co-workers at a level greater than chance. Influencing our conclusion is the fact that we would expect to find two out of forty beta coefficients to be significantly different from zero at the .05 level of significance due to random factors.

The inclusion of an interaction item in the regression analyses failed to affect the outcomes significantly. The analyses described above were redone using three independent variables: masculinity and femininity scale scores in addition to an interaction term represented by the product of the two scale scores. Apart from the two statistically significant results mentioned above, only one multiple regression coefficient reached significance. Male respondents' masculinity, femininity and interaction scores were predictive of their perceptions that female co-workers were more Sensitive to Others ($R = .31$, $F(3,75) = 2.73$, $p < .05$) with betas of -2.25 , -2.49 and 3.61 respectively (all significant with $p < .01$). This finding does not, of course, change the basic conclusion that respondents' scores on the BSRI subscales generally do not predict to their perceptions of co-workers on the variables examined.

DISCUSSION

The purpose of the research described in this report was to investigate the phenomena of sex role orientation among industrial workers, to evaluate the BSRI in a non-college population, and to explore the relationship between sex role orientation and perceptions of co-workers. Five issues will be discussed in this section:

- Differences between the college and industrial samples revealed in the analyses.
- The validity of the BSRI for a non-college sample.
- A methodological technique for eliminating boundary cases that might obscure relationships.
- Hypotheses derived from the analyses of perceptions of co-workers.
- Discussion of findings that suggest causal relationships and require further investigation.

Inter-Sample Differences

The differences between the data collected from the college and industrial samples were substantial. Perhaps the most striking finding was that, for the college sample, there was no statistically significant relationship between BSRI sex-role classification and biological sex of the

respondents. For the industrial sample, men tended to be classified as masculine and undifferentiated more frequently than women, while women were more frequently classified as feminine. The lack of relationship between sex and sex role category for the college sample together with the absence of a significant difference between men's and women's mean scores on the masculinity and femininity scales, is a finding which has not been reported for other studies.

Factor analysis revealed substantial congruence between the two populations on definitions of a Nurturance dimension composed of attributes from the femininity scale. Attributes from the masculinity scale were grouped on different dimensions by members of the two samples indicating different conceptions of masculinity and of the ways in which masculinity and femininity are interrelated.

Masculinity and femininity scale scores of industrial subjects were higher than those of the college subjects. The differences were particularly great for sex-appropriate characteristics: industrial men rated themselves substantially higher than did college men on masculine items, and the mean femininity score for industrial women far exceeded that of college women.

The college and industrial samples differed with respect to both the level and distribution of BSRI scale scores and the factor structure of their self-ratings. This finding raises the question of the generalizability of conclusions based upon research using college students to non-college populations.

Validity of the BSRI Across Different Populations

The results of this research demonstrated the utility of the BSRI in studying diverse populations. Our results also confirmed the independence of the masculinity and femininity scales.

Bem recognized that sex role orientations represent the position of individuals within specific psychological and value matrices. Assignment of sex role orientations with respect to median scores on the masculinity and femininity scales assures the adaptability of the system, within limits, to groups having different value systems. However, it is possible that the items on the BSRI have different meanings for the population under investigation than they had for the population on which the BSRI was standardized. In this research, the mean ratings by the industrial sample suggest that a different constellation of items might be more appropriate for working populations.

The 40 items of the masculinity and femininity scales are intended to be positive in tone (Bem, 1977). (The single negatively worded item, Do Not Act as a Leader, was reversed in computing the masculinity score.) Half of the neutral items are negative and half are positive by design (Bem, 1974); scores for the negative items were reversed in computing the social desirability score.

For the industrial sample described in this research, six BSRI items had mean ratings for both men and women which were not in the expected

direction, based on the college samples on whom the instrument was initially validated. Conventional was regarded as a positive trait, with mean ratings greater than 4 by both men and women. This item was one of ten negative traits on the social desirability scale, as validated by Bem among samples of college students. The remaining nine negative items and the ten positive items were rated in the expected direction by the industrial sample.

Similarly, Dominant from the masculinity scale, and Shy, Gullible, Flatterable and Childlike from the femininity scale, had mean ratings of less than 4 for both men and women in the industrial sample. Clearly, these were not seen as desirable personality traits.

A value inversion on one of twenty items on each of the social desirability and masculinity scales does not seriously impugn the validity of these scales. However, a fifth of the femininity scale items were considered undesirable by a non-college population. This suggests that a somewhat different set of items would have emerged for the femininity scale had Bem's original research been developed on working populations. Differences in age, life experience and semantic context between working and college populations may contribute to different understandings or interpretations of the content of certain words. An item by item validation would further enhance the BSRI as a tool for studying non-student populations.

Boundary Cases

Boundary cases, that is, individuals whose masculinity or femininity scale scores are close to the sample median, may obscure relationships because their inclusion in a particular sex role category is almost arbitrary. Small shifts in responses could result in the assignment of boundary cases to a different category. The deletion of such cases served to clarify relationships between sex role categories and other variables. In the present study, all subjects whose score on either scale was within .15 standard deviation of the median were deleted from chi-square analyses resulting in the emergence of several relationships which had been obscured when the boundary cases were included in the analyses.

Sex Role Orientation and Attitudes Toward Co-Workers

The absence of a clear-cut confirmation of the hypothesis that androgynous people have more favorable perceptions of co-workers of both sexes than sex-typed or undifferentiated people must be interpreted recognizing that the BSRI was not standardized on a working population. The findings from this research suggest five sets of hypotheses concerning the relationship between sex role orientation and perceptions of co-workers.

- Androgynous and Masculine men have more favorable attitudes toward both male and female co-workers than do Feminine and Undifferentiated men.
- Androgynous men prefer male co-workers to a substantial degree; while Masculine men have almost equally favorable attitudes toward co-workers of both sexes.

- While Feminine and Undifferentiated men have less favorable perceptions of male co-workers than do Masculine and Androgynous men, they have still less favorable attitudes toward female co-workers. Undifferentiated and Feminine men did not differ substantially from each other in their perceptions of co-workers of either sex but Feminine men preferred male co-workers to a substantially greater degree than did Undifferentiated men.
- Masculine women preferred female co-workers by a wide margin, but they also assigned the highest scores to men on five of nine attributes.
- Feminine and Androgynous women's ratings of co-workers of both sexes were favorable and differed only slightly. Androgynous women preferred men slightly; Feminine women preferred women slightly.
- Undifferentiated women had about the same favorable view of women that Feminine and Androgynous women had, but had a decidedly lower opinion of men as co-workers.

Antecedents of Androgyny

The findings of this research support the findings of previous researchers about the effects of early environmental factors in the lives of androgynous people. However, our findings suggest that warmth in the fathers of Androgynous men, support for achievement in the parents of Androgynous women, and cross-sex modeling are elements of a more general dimension of richness of stimulation. Education, environmental opportunities, and economic security are other elements of this dimension found by our research to be associated with androgyny.

A second set of findings from this research program (reported in Technical Report No. 6 - Working Relationships) suggests that experience working with members of the opposite sex has a favorable effect on perceptions - specifically among men - of members of the opposite sex as co-workers, subordinates and supervisors.

The findings that sex role orientation is associated with perceptual patterns toward members of the opposite sex, that sex role orientation is associated with background experiences, and that perceptions of members of the opposite sex in the work setting are affected by work experience with the opposite sex, are not necessarily related. In developing policies to facilitate sexual integration of work units, these findings may have relevance. Further research is necessary to determine whether causal relationships exist behind the associations identified, and whether the sets of associations are related to each other.

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