

Assessing Educational Equity With Sex Role Measures

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Fostering sex equity in education has been mandated by federal law (P.L. 93-380 among others), and under the Women's Educational Equity Act, monies were legislated to provide programs emphasizing educational equity for women and girls. A variety of activities have been designed in an attempt to provide for and encourage educational equity. Some of these activities include the use of nonsexist materials, techniques for overcoming math anxiety, and materials designed to expand the vocational horizons of women and girls. It is evident by the diversity of approaches to educational equity that this term is defined in a variety of ways. Thus, it is a challenge to evaluators to provide documentation of the effectiveness of these diverse approaches.

One component of equity, and the achievement of equity within education, deals in part with the affective domain . . . attitudes and perceptions of sex roles. An underlying assumption made is that by fostering egalitarian sex role attitudes, progress can be made toward the achievement of educational equity. That assumption may in fact be valid, but one must examine the methods by which egalitarian sex roles are being defined and measured, and then consider the implications of using these instruments as indicators of equity (or lack thereof).

A popular technique for defining egalitarian sex roles is the concept of psychological androgyny, or the co-presence of masculinity

and femininity. The thinking here is that if a person is sensitive to the qualities of both the masculine and female roles, a more "equal" attitude, and hence behavior, would be adopted. The two most commonly used scales to tap this construct are Bem's Sex Role Inventory (BSRI; Bem, 1974) and Spence and Helmreich's Personal Attributes Questionnaire (PAQ; Spence & Helmerich, 1978).

In the original development of the scales, Bem and Spence have defined differing constructs which are purportedly tapped by the scales. Bem (1974; 1977) described the BSRI as measuring a person's self concept in relation to masculine, feminine, and androgynous behaviors. Androgyny, she suggested, denoted "the integration of both masculinity and femininity within a single individual" (1977, p. 196). Further, "an androgynous individual is one who does not distinguish between masculinity and femininity in his or her self-description; ... androgynous can thus be seen as representing the equal endorsement of both masculinity and femininity" (1977; p. 197). More recently, Bem (1979) has stated that "the BSRI is designed to assess the extent to which the culture's definitions of desirable female and male attributes are reflected in an individual's self description" (p. 1048).

There are three subscales within the BSRI; masculine, feminine, and neutral or social desirability. Only the masculine and feminine scales are used to determine the androgyny score. The BSRI is a seven-point Likert scale, with anchors ranging from "never" to "always". The list of 60 items include a variety of personality characteristics, such as self-reliant, yielding, and helpful. The respondent is to indicate how like or unlike him/her each characteristic is.

The PAQ purports to measure the psychological dimensions of masculinity and femininity. The three scales on the self-report instrument include Femininity (expressive and communal characteristics), and Masculinity (instrumental and agentic), and Masculinity-Femininity (agentic and communal characteristics). The latter scale is interpreted by some as the androgyny scale.

The PAQ consists of 24 pairs of characteristics, such as "not at all independent...very independent." The respondent is to indicate where s/he falls on a five-point scale.

Despite these differences as described by the developers of the scales, researchers studying sex roles either ascribe unique definitions to the scales (e.g., sex role identification [Segal & Richman, 1978; Schiff & Koopman, 1978]; sex role orientation [Orlofsky, Aslin & Ginsberg, 1977; Ickes & Barnes, 1978]) or the use of scales interchangeably with the apparent assumption that the constructs being measured are highly similar. The present study was designed to test the latter assumption, that is, are the BSRI and PAQ scales measuring the same constructs. A secondary purpose of the study was to discuss the implications of using these instruments to evaluate equity programs.

Specifically, do the Masculinity scales of the PAQ and the BSRI appear to be measuring the same construct? Do the Femininity scales of the PAQ and the BSRI appear to measure the same construct? Do the combined scores appear to be tapping similar constructs?

Sample

The Personal Attributes Questionnaire and the Bem Sex Role Inventory were administered to 174 undergraduate students enrolled in the beginning psychology course at Florida State University during the Fall quarter, 1979. One hundred fifteen females and 59 males completed the two instruments as a part of a course requirement.

Results

Pearson correlation coefficients were computed between the BSRI and PAQ for the group as a whole, and for males and females separately. The analyses by sex were included based on the results of Jones, et al. (1978) who noted sex differences in the response patterns to the BSRI, and in particular, on the combined, or Androgyny, subscale.

Tables 1, 2 and 3 present the correlation coefficients for the total group, males, and females respectively. It is interesting to note that there were greater between-scale differences than between sex differences. With one exception, all correlations between scales by sex and total group were essentially the same. The one exception was for Bem Femininity/PAQ Masculine, with males $r = -.1371$ and females $r = .1783$. However, this difference was not significant ($z = 1.946$).

Table 1

Relationship of BSRI and PAQ Scores
for Total Sample (N = 174)

<u>Total Group</u>	<u>PAQ Masculine</u>	<u>PAQ Feminine</u>	<u>Androgyny</u>	<u>Bem Masculine</u>	<u>Bem Feminine</u>
Masculine-Feminine	.7678*	.8492*	.0805	-.0153	.1177
PAQ Masculine	-	.7223*	-.2277*	.2399*	-.0874
PAQ Feminine		-	.2198*	-.0420	.3263*
Androgyny			-	-.3129*	.3859*
Bem Masculine				-	-.0642

* $p < .05$

Table 2

Relationship of BSRI and PAQ Scores
for Males (N = 59)

<u>Males</u>	<u>PAQ Masculine</u>	<u>PAQ Feminine</u>	<u>Androgyny</u>	<u>Bem Masculine</u>	<u>Bem Feminine</u>
Masculine-Feminine	.08483*	.8759*	-.0171	.1496	.1932
PAQ Masculine	-	.8418*	-.1213	.2586	.1783
PAQ Feminine		-	.1094	.0710	.2991*
Androgyny			-	.8572*	.5832*
Bem Masculine				-	-.0677

* p < .05

Table 3

Relationship of BSRI and PAQ Scores
for Females (N = 115)

<u>Females</u>	<u>PAQ Masculine</u>	<u>PAQ Feminine</u>	<u>Androgyny</u>	<u>Bem Masculine</u>	<u>Bem Feminine</u>
Masculine-Feminine	.7471*	.8209*	.0996	-.1069	.0398
PAQ Masculine	-	.0684*	-.2200	.1825	-.1371
PAQ Feminine		-	.2565*	-.0851	.3352*
Androgyny			-	-.2581*	.3677*
Bem Masculine				-	-.0187

* p < .05

Based on the tacit assumptions of researchers using these scales,
one would expect the masculine scales on the PAQ and the BSRI to be

highly related; likewise with the feminine scales and the combined scales. However, the present data suggest that this is not the case, as indicated by the correlation coefficients presented in Table 4.

Table 4
Correlations between similar scales
on the BSRI and the PAQ

	<u>Males</u>	<u>Females</u>	<u>Total</u>
PAQ Masculinity- Femininity / Bem Androgyny	-.0171	.0996	.0805
PAQ Masculinity / Bem Masculinity	.2586*	.1825	.2399*
PAQ Femininity / Bem Femininity	.2991*	.3352*	.3263*

* $p < .05$

The Femininity scales appear to have the greatest common variance, yet the maximum common variance is only 11.24%. One might speculate, therefore, that the two scales are tapping different aspects of femininity. The same conclusion would hold for the masculinity and combines scales.

Another interesting set of results is that of the intrascale correlations as presented in Table 5. One would expect that the relationships between masculinity and femininity would be relatively low.

Table 5

Intrascale Correlations on the BSRI and the PAQ

		<u>Males</u>	<u>Females</u>	<u>Total</u>
PAQ Masculinity	PAQ Femininity	.8418*	.6804*	.7223*
Bem Femininity	Bem Femininity	-.0677	-.0187	-.0642

* $p < .05$

The PAQ Masculinity and Femininity scales appear to be measuring highly similar constructs (minimum variance accounted for is 46.3%), yet the BSRI Masculinity and Femininity appear to be essentially orthogonal.

A multidimensional analysis was then performed on the two scales (Sindschal, 1976). A two-dimensional, orthogonal configuration of the data was found (stress = .003). Dimension A was represented by the bipolar configuration of Bem Femininity and Androgyny. Dimension B was represented by another bipolar configuration of Bem Masculinity, and the cluster of PAQ Femininity, PAQ Masculinity and Masculinity-Femininity. The results of the multidimensional analysis support the conclusion that the BSRI and the PAQ are measuring different constructs, with all of the subscales on the PAQ measuring a highly similar trait. The final configuration of the scales is presented in Table 6.

Table 6

Final Configurations Obtained After
Multidimensional Analyses for
the BSRI and the PAQ

	<u>1</u>	<u>2</u>
Masculine-Feminine	.068	-.499
PAQ Masculinity	.591	-.596
PAQ Femininity	-.069	-.329
Bem Femininity	-1.388	-.012
Androgyny	1.299	.592
Bem Masculine	-.501	.844

Discussion

Based on the results of the present study, it appears that the BSRI and the PAQ are measuring quite different constructs. Of particular note are the dissimilarities in the constructs tapped within the two masculine and the two feminine scales, and the apparent bipolarity of the BSRI, with the poles being defined by femininity and androgyny.

Response modes for the two scales do differ. The PAQ uses bipolar items on which the respondents make a response in terms of the two extremes. For the BSRI, respondents respond on a seven-point scale whether the characteristic is like or unlike them.

Does the five-point versus the seven-point scale make the difference? Research using a five point and seven point rating scale with the BSRI showed no difference (Thomas & Robinson, 1978).

In addition, Nunnally (1978) suggests that responses to rating scales with five and seven point alternatives should be quite similar, although the seven point option should provide slightly more reliable measurement.

Is the conceptual frame created for the respondent with the bipolar and unipolar items sufficiently different to bring about such difference? Although empirical data on this point are lacking, it would seem that never true-always true in regard to aggressive would be quite similar to very aggressive-not at all aggressive.

The construct validity of each of the scales is another area which might be examined in attempting to interpret the constructs being measured. For example, several recent studies have attempted to address the issue of what is being measured by the BSRI. These included factor analytic studies (e.g., Gaudreau, 1977; Waters, et al., 1977; Wakefield, et al., 1976 and Richardson, 1979) ; studies of the validity of the item selection process (e.g., Hinrichsen & Stone, 1978); and comparisons of extreme groups (e.g., Jordon-Viola, Fassberg, & Viola, 1976; Yanico, Hardin & McLaughlin, 1975; and Bernard & Epstein, 1978). In general, results indicated the presence of a masculine factor, a feminine factor, a gender factor and in some analyses, an androgyny (combined masculinity-femininity) factor.

For the PAQ, most validation studies appear to have been carried out by Spence, Helmreich, and their colleagues. The item selection process is described in detail, and correlations with various other scales including social desirability, attitudes toward women, and self esteem (Spence & Helmreich, 1978). Results of factor analyses indicate the unidimensionality of the Masculine and Feminine scales.

Evidence thus suggests that the two scales are tapping some aspect of masculinity and femininity, and that the combined score, some aspect of the co-presence, or dual existence, of these traits. However, data from the present study indicate that although the scales are similarly named, they appear to be tapping different constructs.

Implications for Sex Equity Programs

If, as some sex equity program developers propose, attitude or affective change is an important component of a comprehensive equity program, then encouraging the openness to the co-presence of masculine and feminine behaviors would be good. However, documenting changes in these use areas appears to be a challenge. For example, if Program A was said to be effective in encouraging androgynous behaviors one must also know how those androgynous behaviors were defined and measured. It appears that at the present time little attention is paid to the defining of the concept of sex equity. However, because of the nature of the funding of many sex equity programs, program developers must be able to document the effectiveness of the program in achieving sex equity. Due to the status of the measurement in the area, and also due to the lack of conceptual clarity of many widely used terms, assessing the impact of the affective component of sex equity programs remains a challenge. It is extremely important that concepts be operationalized and that instruments used to document effectiveness be fully described.

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