

Sex-Role-Related Personality Correlates of Intellectual Abilities in Adolescents

Carol Mills

A recent study illustrates the interrelatedness of personality variables and intellectual ability for both boys and girls.

Motivated by the belief that meaningful relationships exist between personality attributes and intellectual abilities, an investigation was undertaken to examine and clarify such relationships between sex-role-related personality variables and two intellectual variables often associated with sex differences: math and verbal ability. Since adolescence is a time when sex roles are especially salient, groups of seventh and eighth grade males and females from two separate populations were chosen for study. One group were semifinalists (188 males, 90 females) who participated in the December 1976 Mathematical Talent Search conducted by The Study for the Mathematically Precocious Youth (SMPY) at The Johns Hopkins University. This group of adolescents ranked in approximately the top one percent of their age group in math reasoning ability. However, there was a wide range of math and verbal ability present in the group as measured by the SAT verbal (230 to 710) and SAT math (390 to 780) scores. In a comparison group were 43 male and 72 female students from a population comprised of varying socioeconomic status and ability levels.

Evidence about the nature of the relationship between personality and intellectual variables is often confusing and contradictory. It is possible that the relationship is different for the two sexes (Maccoby, 1966). On the one hand, evidence points to a positive relationship between "masculine" characteristics and math skills, or "feminine" characteristics and verbal skills (Bieri, 1960; Bing, 1963; Milton, 1957; Walberg, 1969). On the other hand, "masculine" or "feminine" characteristics may have a differential effect. Maccoby, for instance, noted (1966) that correlations between spatial ability and personality measures ran in opposite directions for the two sexes. Specifically, she found evidence that high spatial ability was associated with "masculine" traits for women, but with low masculinity in men. Therefore, instead of speaking about individual differences in personality characteristics that are associated with intellectual skills and functioning, it may be necessary to think in terms of whether an individual possesses characteristics typically

associated with his/her gender, or is "cross sex-typed" (exhibiting traits, interests, or values more often found in the opposite sex).

Maccoby and Jacklin (1974) suggest that acting in a strict sex role can be a negative factor for intellectual development and performance in both sexes, and that some "deviance" or cross sex-typing seems to confer an intellectual advantage. It is important to stress that exhibiting traits typical of the opposite sex does not necessarily imply a lack of characteristics associated with one's own gender. Evidence on the effects of cross sex-typing have usually relied on bipolar scales, so that a point in the direction of femininity was one less point for the masculinity direction. The construction of such tests (bipolar) prohibited the independent measurement of masculinity and femininity. More contemporary measures of masculinity-femininity, such as the Bem Sex-Role Inventory, do allow the independent measure of each.

The seeming contradictions often found in the literature for the relationships between personality attributes and intellectual abilities may be due, in large part, to problems in the measurement of masculinity and femininity (the central components of sex roles). The erroneous assumption of the bipolar nature of masculinity and femininity, as well as the apparent multi-dimensional nature of these psychological constructs (Constantinople, 1973), highlight the need for a careful consideration of *how* masculinity and femininity are measured and *what* is measured. From an examination of the item content of scales and inventories that purport to measure these terms, it is apparent that anything pointing to differences between the sexes is fair game for inclusion. Interests, values, behaviors, traits have all been assessed with little evidence for their interrelatedness.

In the present study, all participants received: 1) the Bem Sex-Role Inventory (BSRI) (Bem, 1974), allowing the independent measurement of "masculinity" and "femininity" in terms of behavioral traits (e.g., compassionate, yielding, aggressive, self-sufficient); and 2) the Femininity Scale (Fe)

from the California Psychological Inventory (Gough, 1952), a measure of what is assumed to be a unidimensional, bipolar trait ranging from extreme masculinity at one end to extreme femininity at the opposite end. In addition, the SMPY or gifted group was given the Allport-Vernon-Lindzey *Study of Values*, a test for which consistent sex differences are reported.

Each person in the study received masculinity and femininity scores from the BSRI, and a femininity score from the Fe. Only the gifted group received the six "value" scores: theoretical, economic, aesthetic, political, social and religious. Because three of the values are considered "masculine" since males consistently score higher on them, and three "feminine" since females consistently score higher on them, a masculinity and femininity score from the Study of Values was assigned to each gifted participant. The three masculine values on the Study of Values are theoretical, economic, and political; the three feminine values are aesthetic, social, and religious. Scores from the BSRI are referred to as masculine or feminine behavioral traits; scores from the Fe as masculine or feminine interests; and scores from the Study of Values as masculine or feminine value orientations.

Several meaningful factors can be identified on the Bem Sex-Role Inventory and on the CPI Femininity Scale (Bohannon & Mills, 1977). Using the present sample, five factors were identified on the BSRI: 1) expressive/feminine; 2) instrumental/masculine; 3) negative/undesirable traits; 4) maturity; and 5) moody/negative effect. Five factors emerged from a factor analysis of the Fe scale: 1) macho; 2) neuroticism; 3) stereotypic female; 4) intellectual/political; and 5) moral/introversion.

The intercorrelations for the personality variables were all generally low, indicating that each of the scales and factors was measuring a different aspect of the person's sex role orientation, and lends support to the multi-dimensionality of the "masculinity-femininity" construct.

Correlations for the BSRI factors and the original scale scores with math and verbal scores are reported in Table 1: the Fe total score and Fe factors with math and verbal scores in Table 2; and the Study of Values with cognitive scores in Table 3.

Some evidence for a relationship between math scores and masculine variables for girls, and verbal scores with feminine variables for boys, was found in the public school comparison group. In this group, the BSRI femininity score was positively related to verbal scores for boys, and the BSRI masculinity score was positively related to math scores for girls. In addition, the "maturity" factor on the BSRI, which contained nine of the original masculinity items, had a strong positive correlation with math scores for public school girls. This factor also had a strong positive correlation with verbal scores for the girls. In other words, the very positive, but also "instrumental," characteristics on this factor were strongly related to intellectual variables overall for these girls.

Variables indicative of highly "stereotypic" characteristics or interests, such as the Fe "macho" factor, the Fe "stereotypic female" factor, and the BSRI "instrumental" factor (which contained more stereotypic masculine characteristics than the "maturity" factor), were found to be negatively related to overall intellectual skills. The masculine stereotyped items were more often negatively related to cognitive variables for boys and the feminine stereotyped items for girls. On the other hand, a feminine value orientation was generally related to verbal scores in a positive direction and in a negative direction to math scores. A masculine value orientation was generally related to high math scores and low verbal scores.

In an atmosphere of more homogeneous ability, and perhaps an atmosphere more supportive and conducive to high achievement (the SMPY program), the factors such as the BSRI "negative," the BSRI "mood," and the Fe "neurotic" factor, all of which are indications of a rather neurotic and negative self-characterization, were unrelated to intellectual scores. However, in the public school group, these factors were significantly related to intellectual ability, and in an opposing

TABLE 1
Correlations for BSRI factors and Original Scales with Cognitive Variables

	Verbal Scores		Math Scores	
	SMPY	Public	SMPY	Public
BSRI Masculinity				
Males	-.08	.05	-.21†	.08
Females	-.03	.20	-.20*	.21*
BSRI Femininity				
Males	-.01	.30†	.03	.01
Females	.08	.14	-.16*	.17
Factor One "Expr."				
Males	-.08	.10	-.17*	-.16b
Females	.02	.15	-.25†	.15b
Factor Two "Instr."				
Males	-.13	-.19	-.29‡	-.10
Females	-.05	-.02	-.16	.03
Factor Three "Negative"				
Males	-.01	.27*	.11	.31*d
Females	.08	-.17c	.02	-.25*d
Factor Four "Maturity"				
Males	.08	.25*c	-.11	.12g
Females	.01	.56‡c	-.11	.52g
Factor Six "Mood"				
Males	-.03	-.10	.09	.08j
Females	-.04	-.19	.08	-.16j

*p < .05; †p < .01; ‡p < .001
NOTE: Correlations with the same subscript differ significantly from one another (p < .05).

TABLE 2
Correlations for Fe Factors and Total Fe with Cognitive Variables

	Verbal Scores		Math Scores	
	SMPY	Public	SMPY	Public
Fe Total				
Males	.18*	.01	.28†	.16
Females	.17	.03	-.08	.00
Factor One "Macho"				
Males	-.12	-.26‡	-.17‡	-.30‡
Females	.06	-.23‡	-.21‡	-.31*
Factor Two "Neurotic"				
Males	.00	.22c	.19*	.15d
Females	-.03	-.20c	-.02	-.16d
Factor Three "Stereo. Fem."				
Males	.08	-.35*	.23†	-.12
Females	.05	-.32*	.05	-.25†
Factor Four "Intell/Pol."				
Males	-.03	-.29††	-.12	-.33†h
Females	-.13	.10†	-.10	.02h
Factor Five "Moral/Intr."				
Males	.25†	-.09	.20†j	-.34†k
Females	.16	.13	-.03j	.10k

‡p < .05; *p < .01; †p < .001
NOTE: Correlations with the same subscript differ significantly from one another (p < .05).

TABLE 3
Correlations for the Study of Values' Scores with the Cognitive Variables

	Verbal Scores		Math Scores	
	SMPY	Public	SMPY	Public
Theoretical				
Males	.22*a		.23*	
Females	-.22†a		.08	
Economic				
Males	-.11		.11	
Females	-.13		.02	
Aesthetic				
Males	.20*		.02	
Females	.23†		-.05	
Social				
Males	-.05		.02	
Females	-.09		-.09	
Political				
Males	-.19*		-.02	
Females	-.22†		.05	
Religious				
Males	-.08b		-.25‡	
Females	.30*b		-.03	

†p < .05; *p < .01; ‡p < .001
NOTE: Correlations with the same subscript differ significantly from one another (p < .05).

direction for boys and girls. Apparently, in this group, high intellectual ability is related to a more positive self-opinion for girls and a more negative one for boys. Mokros, Taylor, and O'Neill (1977) have reported that seventh and eighth grade girls view intellectual achievement more positively than boys the same age. Peer pressures and societal expectations are often very different for boys and girls, and their impact often depends on the student's age. At this age, achievement is still "acceptable" to adolescent girls. This changes in late adolescence when girls no longer view intellectual pursuits as positively (Mokros et al., 1977). Boys, on the other hand, may often feel peer pressure from peers to engage in more "masculine" pursuits such as sports. The fact that this relationship was not found in the gifted group may indicate that the rewards from recognition and participation in an active program for the gifted are sufficient to counterbalance the effects of peer pressures and role stereotypes.

It was also found that at this developmental stage, girls may be more balanced or "androgynous" than boys. This is supported by the present findings. According to Block (1973), society tends to encourage a more "androgynous" sex role for boys as they get older, but reinforces a more narrowly defined "feminine" sex role for girls. Thus, role definitions and behavioral options for women are narrowed through socialization, and broadened for men. Maccoby and Jacklin (1974) cite interesting evidence that females are allowed more sex role freedom than boys at an early age. This fits with the data presented here which show girls to be more balanced, with bigger sex differences on the femininity scale of the BSRI than on the masculinity scale.

In the present study, the three measurement devices assessed very different aspects of the masculinity-femininity constellation. This resulted in very different relationships with the intellectual variables, as well as complex relationships among the three personality measures. It was not uncommon to find high feminine interests (such as found on the Fe) and high masculine values together.

The gifted and comparison groups did not differ significantly on the three personality variables. However, the relationship between the cognitive and personality measures did differ for the two groups. For the gifted group of adolescents, the scores from the Study of Values were most highly related to intellectual scores, while the more behavioral traits found on the BSRI were most predictive of cognitive scores for the public

“... rewards from recognition and participation in an active program for the gifted are sufficient to counterbalance the effects of peer pressures and role stereotypes.”

school group. One of the strongest findings was the consistent positive relationship between total Fe scores, and math and verbal abilities for SMPY boys.

Little evidence from this study was found to support an intellectual advantage for having a "balanced" or "androgynous" sex role. Rather, the evidence points to the advantage of possessing cross-sex characteristics, particularly for girls. Certain "instrumental" or "masculine" characteristics such as the "maturity" factor of the BSRI (e.g., independent, self-sufficient, assertive) were found to be positively related to intellectual variables for both sexes.

The differing relationship between personality variables and intellectual ability for the sexes emphasizes that the relationship between cognitive and personality variables is a two-way process. Certain personality characteristics associated with existing sex roles may be developmentally linked to cognitive skills in either a causal relationship or through shared socialization experiences. At the same time, cognitive abilities may have a causal effect on personality. It is also possible that environmental reactions to particular intellectual skills may affect one's personality (as in the case of differing self-concepts and attitudes among achieving boys and achieving girls). Particular values and interests may encourage the development of certain cognitive skills, or they may just complement each other. It is also possible that one's values and interests are shaped by one's intellectual skills. Personality attributes and attitudes have also been shown to be strongly related to how (or whether) one utilizes one's unique set of abilities.

REFERENCES

- Ben, S. The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology*, 1974, 42 (2), 155-162.
- Bieri, J. Parental identification, acceptance of authority, and within-sex differences in cognitive behavior. *Journal of Abnormal and Social Psychology*, 1960, 60, 76-79.
- Bing, E. Effect of childrearing practices on development of differential cognitive abilities. *Child Development*, 1963, 34, 631-648.
- Block, J.W. Conceptions of sex-role: Some cross-cultural and longitudinal perspectives. *American Psychologist*, 1973, 28 (6), 512-526.
- Bohannon, W.E. & Mills, C.J. Statistical and conceptual analysis of two measures of M-F. Paper presented at the Annual Meeting of the American Psychological Association, August, 1977, San Francisco.
- Constantinople, A. Masculinity-femininity: An exception to a famous dictum. *Psychological Bulletin*, 1973, 80 (5), 389-407.
- Gough, H.G. Identifying psychological femininity. *Educational and Psychological Measurement*, 1952, 12, 427-439.
- Maccoby, E.E. Sex differences in intellectual functioning. In: Maccoby, E.E. (Ed.) *The development of sex differences*. Stanford, Calif.: Stanford University Press, 1966.
- Maccoby, E.E. & Jacklin, C. *The psychology of sex differences*. Stanford, Calif.: Stanford University Press, 1974.
- Mills, C. Sex-role-related personality correlates of intellectual abilities in adolescents. Paper presented at the Annual Meeting of the American Psychological Association, August, 1978, Toronto.
- Milton, G.A. The effects of sex-role identification upon problem-solving skill. *Journal of abnormal and social psychology*, 1957, 55, 208-212.
- Walberg, H.J. Physics, femininity, and creativity. *Developmental psychology*, 1969, 1 (1), 47-54.

Combating Sexism In the Preschool Environment*

Robert Kirschenbaum

Gifted Children need to know, and at a very young age, that sex roles have no bearing on excellence.

Each of us would like to think that we have the opportunity to develop our talents and abilities as far as our commitment to personal growth will allow. This, after all, is a fundamental goal of American democracy. For many American women, however, that goal is still a fantasy. In this International Year of the Child, every educator should give priority to the neutralization of sexist conditions in their classrooms. Forty years of research indicate that most gifted girls do not make full use of the talents they possess. There is little argument on the position that girls have suffered the greatest loss in opportunities to excel as a result of sexism in society, and therefore have the most to gain from a concerted effort to counteract sexist stereotyping in the schools.

One survey¹ concludes that creative women, particularly those under twenty-six, reject traditional routes to professional achievement in order to find fulfillment in personal areas of achievement. A considerable number of creative women in this study recognized child-rearing and family care as challenges as great as achievement in a professional field. Yet, as new opportunities and problems are realistically appraised by women, the prospect for personal growth is dampened by the lack of definable models for women let alone gifted women.²

College women have incorporated society's attitudes and tend to evaluate themselves in terms of the dictums which stress that competition, success, competence, and intellectual achievement are basically inconsistent with femininity. The classic study by Horner³ notes that responses from older women are characterized by an awareness of the actual problems a woman encounters when she tries to overcome societal pressures against pursuing an interest avidly, especially if it brings her into conflict with men. Younger women in this study who projected

*I wish to acknowledge Linda Rae Geer for spurring my interest and Vince Rogers for being a constant source of verification while preparing this paper.