At Issue:  
Sex and Gender in Schizophrenia  
by Rich Lewine

Abstract

Using data collected in a study of sex differences in schizophrenia, I undertook this study to show the utility of distinguishing between sex and gender in the study of schizophrenia. Schizophrenia and schizoaffective disorder were combined to yield 213 patients (141 men, 72 women). There were 98 healthy controls (41 men, 57 women). The relative contributions of sex and gender to the prediction of age of first hospitalization and neuropsychological functioning were examined in linear regression analyses. Sex, but not gender, was a significant predictor of age at first hospitalization, even when controlling for illness severity. Among patients, sex and gender significantly contributed to the prediction of neuropsychological performance, beyond the contributions of education, age, and illness severity. Comparable results were found among healthy controls, although gender was significant only for women. For both healthy subjects and patients, more frequent endorsement of female typical social roles predicted better neuropsychological functioning. Being female also predicted higher neuropsychological scores in patients. The findings suggest that some aspects of schizophrenia study, such as the disorder’s onset, may be best pursued from a more biological (sex difference) perspective, while a sociocultural (gender difference) perspective may best serve other aspects of study, such as neuropsychological functioning.

Keywords: Schizophrenia, sex, gender, neuropsychology, onset.


The study of sex differences has yielded helpful insights into and stimulated research of the possible role of biopsychosocial processes in the genetic liability, onset, course, etiology, and treatment of schizophrenia. Goldstein and Lewine (2000) recently summarized the sex differences literature, suggesting that men, relative to women, have an earlier onset of illness; a more severe form of the disorder as reflected in greater social, cognitive, and affective impairment; and a poorer long-term outcome but may have a less familial form of the disorder than women. The utility of “sex” as a study variable inheres in its functioning as an uncontaminated predictor variable (Pekorny and Overall 1970) and its relative lack of ambiguity when operationalized by secondary sex characteristics. This line of research has tended to lead to hypotheses about the importance of biological processes in the onset and course of schizophrenia, in particular hypotheses about estrogen. As recently emphasized by Nasser et al. (2002), however, “sex” and “gender” have been used interchangeably in this area of study, as suggested by Lewine (1994). This causes a problem, as “sex” is primarily a biological variable while “gender” encompasses a broad range of biological, psychological, social, and cultural processes. To benefit maximally from the clues about schizophrenia yielded by “sex differences” research, it is imperative that we distinguish between the two, as they suggest potentially different paths of research.

Not all view “gender” the same way. Some include presumed etiology, while others do not (Unger and Crawford 1993). Gentile (1993), for example, has proposed a terminology to capture explicit assumptions about
etiology: “biologically sex-linked” traits for those related to biological femaleness/maleness; “gender-linked” traits for those related to sociocultural processes; “sex- and gender-linked” traits for those involving the conjunction of biological and sociocultural factors; and “sex-correlated” traits for those of unknown origin. Others point more broadly to the use of gender to reflect culturally embedded role, preference, or behavior (see Nasser et al. 2002). For the purposes of this analysis, I will follow Deaux’s recommendation (1985, 1993) in using “sex” when making comparisons based on the demographic categories of female and male and “gender” when comparing features of femaleness/maleness or femininity/masculinity.

This study was undertaken to provide substantive data and to show the utility of distinguishing between sex and gender in the study of schizophrenia. The general principle guiding this analysis inheres in the distinction between sex, a biological variable, and gender, a complex function of biology, psychology, and culture (Lewine 1994; Nasser et al. 2002). The examination of “gender” differences, therefore, emphasizes broader sociocultural processes, while the examination of “sex” places greater focus on biological variables.

A considerable problem in the practical implementation of this analytic strategy is the definition and operationalization of the term “gender.” As pointed out by Nasser et al. (2002), there is no “gold standard” in this field, in part because there is disagreement about how “gender” is defined and operationalized (e.g., Spence and Helmreich 1978; Bem 1981; Deaux 1993). I do not intend to resolve the controversies surrounding the meaning of “gender” in this article. While I use a measure (the Minnesota Multiphasic Personality Inventory [MMPI; Hathaway and McKinley 1942] Mf [masculinity-femininity] scale) that would not be my first choice if I had planned this study originally to distinguish between sex and gender, the results are sufficiently provocative to justify their report. I hope the strategy of analysis illustrated in this study will lead to more rigorous, differentiated, and prospective studies of gender in schizophrenia.

Using data collected in a study of sex differences in schizophrenia (Lewine et al. 1996, 1997), I examined the relative contributions of sex and gender to age of first hospitalization and neuropsychological functioning, both areas reported in the past to reveal sex differences (Goldstein and Lewine 2000). More specifically, most studies examining sex differences in age at schizophrenia onset (variably operationalized as symptom onset, psychosis onset, or first psychiatric hospitalization) have reported men to be younger at onset than women. Men are generally more neuropsychologically impaired than are women. These two variables were selected as exemplars, as it was expected that age at first hospitalization (AFH) would be largely associated with sex, while neuropsychological functioning has been reported to be associated with sociocultural variables and education (see Lewine and Caudle 2000). It was expected, therefore, that sex would predict onset, while gender would not, and that gender would predict neuropsychological functioning. Inclusion of the healthy comparison group provided a means of determining whether such sex and gender associations were limited to schizophrenia patients.

Methods

Patients. The patients in this analysis, representing a subsample of a larger study of sex differences in neuropsychological function and brain structure in psychiatric patients and healthy controls (Lewine et al. 1996, 1997), completed the MMPI as part of their clinical assessment. All subjects were interviewed using the Schedule for Affective Disorders and Schizophrenia—Lifetime (Endicott and Spitzer 1978). A senior clinician (R.L.) assigned a research diagnosis after review of all clinical assessments but without knowledge of any other study results (e.g., neuropsychological testing). The patients were recruited from private and public facilities, from the Georgia chapter of the National Alliance for the Mentally Ill, and by word of mouth. The racial composition of the sample reflected the demographics of the state within which the study was conducted. Schizophrenia and schizoaffective disorder (DSM-III-R [APA 1987]) were combined to yield 213 patients (141 men, 72 women). There were 98 healthy controls (41 men, 57 women) for whom neither history nor study assessment suggested a significant psychiatric disorder. The sex distribution was significantly different by diagnosis (chi-square = 12.189, df = 1, p < 0.0001), men (66.2%) being more prevalent than women within the patient group and less prevalent (41.8%) within the comparison group.

The larger study of which this analysis is a subset included extensive clinical assessment of symptoms, medication side effects, and neurological soft signs; psychosocial history; medical history and examination; an extensive battery of neuropsychological tests; and magnetic resonance imaging scans. Of the patients, 70 percent were on antipsychotic medication at the time of the study, with 25 percent also on anticholinergic medication for antipsychotic medication side effects. Approximately 12 percent of the patients were not on any psychotropic medications; medication status of the remaining patients was not determined. There were no sex or age of onset (age of first hospital admission) differences in medication status (Lewine et al. 1997).

I employed the MMPI Mf scale, one of several measures listed by Nasser et al. (2002) as acceptable options,
to assess gender. Although originally intended to measure sexual orientation, it is widely accepted that the Mf scale is not valid for this purpose. Rather, it appears to capture for the most part a set of sex-typical social role and preference items. For example, “I like Mechanics magazine,” “My feelings are not easily hurt,” and “I frequently find it necessary to stand up for what is right” are considered male-atypical when answered “false” by men and “yes” by women. High T scores for both sexes indicate greater deviation from own-sex typical item endorsements. Valentine (1981) reported that while the Mf scale is not an adequate measure of the gender construct, it exhibited significant overlap with both the Bem Sex Role Inventory and the Personal Attributes Questionnaire, both more widely accepted gender measures (detailed interpretations of the Mf scale are provided in the Discussion). The Mf scale’s primary shortcoming is its bipolar nature, making the assessment of androgeny impossible. The Mf scale appears to be more accurately interpreted, according to Valentine, as a measure of “femininity” rather than “masculinity/femininity.” In keeping with Valentine’s view, I tried to generate an Mf scale score that would have the same gender meaning for both sexes (i.e., higher scores indicating greater “femininity” for both men and women). This was accomplished by subtracting women’s Mf T scores from 50, thereby reversing the metric of the scale for women. Men’s Mf scale T scores were left as originally calculated. This strategy resulted in severe collinearity between sex and Mf scale, making regression analyses using both sex and gender impossible. I opted instead to conduct separate regression analyses for men and women when examining gender (Mf scale) and a separate regression analysis using sex, omitting gender. Patients and healthy controls were analyzed separately.

**Measures.** As previously discussed, AFH and neuropsychological function were selected as dependent variables to highlight sex and gender, respectively. AFH was based on patient report and prior service records, when available. For neuropsychological function, following the suggestion of Blanchard and Neale (1992), an extensive battery of neuropsychological tests was administered to all subjects. Each test score was standardized using the entire sample and combined into seven functional domains: language, executive function, verbal memory, spatial memory, visual perception, concentration, and motor speed. As neuropsychological test scores are typically moderately to highly correlated with one another, I computed the mean standardized score of the seven standardized functional domains to use in this analysis (see Lewine et al. 1996, 1997, for further details of the specific tests included in the neuropsychological battery).

**Results**

**Subjects.** Women in this sample were significantly older at time of assessment than were men: 36.2 (11.9) and 33.2 (9.5) for women and men, respectively; $F_{1,307} = 5.118$, $p = 0.024$. There were no other significant main or interaction effects on age. Age was used as a predictor or as a covariate in all subsequent analyses of neuropsychological functioning.

**AFH**

**Regression analysis—sex.** To account for any possible sex differences in severity of illness, both the Schizophrenia (Sc) scale of the MMPI and sex were used to predict AFH. As expected, both Sc and sex significantly contributed to the prediction of AFH, the beta weights indicating that early AFH was associated with more severe illness (higher Sc scale scores) and being male. The standardized coefficients for Sc and sex were $-0.199$ ($t = -2.959$, $p = 0.003$) and $0.162$ ($t = 2.411$, $p = 0.017$), respectively. The analysis of variance (ANOVA) for this model yielded an $F_{2,208} = 8.246$, $p < 0.0001$.

**Regression analysis—Mf scale.** Table 1 provides summary statistics for the prediction of AFH from the Sc scale and the Mf scale for men and women separately. While Sc scale was a significant predictor for men and approached statistical significance for women, the Mf scale failed to reach statistical significance for either sex. As was true in the sex analysis, higher Sc scale values (i.e., more severe schizophrenia) predicted an earlier AFH.

**Neuropsychological Function**

**Multiple regression analysis—sex: Patients.** Three variables in addition to sex were entered into the regression analysis predicting neuropsychological performance: number of years of education, age at testing, and Sc scale. The overall model significantly predicted neuropsychological performance, $F_{4,137} = 14.604$, $p < 0.0001$. $R^2$ for the four-variable model was 0.299; each of the four predictor variables resulted in a statistically significant ($p < 0.05$ or smaller, $p = 0.011$ for sex) addition to $R^2$. Better neuropsychological performance was predicted by having stronger Sc scales.
more years of education, being younger, being less ill, and being female.

Healthy controls. Omitting Sc scale (as none of the subjects by virtue of selection criteria scored in the clinical range), the ANOVA of the three-variable model (education, age, sex) was significant, $F_{3, 69} = 11.280$, $p < 0.0001$. Examination of the beta values and their associated $t$ values and significance levels revealed that age did not significantly add to the prediction (standardized beta = 0.011, $t = 0.108, p = 0.915$), sex was marginally significant (standardized beta = -0.172, $t = -1.723, p = 0.089$), and only education significantly predicted the mean neuropsychological score in both sexes (standardized beta = 0.535, $t = 5.349, p < 0.0001$).

Multiple regression analysis—Mf: Patients. Table 2 presents the standardized beta weights and associated significance levels for the prediction of neuropsychological performance from education, age, Sc scale, and Mf scale for men and women. Mf scale predicted significantly for both sexes, with the four-variable model yielding $R^2$s of 0.35 and 0.49 for men and women, respectively. Being more educated, younger, and less severely ill predicted better neuropsychological performance in both sexes. Among male patients, higher Mf scale scores predicted better performance, while among female patients, lower Mf scale scores predicted better performance.

Healthy controls. Comparable results were found for the healthy controls, as summarized in table 3. In particular, higher Mf scale scores and lower Mf scale scores predicted better neuropsychological performance in men and women, respectively. Unlike the results for patients, however, the Mf scale findings were statistically significant for the women only. To determine whether a restricted range of scores in male neuropsychological performance or Mf scale could have contributed to this sex difference, I examined sex differences in the descriptive statistics of Mf scale and neuropsychological test score. In both cases, women had a more constricted range of scores, arguing against this explanation of the findings.

Summary of Results. Sex emerged unequivocally as a significant predictor of AFH, even when controlling for severity of illness. Mf scale was not significant. Among patients, both sex and Mf scale significantly contributed to the prediction of neuropsychological performance above that of education, age, and illness severity. Comparable results were found among healthy controls, although the Mf scale was significant for only women. For both healthy subjects and patients, higher Mf scores in men and lower Mf scores in women predicted better neuropsychological functioning. Being female predicted higher neuropsychological scores in patients.

Discussion

Sex and Gender in Schizophrenia. As expected, sex was significantly associated with AFH among schizophrenia patients. Numerous original epidemiological studies and review articles have documented an earlier onset of schizophrenia in men than in women (Goldstein and Lewine 2000). Likewise, severity of illness (in this study operationalized as the MMPI Sc scale score) has been associated with onset age: the more severe the disorder, the earlier the onset. Gender (MMPI Mf scale) was not significantly associated with illness onset. These findings confirm the importance of biological processes (e.g., puberty, hormonal modulation of illness) in the study of schizophrenia onset. This is not to say that psychosocial factors are not involved but only that given limited time and resources, focus on sex-associated biological functions may yield a bigger payoff than study of psychosocial variables.

Neuropsychological function, in sharp contrast to illness onset, is associated with sex and numerous psychosocial variables, including gender. It was expected that education, age at testing, and illness severity would be associated with performance scores. Of greater interest was that both sex and gender contributed to the prediction of neuropsychological performance above that of these other variables. Accounting for sex differences in education, age, and AFH, being male predicted poorer neuropsychological functioning than being female, an association commonly reported. This finding is consistent with the view that men have a more severe form of the illness characterized in part by early onset and significant functional impairments. In short, this aspect of the results confirms the frequent findings of others.

Table 2. Summary of standardized coefficients (significance level) for prediction of patients' neuropsychological performance scores

<table>
<thead>
<tr>
<th></th>
<th>Education</th>
<th>Age</th>
<th>Sc scale</th>
<th>Mf scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>0.470 (&lt;0.0001)</td>
<td>-0.330 (0.001)</td>
<td>-0.211 (0.027)</td>
<td>0.325 (0.001)</td>
</tr>
<tr>
<td>Women</td>
<td>0.219 (0.081)</td>
<td>-0.164 (0.134)</td>
<td>-0.354 (0.002)</td>
<td>-0.481 (&lt;0.0001)</td>
</tr>
</tbody>
</table>

Note.—MI = masculinity-femininity; SC = schizophrenia.
Recall that the association of Mf scale and neuropsychological functioning was the opposite in female and male patients. Low Mf scale scores in men and high Mf scale scores in women predicted poorer performance (in association with education, age, and illness severity). In both sexes, endorsement of "typical male role" behaviors predicted poorer neuropsychological functioning. This suggests that it is not sex-atypical role endorsement that is critical, but rather the characteristics associated with the typical male role as measured by the MMPI that is the relevant feature of its predictive strength. Together with the sex differences findings, it may be speculated that the frequently reported association of poor neuropsychological performance in male schizophrenia patients may be attributed in part to biological sex factors and, just as importantly, in part to features of "maleness" that transcend sex (see below).

The interpretation of the gender findings finds partial confirmation in the results of the healthy control analyses.

**Sex and Gender in Healthy Controls.** As expected, sex was not found to be a statistically significant predictor of neuropsychological performance among the healthy subjects. However, as was true for patients, the Mf scale contributed significantly to the prediction of neuropsychological performance among healthy individuals; higher Mf scale scores predicted poorer performance for women, and lower Mf scale scores predicted poorer performance for men, the association being statistically significant for only women. Again, "maleness" was consistently associated with poorer neuropsychological performance. The distributions of both Mf scale scores and neuropsychological test scores were examined for each sex to determine whether constricted score range accounted for this finding. In fact, men had the greater range of scores on both variables. The difference may be due to sample size differences, as there were more healthy women (57) than men (41) in the study. More important, the findings for Mf and neuropsychological functioning in the healthy sample parallel those in the patient sample, suggesting a generic relationship between the two variables.

**Table 3. Summary of standardized coefficients (significance level) for prediction of healthy controls’ neuropsychological performance scores**

<table>
<thead>
<tr>
<th></th>
<th>Education</th>
<th>Age</th>
<th>Mf scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>0.547 (0.004)</td>
<td>0.131 (0.454)</td>
<td>0.183 (0.292)</td>
</tr>
<tr>
<td>Women</td>
<td>0.541 (&lt;0.0001)</td>
<td>-0.018 (0.887)</td>
<td>-0.276 (0.034)</td>
</tr>
</tbody>
</table>

*Note.—Mf = masculinity-femininity.*

What Does the MMPI Mf Scale Measure? We know that the Mf scale does not measure homosexuality or "sexual inversion," as had been thought originally (Wong 1984). Appropriately critiqued on multiple methodological and research design grounds, this scale has been largely ignored, so there are limited empirical data relevant to understanding it. Nevertheless, there are several findings that, taken together with the results from this study, suggest that the scale may have utility.

Cernovsky (1985) reported an association between the Mf scale and intellectual functioning (measured by a test of vocabulary) in a sample of male and female alcohol abusers that is strikingly similar to the results reported here. The Mf scale correlated −0.32 and 0.44 with vocabulary scores in female and male alcoholics, respectively. In other words, in both sexes, "masculinity" was associated with inferior performance. Assessing neuropsychological functioning in a sample of male patients with organic brain damage, Calsyn et al. (1982) similarly found that Mf correlated −0.42 with neuropsychological performance. Calsyn et al. interpreted the findings as reflecting greater cognitive flexibility and abstracting ability among those men with elevated "femininity" scores; or, in keeping with the presentation of this study’s results, "masculinity" scores are associated with less cognitive flexibility and abstracting ability. Finally, Zetenyi and Lukacs (1985) also found that "femininity" and "masculinity" transcended sex in a perceptual style task; "feminine" men and women performed similarly and in contrast to "masculine" men and women. These three studies, as well as the results of my analysis, implicate the Mf scale as tapping a bipolar feminine–masculine gender style, the "feminine" end of which is correlated with better neuropsychological functioning than the "masculine" end. Todd and Gynther (1988) conceptualized the Mf scale differences as capturing interpersonal style differences. "Femininity" (low Mf in females and high Mf in males) was associated with being approachable, kind, emotional, neighborly, and forgiving. In contrast, "masculinity" (high Mf in females and low Mf in males) was associated with being self-confident, outgoing, industrious, productive, and dominant.

The Mf scale has also been viewed as measuring global psychological adjustment, although in a way that contradicts both my findings and those of the studies summarized above. Ward and Dillon (1990) had clinicians rate a sample of psychiatric patients on the Brief Psychiatric Rating Scale without knowledge of the patients' Mf scores. Those patients with high Mf scores (i.e., both women and men scoring in the sex-atypical direction on the scale) were rated as more anxious, depressed, guilty, and tense than those with average or low Mf scores. Female psychiatric patients who score
high on the Mf scale tend to be described as hostile, aggressive, and unfriendly, whereas male psychiatric patients scoring high on the Mf scale tend to be described as passive and socially sensitive. In short, men and women who differ significantly from the statistical mean of sex-typical responses on the Mf scale may be less well adjusted than those scoring lower on the Mf scale. This view contrasts sharply with those studies reporting an association between elevated Mf scores and better neuropsychological functioning in men (even taking the well-documented association between education and Mf into account).

In sum, there are some early data (Cernovsky 1985, 1986; Zetenyi and Lukacs 1985; Alumbaugh 1987) that are consistent with the findings reported from my study that suggest that femininity/masculinity is associated with neuropsychological functioning or perceptual style and that the Mf scale may better be conceptualized as either a cognitive style or an interpersonal style than as a measure of gender. The precise nature of this personality style remains to be elucidated.

I note, of course, that the Mf scale may not be homogeneous. The factor structure of the Mf scale suggests that it is not homogeneous. Graham et al. (1971) factor-analyzed the Mf scale for 422 subjects representing a cross section of age and occupations and both psychiatric patients and healthy controls. They reported seven factors: sensitivity-narcissism (accounting for 21% of the common variance), feminine interests, masculine interests, passivity, social extroversion, exhibitionism, and a demographic factor. This further complicates the interpretation of the relationship between MF and neuropsychological functioning, as it is unclear which of the Mf components carries the relationship. There is also disagreement about whether MF is bipolar or confounds independent dimensions of masculine and feminine (Wong 1984). Finally, I note that this study employed the Mf scale and that it has been revised somewhat in the MMPI-2. I expect, however, that differences in results from future studies using the MMPI-2 that may be attributable to the revision of the scale will be minimal. The MMPI-2 Mf scale is largely the same as the original, having retained all but four of the original items and modified language to be more contemporary and less offensive.

Indeed, the literature on the MMPI-2 MF scale is similar to the MMPI literature in its being scant, being contradictory, and pointing to the importance of personality style. Johnson et al. (1996) examined the gender-feminine (GF) and gender-masculine (GM) MMPI-2 scales constructed in acknowledgment that the original Mf scale may not be bipolar. They found high GF scores associated with high interpersonal affiliation and interpersonal sensitivity and high GM scores associated with personal strength and potency. The view of Johnson et al. echoes that of Peterson and Dahlstrom (1992) in their suggesting the confounding of “communion” and “agency” (p. 487) in the MF scale. Likewise, factor analysis of the MMPI-2 Mf scale has yielded results that are quite similar to Graham et al.’s (1971). Martin (1993) found seven subscales that were identical for men and women: masculine interests, hypersensitivity/anxiety, feminine interests, cynicism/suspiciousness, aesthetic interests, feminine gender identity, and boisterousness. Finally, the conundrum of whether elevated Mf scores have a positive or negative valence may be a function of the sample under study. Long and Graham (1991) suggest that elevated MF scores are associated with “negative” characteristics (e.g., narcissism, aggressiveness, and suspiciousness, see Blais 1995) in psychiatric samples and with “positive” characteristics (e.g., industriousness, responsibility) in normal samples.

**Sex and Gender as a Heuristic.** Clearly, “sex” and “gender” are not the same and should not be used interchangeably. Others have used the analytic strategy reported in this article with the same conclusions regarding the independent contributions of gender and sex. Daniel et al. (1988), for example, examined brain blood flow differences as a function of sex and as a function of gender. While they found the expected sex difference in blood flow (higher for women than for men), feminine subjects of both sexes had higher brain blood flow values than masculine subjects. The susceptibility of biological and behavioral indexes to gender effects and by implication to sociocultural processes raises significant questions about their study as “markers” for schizophrenia. Various neuropsychological impairments such as executive dysfunction and working memory deficits have been proposed as potential behavioral markers of schizophrenia (Conklin and Iacono 2003). Neuropsychological function appears, however, to be associated with a range of generic sociocultural variables that may serve as powerful moderating influences. There have been only scattered attempts to study in detail the sociocultural contexts of these putative markers (see Lewine and Caudle 2000; Nasser et al. 2002).

This analysis also illustrates how formal comparison of sex and gender may guide the search for etiological processes. Consider, for example, AFH for schizophrenia. Sex, not gender, differences clearly emerged, a finding consistent with a large body of literature (Goldstein and Lewine 2000). The exclusion of gender, only possible when analyzed, suggests that sex-associated biological processes may prove more useful than sociocultural processes (gender) in explaining the onset of schizophrenia. (Some major assumptions are glossed over in emphasizing the heuristic potential of the sex-gender research strategy. The two primary assumptions are that AFH is a valid marker of illness onset and that
"gender" has been adequately assessed.) In contrast, neuropsychological functioning can be fruitfully explored with respect to biological and sociocultural processes, as suggested by the independent effects of sex and gender on the global neuropsychological functioning score.

It is important that the examples in this study not be viewed too rigidly. Likewise, it would be far too simplistic to categorize "sex" as exclusively biological in nature and "gender" as exclusively sociocultural. Obviously, most phenomena of interest will prove to be complex inter- or transactions of biological, psychological, and social processes. Hence, the use of "sex" and "gender" is meant largely to guide the general direction of research and, especially with respect to gender, to formalize the incorporation of sociocultural variables into the study of schizophrenia. The perspective outlined in this article may strike some as a revisionist return to pre-biopsychosocial days when arbitrary and stringently maintained boundaries between domains of inquiry resulted in all too often simplistic and incorrect theories of schizophrenia. This is definitely not the intended message. Rather, the comparison of gender and sex may focus our attention on certain schizophrenia-related phenomena that may more readily yield to studies of the complex interactions of biology, psychology, and culture than might others. Neuropsychological function, in contrast to AFH, may be one such phenomenon.

References


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