

GENDER IDENTITY AND GENDER ROLE IN SCHIZOPHRENIA

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A thesis submitted to the Faculty of Graduate Studies and Research  
in partial fulfillment of the requirements of the degree of Doctor  
of Philosophy.

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Montreal

August, 1977

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Abstract

This thesis consists of four separate manuscripts. Manuscript I is an historical introduction and evaluative review of gender identity and gender role in schizophrenia. Manuscripts II and III revalidate parts of the Terman-Miles M-F Test and several nonverbal sex-differentiating tasks. The final manuscript compares recently-admitted affective disorders, noninstitutionalized controls, recently-admitted nonparanoid schizophrenics, and long-term nonparanoid schizophrenics. Appropriate gender differences emerge on tests of gender identity and gender-role adoption. And schizophrenics have neither a faulty gender-role knowledge nor a differential perception of gender-role reinforcement by parents or hospital staff. But schizophrenics do prefer more opposite sex roles.

## L'IDENTITE DES GENRES ET LE ROLE DES GENRES EN SCHIZOPHRENIE

Ronald A. LaTorre

## Résumé

Cette thèse consiste en quatre manuscrits séparés. Le manuscrit I est une introduction historique et une revue qui évalue l'identité des genres et du rôle des genres en schizophrénie. Les manuscrits II et III rendent valables des extraits des tests Terman-Miles M-F et plusieurs essais non verbaux de différenciation des sexes. Le dernier manuscrit compare les individus récemment admis pour désordres affectifs et pour schizophrénie non-paranoïde ainsi que les cas de schizophrénie non-paranoïde interné depuis un certain nombre d'années et enfin un groupe contrôle d'individus sains. Les différences convenables apparaissent dans deux tests d'identité de genres et deux tests d'adoption du rôle de genres. Aussi, les schizophrènes n'ont pas d'une mauvaise connaissance du rôle attribué aux différents sexes ni d'une perception différente du renforcement accompagnant ces rôles par les parents ou le personnel de l'hôpital. Mais les schizophrènes préfèrent le rôle du sexe opposé.

## TABLE OF CONTENTS

	<u>Page</u>
PREFACE .....	i
MANUSCRIPT I. The Psychological Assessment of Gender	
Identity and Gender Role in Schizophrenia .....	1
Measuring Gender Identity and Gender Role .....	4
Gender Identity .....	6
Gender-Role Adoption .....	19
Gender-Role Preference .....	33
Gender-Role Ability .....	36
Summary of Empirical Studies .....	38
Implications for Theory .....	40
References .....	47
MANUSCRIPT II. The Terman-Miles M-F Test: An	
Examination of Exercises 1, 2, and 3 Forty	
Years Later .....	60
Abstract .....	61
Introduction .....	62
Methodology and Results .....	68
Gender, Student Status, and Religion .....	68
Gender, Marital Status, and Education .....	69
Gender and Age .....	70
Internal Reliability .....	71
Test-Retest .....	72
Fakability .....	72
Additional Correlations with the BSRI and	
the Terman-Miles Test .....	74
Discussion .....	75

	<u>Page</u>
Reference Notes .....	78
References .....	79
Footnotes .....	81
Tables .....	82
MANUSCRIPT III. Cognitive Style, Hemispheric Specialization, and Tested Abilities of Transsexuals and Nontranssexuals .....	92
Abstract .....	93
Introduction .....	94
Method .....	96
Results and Discussion ,.....	97
References .....	99
Footnotes .....	100
Tables .....	101
MANUSCRIPT IV. Gender Identity and Gender Role in Schizophrenia: An Experimental Investigation .....	104
Abstract .....	105
Introduction .....	106
Method .....	114
Results .....	127
Discussion .....	133
Reference Notes .....	138
References .....	139
Tables .....	145
GENERAL DISCUSSION .....	160
GENERAL REFERENCES .....	164

## PREFACE

Classic analytic literature suggests that schizophrenic psychosis results from a conflict and confusion in bisexual identification (Kempf, 1949). Detailed observation of families of schizophrenic offspring would allow even a learning theorist to deduce that schizophrenics might have gender identity and/or gender role difficulties. Schizophrenic males and females tend to come from two distinct types of families (Lidz, 1972). The male schizophrenic has a strong, engulfing mother and a weak or absent father. The female schizophrenic's father is close while the mother is emotionally distant. In essence, the same sex parent neither provides a good gender role model nor reinforces the child for appropriate gender role behavior. The opposite sex parent may even reinforce inappropriate gender role behavior.

There is considerable research which has been done in the psychological assessment of gender identity and gender role problems in schizophrenia (see LaTorre, 1976, for a review). Yet, progress in such research has been stifled by several methodological shortcomings.

One such problem has been that previous studies have saturated their schizophrenic sample with paranoid and undifferentiated subtypes (Biller & Poey, 1969; Kayton & Biller, 1972; Kokonis, 1973; Millgram, 1960; Smith, 1953). Since paranoia (which symptoms may also exist in undifferentiated schizophrenics) has, itself, been linked to gender identity or role problems, it is possible that the results of previous research have been overgeneralized to the entire schizophrenic population. Where paranoids have been compared to nonparanoids on gender identity and role tests, the results are equivocal (Kayton & Biller, 1972;

Musiker, 1952; Petzel & Gynther, 1969; Rosenweig & Shakow, 1937; Watson, 1965).

Another problem has been the notorious lack of adequate control groups, particularly the inclusion of a nonschizophrenic sample matched in length of hospitalization. Since psychopathologies other than schizophrenia have been linked to gender identity and role problems (Jordan & Bempler, 1970; Kayton & Biller, 1972; Kokonis, 1972; LaTorre & Gregoire, in press; Lynn, 1969; Wilsnack, 1973), the inclusion of such a control group would allow us to determine whether such problems are specific to schizophrenia or whether they are more general and possibly a result of emotional illness/turmoil or psychiatric hospitalization.

A third problem has been that insufficient demographic information has been reported in these studies. This insufficiency precludes an assessment of the comparability of the results from different sources. Such potentially important factors include subtype of schizophrenia, marital status, age, and length of hospitalization.

A fourth problem clouding the picture has been the method of data analysis. There has been too much of a focus on investigating diagnostic group differences with the same sex rather than investigating sex differences within each diagnostic group. Since gender identity and role are basically defined within the context of sex differences, such an analysis would be more appropriate than a group difference analysis.

A fifth problem lies within the broad area of schizophrenia. There has not existed clearly defined and reliable criteria for inclusion into the group labeled schizophrenic. Previous studies have taken as

the criterion the psychiatric diagnosis. However, this criterion has been shown to suffer in reliability and possibly validity (Ash, 1949; Ellis & Sells, 1964; Mehlman, 1952; Pasamanick, Dinitz, & Lefton, 1959; Schmidt & Fonda, 1956).

A sixth problem lies in the broad area of gender identity and gender roles. Gender identity and role research has proven to be a most confusing area in psychology. It consists of imprecise and intermixed terminology, poor test construction and validation, hypotheses based more on emotion than reason, and an apparent lack of communication among the various researchers.

This thesis consists of a series of original studies which seek to clarify the nature of gender identity and gender role in schizophrenia. The first manuscript deals with terminology and reviews the empirical literature with specific regard to the comprehensive terminology developed therein. It attempts to untangle the gender identity and role terminology confusion and gives the reader an insight into many of the available measuring devices. It also provides an historical introduction and evaluative review which point to and highlight many of the problems discussed above.

The second manuscript reports the revalidation of the first three exercises of the Terman-Miles Attitudes-Interest Analysis Test. This test was chosen because it is the oldest standardized test which measures gender identity or role, it remains the most thoroughly standardized of all such tests, and it is one of the few tests that permits a profile analysis which recognizes the multidimensionality of gender roles.



Despite these attractive aspects, however, it was standardized a very long time ago and what was true of a 1920-1930 American sample may not be true of a 1975 Canadian sample.

In the third manuscript, we sought to validate other tests of sex differences which might be useful as measures of gender identity or role. We investigated nonverbal tests since traditional verbal tests are notorious for their fakability and transparency, and since nonverbal tests used in conjunction with verbal tests could strengthen experimental results by virtue of converging methodologies. A major strength of this manuscript is that it possesses a transsexual validation group.

Having tried to bring some order to the general area of gender identity and role research, having noted several serious methodological shortcomings in previous research, and having examined the validities and reliabilities of several tests, we sought to make a detailed investigation into the area of gender identity and role in schizophrenia. The fourth and final manuscript is the report of that investigation. This manuscript has both strength and uniqueness in two separate areas. These areas are (1) a methodological sophistication and methodological improvement over previous studies, and (2) the goals sought and specific hypotheses examined. Methodologically, it uses a research diagnosis procedure of high reliability, does not confound paranoia with schizophrenia, includes both males and females, and includes appropriate nonschizophrenic psychiatric patient controls. With respect to goals and hypotheses, it is concerned primarily with sex differences within groups and not group differences for one sex,

it seeks to determine the effects of hospitalization on gender identity and role tests, and it examines several possible sources of gender identity and gender role problems.

These four studies are presented in the form of four original manuscripts written in formats suitable for publication. The first manuscript is published in Schizophrenia Bulletin (1976, 2, 266-285); the second manuscript, with W. E. Piper as coauthor, has been accepted for publication by Sex Roles (in press); the third manuscript, with I. Gossmann and W. E. Piper as coauthors, is published in Perceptual and Motor Skills (1976, 43, 719-722, the fourth manuscript has been submitted for publication.

This research was partially supported by two McGill University Faculty of Graduate Studies and Research grants, principal investigator Dr. William E. Piper. The author was a McConnell fellow during the course of this research and wishes to thank the J. W. McConnell Memorial Fellowship fund for providing financial support.

I am also indebted to

-- Dr. William E. Piper for many helpful discussions throughout all phases of this research, for his critical reading and evaluation of the Manuscript, for his continued support, and particularly for his patience.

-- Drs. Michael Corballis, David C. McClelland, and Donald Taylor who served as members of my internal thesis committee.

-- Drs. J. Ramsay, G. Ferguson, C. Olson, and Ms. R. Amsel for advice and assistance on statistical evaluation of the data.

-- Drs. W. D. Engels, S. Yulis, R. Kiriakos, T. Kolivakis, R. E. Pittenger, D. Pivnicki, and the staff of the Allan Memorial Institute of Psychiatry, Royal Victoria Hospital, for their permission and co-operation in testing patients at that institution.

-- Drs. F. Smith, A. Surkis, R. J. Gardiner, L. Vacaflor, and staff of the Montreal General Hospital for permission and co-operation in testing patients at their institution.

-- Drs. C. H. Cahn, N. P. V. Nair, R. Buckridan, E. Naltchayan, C. Sterlin, L. Balingao, L. Buffett, R. A. Tirol, J. Ruiz-Navarro, R. Yassa, B. M. Robertson, J. D. Stewart, C. Chuaqui, N. Moamai, S. Semmikian, C. Umman, and the staff of the Douglas Hospital for permission and co-operation in testing patients at their institution.

-- Dr. G. Nemeth and the staff of the Queen Elizabeth Hospital for permission and co-operation in testing patients at their institution.

-- Drs. B. T. Wigdor, L. Gomez, and the staff of the Queen Mary Veteran's Hospital for permission and co-operation in testing patients at their institution.

-- Drs. J. J. Sigal, E. Levinson, and the staff of the Jewish General Hospital for permission and co-operation in testing patients at their institution.

-- Mss. N. Edwards, I. Gossmann, A.-M. LaTorre, J. LeGallais, E. Morrissy, C. Patterson, and J. Perry who served as research assistants.

MANUSCRIPT I. The Psychological Assessment of  
Gender Identity and Gender Role in Schizophrenia

Gender identity has been likened to a symphonic orchestration (Gershman, 1970). It is composed of many motifs intertwined into one integrated theme. In other words, gender identity is a composite of several subcategories. These subcategories vary from author to author but not without considerable overlap. John Money (1973), who claims to be the first person to define gender identity in print, discusses gender role, gender identity, and core gender identity. Gender role is the public expression of one's individuality as male or female. Gender identity is the private experience of one's individuality as male or female. Core gender identity is a term used to designate the development of gender identity, a process that has begun as early as 18 months, in contradiction to classic Freudian theory.

Biller (1968) defined his three levels as sex-role preference, sex-role adoption, and sex-role identity/orientation. Sex-role preference is the desire to adhere to cultural prescriptions and proscriptions of the masculine or feminine role. This implies a choice or discrimination, and the individual is aware of which of two roles he wishes to pursue. Sex-role adoption is publicly observable behavior, that is, how masculine or feminine members of society view an individual. As such, it is a function of general behavior, only some of which involves intentional awareness. Sex-role adoption, therefore, is similar to Money's gender role. Sex-role identity/orientation is the way in which an individual basically views himself. It is an underlying and not necessarily conscious perception of maleness or femaleness. Sex-role identity/orientation corresponds to Money's gender identity.

Green (1974) discusses the following three subcategories: 1) an individual's basic conviction of being male or female - similar to Money's gender identity and Biller's sexual identity/orientation but with more conscious awareness; 2) an individual's behavior, which is culturally associated with males and females - Money's gender role and Biller's sex-role adoption; and 3) an individual's preference for male or female sexual partners - a specific subset of Biller's sex-role preference.

McClelland and Watt (1968) discuss three levels within a developmental framework. First is gender identity, which is an unconscious schema representing pride, confidence, and security in one's membership in the male or female sex. This is similar to Money's gender identity, Biller's sexual identity/orientation, and Green's basic conviction. The second level is sex-role style, which is a more or less unconscious phenomenon characterized by assertiveness in males and yielding or interdependence in females. This level seems to be a specific subset of Money's gender role, Biller's sex-role adoption, and Green's individual behavior. The third level consists of sex-typed interests, likes, and attitudes, which are products of a particular culture and a particular time. This third level seems to be a combination of Biller's sex-role preference and sex-role adoption.

It is apparent that while the terminology is mixed, confusing, and muddy, there are some universal underlying constructs. First, and most universally acknowledged, is a self-definition of oneself as being male or female. It is often regarded as a deep belief and may be quite

unconscious, although virtually everyone has some conscious awareness of their gender identity. For this category I have opted for the term gender identity. Money rightly argues that the word "gender" is more appropriate than the word "sex" as the latter has implications and connotations of reproductive functioning that the former does not have. Gender identity, as McClelland and Watt (1968) suggest, is the first level to develop, and it is around this level that later levels will be built. The next level is gender role, which constitutes those characteristics such as traits, behavior, and appearance that differentiate the two genders. Gender role may itself be subdivided. The first subdivision is gender-role adoption, which consists of those aspects of the gender role that the individual has himself actually acquired. As such, it may be conscious or unconscious to the individual, but it is readily observable to others. This is in contrast to gender identity which is not directly observable to others. A second subdivision is gender-role preference, which is an individual's preference for gender-typed items or behavior. A third subdivision, not discussed by the other authors, is gender-role ability or a person's ability to present manifest acquired skills.

For the most part, gender identity and the three subdivisions of gender role are in line with each other. However, they may, at times or in select samples, be discrepant. That gender-role adoption and gender identity are independent categories is underscored by Hooker's (1965) work with nonpatient male homosexuals. These males all described their conscious gender identity as male; however, there was a considerable variation in the degree to which they adopted the masculine or feminine

role. The discrepancy between gender-role preference and gender-role adoption can be seen in male prisoners who have sexual relations with fellow male prisoners and yet voice a preference for women. Male transsexuals (biological males presenting for sex-change surgery) normally have a feminine gender identity, gender-role adoption, and gender-role preference; however, there are considerable individual differences in this group's gender-role ability or their ability to "pass" as a female. These examples underscore the fact that the concepts used herein are independent and may be incongruent. Certainly, there is congruency in the average population. Which biological gender one believes oneself to be influences the roles he chooses; and the roles chosen, which are usually appropriate, reinforce one's gender identity. An analogy would be body and limbs. When we see a body we usually also see limbs attached, and vice versa. But, in times of war, for example, we may see limbless bodies or limbs without bodies. So, although they normally both go together, they are independent.

#### Measuring Gender Identity and Role

Although one can label different levels or categories of gender identity and role, there seems to be only one operational criterion upon which the measurement of each is based. That criterion is a difference between the two genders. The one factor common to tests of gender identity or role is the test's ability to discriminate the responses of males and females. Hence gender identity and role are, unfortunately, defined basically in terms of gender differences. While it makes sense, with two genders of male and female, that any level of gender identity or role



should be different for the two genders, the converse is not always true. That is, not every difference between the genders can be taken as a sign of gender identity or role.

Another problem with the measurement of gender identity and role is that the tests employed often confound one category of gender identity or role with another category. For example, the California Psychological Inventory (CPI), which consists of a number of statements to which the subject responds "true" or "false" with regard to himself, contains a femininity (Fe) scale. This scale, however, contains both gender-role preference items ("I would like to be a nurse") and gender-role adoption items ("I get excited easily").

A final problem is that the measurement of gender identity is more difficult and involves more steps between the observable characteristic and the construct inferred than does the measurement of gender role. Gender identity is much more dependent on unconscious factors; hence, there is a greater reliance on projective measures to tap it. In short, the measurement of gender identity is more difficult and its interpretation more tenuous than is the measurement of gender role.

In the review that follows, studies that address specific aspects of gender identity or role will be discussed. Each measure used in these studies to determine gender identity and role will be briefly outlined for the reader who may not be familiar with this area. The methodological limitations just discussed, however, should be kept in mind as each study is reviewed and critiqued.

### Gender Identity

Theoretically, the establishment of a gender identity is intimately involved with the development of the body image. That schizophrenics (at least paranoid schizophrenics) have some problem with their body image can be traced back to Krafft-Ebing's (1933) *metamorphosis paranoica sexualis* - the delusion of sex change that may appear in schizophrenia. Body-image problems were also noted in Freud's (1925) analysis of the Schreber case. Dr. Schreber believed that he would give birth to a new mankind.

One of the most common projective tests associated with gender identity is the Draw-a-Person (DAP) Test. An individual is first asked to draw a person; subsequently, the individual is asked to draw a person of the opposite sex from the first-drawn person. One assumption of this test is that a person will project himself into the figure drawings - particularly the first one. In fact, it has been found that 80 to 100 percent of the males and 60 to 80 percent of the females draw their own gender first. Even more interesting is a study by Apfeldorf and Smith (1966) in which the same-sex drawings of 25 females along with the full-length photos of these same females were given to 60 judges. The judges were able to match the drawer's photo with her drawing at a better than .01 level of probability.

One limitation, however, is that the gross dichotomy of gender drawn first does not take into account gradations of identification. That is, a male subject could identify with his gender and therefore draw a male first, but nonetheless be less confident or identified in

his maleness than someone else who also drew a male first. Swensen's (1955) Sexual Differentiation Scale (SDS), which is applied to the DAP, attempts to account for such gradations by measuring the degree to which the individual has differentiated himself with respect to his gender. The SDS is a 9-point scale ranging from little or no sexual differentiation between the two figures to excellent sexual differentiation between them.

Smith (1953) reported that the gender of the first-drawn figure did not differentiate matched groups of male schizophrenics (mainly paranoid) and male medical and surgical patients. Kokonis (1972a) also reported that matched groups of schizophrenic and normal males draw their own gender first equally often. There seems to be no evidence, then, that male schizophrenics identify themselves with the female gender. This does not mean, however, that they are as differentiated in their identity as are others or that they feel no confusion or alienation with regard to their gender. Again, the gender of the first-drawn figure takes into account only direction, not degree.

When Swensen (1955) developed the SDS, he noted less sexual differentiation in the drawings of inpatients than in the drawings of outpatients. Unfortunately, no demographic information was given. Nevertheless, if his sample was representative, we can be fairly certain that there were more schizophrenics in the inpatient than in the outpatient group.

Reed (1957) reported two studies, done in sequence on two different samples, that demonstrated that psychotic females consistently drew male-female measurements inappropriately. That is, psychotic females, in comparison to a control group of nurses-in-training, did not draw the

appropriate anatomical relationships such as male figure being taller than female figure or female proportion of waist height to neck height being greater than the respective male figure proportion. While the group was given the general label of psychotic, it does seem more than likely that most of the female psychotics were schizophrenic, since they averaged 29 years of age with 4 years of hospitalization. It is not common to find affective disorders of a psychotic type to be admitted at age 25. However, the nonpsychotic group, being nurses-in-training, must have had experience with or training in anatomy that the psychotic females did not have. Hence, psychiatric status was confounded with anatomical knowledge or experience, which is an important factor when investigating the anatomical relationships in figure drawings.

Strumpfer and Nichols (1962) found no difference on the SDS scores of male surgical patients, neurotics (two-thirds of whom were hospitalized), and hospitalized schizophrenics. Other than age and education, no demographic information was given, making a comparison with other studies impossible; in terms of control groups, though, their study is more sophisticated than most other studies.

From a diagnostic checklist of over 50 DAP items, Burton and Sjoberg (1964) reported that only a few significantly differentiated schizophrenic females from normal females and that these items dealt with body proportions and integration. Of interest is their finding that normal females significantly more often delineated a breast than did schizophrenic females. Also, using surgeons, artists, and psychologists as raters, they found that differentiation of pictures on the basis of

anatomical accuracy (using a 2-point scale) differentiated between schizophrenic and normal females. The differentiation on the basis of anatomical correctness was about as accurate as the differentiation made by psychologists who used "subtle clinical cues" to assess the presence or absence of schizophrenia. A differentiation on the basis of esthetic quality was not so accurate as the differentiation made on the basis of anatomical correctness. The schizophrenic females were newly admitted, but in terms of demographic background, they were less than adequately matched with the normal females who were PTA members. The most confounding factor was the lower number of married females in the schizophrenic than in the normal group.

In a study with males, Ries et al. (1966) reported that only 3 of 80 diagnostic signs significantly differentiated schizophrenic males from normal males. The most significant of the three was that the schizophrenics drew proportionately smaller breasts on the female figure. As in the Burton and Sjoberg (1964) study, the schizophrenics were newly admitted; they were, however, more carefully matched (marital status was not mentioned). Ries et al. found no differences between process and reactive subtypes of schizophrenia.

Kahn and Jones (1965) administered the DAP to 104 applicants for psychiatric admission. Those who were subsequently admitted tended to have poorer sexual differentiation and more gender reversals of first drawings than those not admitted. Unfortunately, as in the Swensen (1955) study, there is no diagnostic information given. Again, we can only surmise that the proportion of schizophrenics in the admitted group would be greater than the proportion in the non-admitted group, since admission was largely dependent on severity of the presenting problem.

In a comparison of schizophrenic and normal subjects, Biller and Poey (1969) found that the normal group manifested more sexual differentiation on the DAP and on a subsequent task that consisted of modifying their DAP so as to increase sex differences. They further noted that schizophrenic males were particularly impaired in this second attempt. Most of their subjects were of the undifferentiated subtype, and length of hospitalization was not mentioned in their brief report.

Kokonis (1973) reported that a group of schizophrenic patients scored significantly lower on the SDS than a normal control group when whole groups or similar subgroups, formed with reference to parental dominance, were compared. He further reported that there were no significant effects or interactions when subtypes of schizophrenia were considered; however, no data are offered. His sample was largely of the undifferentiated subtype whose mean length of hospitalization was  $2\frac{1}{2}$  years.

The bulk of the studies do seem to support the notion that figure drawings of schizophrenics are sexually less differentiated than the figure drawings of normals. It is unclear, however, whether schizophrenics draw less differentiated figures than other psychiatric groups or normal groups subjected to a stressful situation (e.g., surgery). The main hindrance to an explanation of the studies dealing with sexual differentiation on the DAP is the lack of specific and basic information about the subject sample. The only study that reports negative results (Strumpfer and Nichols, 1962) lacked any basic information such as length of hospitalization, failed to equate neurotic and schizophrenic groups on the number who were then hospitalized, and did not mention subtypes of schizophrenia.

Considering the number of other studies showing poorer sexual differentiation for schizophrenics, we are inclined to accept a deficit for schizophrenics but hold out the possibility that this deficit might be more related to a variable such as stress that is more associated with the schizophrenic group than with most other control groups used. In fact, Goldstein (1972) was able to obtain reversals of gender drawn first in a group of males who were shown stressful films dealing with childbirth and circumcision.

Another problem is that Swensen (1968) concluded, after reviewing a number of studies, that sexual differentiation of figure drawings is largely affected by the quality of the drawing. It is not surprising, therefore, that people undergoing emotional turmoil have less sexual differentiation in their drawings.

At the same time, however, while the stressed normals might lack sexual differentiation due to the stress per se, the schizophrenics' lack of sexual differentiation may be due to a gender-identity problem. Smith (1953) asked schizophrenics (mainly paranoids) and medical-surgical patients to describe verbally the differences between the genders. While there were no differences in terms of number of indicators for each group, there were certain basic signs of sexual differentiation that the schizophrenic group mentioned less often than did the medical-surgical patient group. These signs were genitalia, body shape, hair length, complexion, and cosmetics. Interestingly, the genitalia sign did not differentiate the groups when only married schizophrenics were considered. Since schizophrenics are more often single than are other

groups, marital status should be an important variable to control for in studies of gender identity and role. This study demonstrates that the schizophrenics' inability to differentiate the genders on figure drawings may be related to the verbal-cognitive area of functioning and is not specific to motor representation. It also suggests that problems of gender differentiation in the schizophrenic group may be due to this faulty cognitive aspect whereas the same problem in stressed normals may be confined to the area of motor functioning or representation. Hence, similar consequences may be due to different antecedents.

Another aspect of gender identity that deals with body image is tapped by the Body Parts Satisfaction Test, which consists of an individual noting his satisfaction or dissatisfaction with 20 body parts. Some of these parts are designated as masculine, some as feminine, and the remainder are classified as non-gender-related. Again, the general assumption behind this type of test is that body image is a very important aspect of gender identity.

McClelland and Watt (1968) reported that their schizophrenic sample (mostly chronic cases) showed a decided gender reversal from their normal sample. Schizophrenic females, like normal males, reported satisfaction with more body parts than did schizophrenic males and normal females. This finding is outstanding; these researchers did not find an overall impairment (i.e., the schizophrenics as a whole were not different from normals as a whole) but actually found a gender reversal (i.e., male schizophrenics responded like female normals and female schizophrenics responded like male normals). This finding should be given even more



weight since it is a replication of the findings of Holzberg and Plummer (quoted by McClelland and Watt, 1968). McClelland and Watt also reported that schizophrenic females were significantly less concerned than normal females with all body parts and when female and male body parts alone were considered. Schizophrenic males, however, differed significantly from normal males only in relation to their satisfaction with female body parts.

Ecker, Levine, and Zigler (1973) failed to replicate the McClelland and Watt findings using a group of schizophrenics with a mean length of hospitalization between 4 and 5 months and a group of medical patients who had been hospitalized for a mean length of 1 to 2½ months. One obvious flaw in the Ecker et al. study is the lack of control for age. The female schizophrenics' average age was 8 years older than the average age of the female medical patients. It is well documented that with increasing age, the response to tests of gender differentiation becomes more feminine. Hence, the lack of control for age may have equated the groups' responses to the Body Parts Satisfaction Test. Another and possibly more plausible explanation lies in the different subject samples used. First, by using medical patients, Ecker et al. attempted to control such extraneous factors as stress and routine, which are associated with hospitalization. Body parts satisfaction, therefore, may be related to amount of stress, as in the SDS. Second, the average length of psychiatric hospitalization in the McClelland and Watt study was between 10 and 11 years. This is 26 to 30 times greater than the average length of hospitalization in the Ecker et al. study.

The difference in the two studies for the length of hospitalization for the schizophrenic groups suggests two explanations. One is that hospitalization produces an effect. This explanation is relatively unlikely since such an effect should have a universal result. That is, if the hospital effects a passive, dependent role (or has a feminizing effect), it should do so for both males and females. The results, however, are suggestive of a gender reversal, not of a feminizing effect. The other explanation is that gender-identity impairment in schizophrenia produces more disorganization with consequent increased severity of illness and a more chronic course.

That there is a relationship with length of hospitalization is also underscored by another failure to replicate the Body Parts Satisfaction Test results when ambulatory (outpatient) schizophrenic and neurotic males and females were compared (Elfert, 1971).

To complicate the matter, Jaskar and Reed (1963) found that a group of heterogeneous psychiatric females were less happy with their bodies and their bodies' functions than were a control group of female applicants for a hospital job. This is a reversal of the McClelland and Watt (1968) findings. However, it is unknown what the percentage of schizophrenics was in the Jaskar and Reed sample (again no demographic or diagnostic information was given), and the test that they used is not directly comparable to the Body Parts Satisfaction Test. The test used by Jaskar and Reed was developed by Secord and Jourard (1953) and contains not only body parts but also body functions, which the individual is asked to rate on a 5-point scale. The difference, therefore, could be accounted

for by the differential method of testing, the differential items of the tests (the Body Parts Satisfaction Test does not inquire about functioning), or the different subject samples. Again, comparison is precluded as the researchers did not define their research samples.

In a more behaviorally oriented approach, Rosenweig and Shakow (1937) found that using a one-way mirror, hebephrenic schizophrenics looked into the mirror more often than did normals. A group of paranoid schizophrenics used the mirror less often than the control group, however. The researchers explained the paranoids' lack of mirror behavior as extreme narcissism - they felt themselves to be so perfect that they did not need reassurance. Although demographic information on the three groups is lacking, the researchers did mention that the hebephrenics were deteriorated in comparison to the paranoids. Like body parts satisfaction, mirror gazing may have a relationship with degree of pathology or length of hospitalization.

Fisher (1973) has offered the explanation that mirror gazing shows a concern about body image and is an attempt to find a clearer picture of the body world, which to the schizophrenic, never made sense. He also suggests that poking around and inserting objects into taboo body areas, wearing bright or gaudy clothes, and exposing of genitalia by schizophrenics are all evidence of an attempt to delineate body boundaries and to determine a body image.

There are, therefore, behavioral examples of some schizophrenics being overly concerned with their bodies - as are normal females. There is also evidence that female schizophrenics are less concerned, as are normal males. However, as we examine less chronic and more acute cases,

the differential body concern disappears. If length of hospitalization produces an effect, we would expect more gender-inappropriate scores in the McClelland and Watt (1968) than in the Ecker, Levine, and Zigler (1973) study. While overall body satisfaction was most inappropriate for the McClelland and Watt males, there was little difference for the females.

An alternate explanation, not ruled out by the findings, is that the more severe the pathology, the greater the degree to which gender-typed responding is inappropriate. We do not know the severity of the Ecker et al. sample. The fact that they had been hospitalized 4 months before testing tells us nothing of the subsequent course of the sample. They could all have been discharged within a few days or could all still be hospitalized. A correlation between the Body Parts Satisfaction Test scores and the length of subsequent hospitalization of the Ecker et al. group would have given us important information concerning gender identity and chronicity or severity of illness.

Interpretations are further complicated by the lack of correspondence between the control groups of the McClelland and Watt and the Ecker et al. studies. The responses of the females in the Ecker et al. study are more like those of the males than of the females in the McClelland and Watt study. It could very well be that hospitalization is more disruptive to the female (since her body appearance is more important to her than a male's appearance is to him). Hence, we might question, in this particular case of using a body-image questionnaire, the inclusion of a control group comprising medical or surgical patients, who have a real concern about their bodies.

Another test that presumably taps gender identity is the Franck-Rosen Drawing Completion (DC) Test. The DC consists of 36 incomplete drawings that the individual completes as he wishes. This test is theoretically associated with body image in that males tend to draw angular shapes with protrusions and females tend to draw more circular patterns with openings and internal embellishments. As such, Franck and Rosen (1949) noted that the DC test assessed the more latent aspects of masculinity-femininity. That the DC does not tap the same construct tapped by more conscious tests of gender role is supported by the lack of significant correlations between the DC and such tests as will be described later (McCarthy, Anthony, and Domino, 1970; and Shepler, 1951).

Musiker (1952) reported that paranoid schizophrenic males attained more feminine scores on the DC than a matched group of nonparanoid schizophrenics. Aronson (1950), however, found no differences among matched groups of paranoid schizophrenics (chosen on the basis of most presence of paranoid delusions), psychotics (almost all of whom were schizophrenic), and a normal control group. It should be noted, though, that Aronson (1952) described his original sample of normals as possibly having shown "some tendency toward paranoid behavior." One would question, therefore, the validity of his normal control group and his study. Butler and Bieliauskas (1972) compared hospitalized paranoid schizophrenics and hospitalized passive-aggressives. Although they found no differences between the two groups on the DC test, the lack of a normal control group leaves open at least two possibilities: One, which the researchers accepted, is that there is no feminine identity in the paranoid or passive-aggressive groups.

The other, which is also likely, is that both groups have a feminine identification. This latter possibility is even more plausible since another group of researchers (Whitman, Trosman, and Koenig, 1954) described passive-aggressives as also having a conflict over feminine or passive impulses.

Two studies have employed the DC test with female psychiatric patients. Both studies only give the diagnosis of psychosis. One of these studies (Jaskar and Reed, 1963) mentioned that their psychotic females were a heterogeneous group and gave no demographic information. This study reported no differences between psychotic females and females applying for a job at the hospital. The other study was by Reed (1957); we have already noted that it is highly likely that his 29-year-old female psychotics were composed largely, if not entirely, of schizophrenics. He reported that psychotic females obtained significantly more masculine scores on the DC than did female nurses-in-training. While he did not control for age and marital status, he analyzed these variables in relation to DC scores and found them to be unrelated. Hence, while the bulk of the evidence argues against a gender-identity impairment as assessed by the DC, this group of studies is much less than adequate in terms of scientific methodology. At present, the DC test has really not been fully exploited in a carefully controlled and descriptively complete study.

In addition to the tendency to complete drawings in a gender-typed manner, an individual's preference for figures of various shapes is also gender typed. The Figure Preference Test is a forced-choice form of projective test, developed from the DC test, in which designs characteristic

of female-figure completions are contrasted with male-made designs. It is assumed that preferences for such figures represent gender identity. Males tend to prefer angular figures representing salient aspects of the male body, and females prefer circular figures with openings representing salient aspects of the female body.

McClelland and Watt (1968) used the 13 figures that Whiting (quoted by McClelland and Watt) found to produce the largest difference between males and females. They added three figures to see if females would prefer tilted and males upright figures (based on the findings of Witkin et al., 1954). There was an overall lack of significant difference between schizophrenics and normals on the Figure Preference Test and on the supplementary figures of slanted and upright items. In both cases, however, there was a significant difference between the normal males and females but no significant difference between schizophrenic males and females. That is, the schizophrenic group did not show the typical gender-typed pattern that the normal control group did. McClelland and Watt also noted that schizophrenic females and normal males preferred the "penetration" figures to a significant extent, while schizophrenic males and normal females preferred the nonpenetration choice. The findings of McClelland and Watt, therefore, support the notion of an impairment in gender identity for schizophrenics.

#### Gender-Role Adoption

Gender-role adoption consists of an individual's acquired characteristics. The most often used method to assess an individual's characteristics is to ask him to describe himself, usually through a paper-and-pencil

inventory. One such inventory, the CPI, which was previously discussed, is fairly representative of the field of tests normally used.

The first such psychometric device was developed over 40 years ago (Terman and Miles, 1936). The Terman-Miles Attitude-Interest Analysis Test comprises seven exercises or subtests: Word Association, Inkblot Association, Information, Interests, Introversion, Emotional and Ethical Attitudes, and Opinions. The criterion for item inclusion was the item's ability to discriminate males and females. A group of passive homosexuals did score as more feminine than other groups of males. More recently the test has been used to discriminate transsexual males (Paitich, 1973).

Very soon after the test was developed, it was used to test Freud's theory of the etiology of paranoia. Page and Warkentin (1938) assessed 50 patients - mostly diagnosed as having paranoid schizophrenia but a few as having paranoia. For comparison they used the mean scores from several groups that were reported by Terman and Miles (1936). The male paranoid group did score as more feminine than the Terman and Miles' male adults from the general population (approximately 7 points difference). The paranoid group, however, also scored approximately 58 points more masculine than did the passive homosexuals and 115 points more masculine than did the female adults from the general population as reported by Terman and Miles (1936). No statistical analysis was performed, and although the paranoid group was more feminine on the test scores, the difference was small. This is contrasted with very large differences between the paranoid group's and the normal male group's scores and



those obtained by normal females and passive homosexuals. Finally, the paranoid group was approximately 20 years younger than the general population with which they were compared.

Kokonis (1973) used the Word Association and the Emotional and Ethical Attitudes subtests of the Terman-Miles test. The Word Association subtest did not significantly differentiate male schizophrenics from male normals, but the scores of the schizophrenics were more feminine than the scores of the normals. Kokonis did find that the schizophrenics achieved significantly less masculine scores on the Emotional and Ethical Attitudes subtest and that the difference was irrespective of parental dominance and subtype of schizophrenia.

One of the most widely used tests of masculinity-femininity is the Minnesota Multiphasic Personality Inventory (MMPI) Masculinity-Femininity (Mf) scale. The Mf scale was developed to identify those aspects of personality related to male inversion. The scale consists of 60 items (23 from the work of Terman and Miles) that deal mostly with personal sensitivity, altruism, endorsement of culturally feminine occupations and denial of culturally masculine occupations (Hathaway, 1956). The subject responds to each item on a true-false basis and the items are keyed positively when they indicate femininity in males or masculinity in females. The MMPI Mf scale is not correlated with the DC test but is correlated with the CPI Fe scale (McCarthy, Anthony, and Domino, 1970), supporting the idea that the MMPI Mf and the CPI Fe measure a different construct than does the DC test.

Reed (1957), in two separate experiments, found no significant differences between the Mf scale scores of female psychotics and female nurses-in-training. He also reported a higher correlation between the DC test and MMPI Mf scale scores for the nurses-in-training than for the psychotics (previously discussed and noted to be probably schizophrenics). That is to say, the gender identity and the gender-role adoption of normal females are more in line with each other than are the gender identity and gender-role adoption scores of psychotic females.

Watson (1965) administered the MMPI Mf scale to 23 male schizophrenics who had never had a subtype diagnosis of paranoia and to 23 male schizophrenics who had never had a subtype diagnosis of anything but paranoia. The two groups were not significantly different on subscales measuring defensiveness, faking, and lying, or with regard to age, education, length of psychiatric hospitalization (approximately 37 months), or IQ. Watson reported no significant differences on the MMPI Mf scale. Unfortunately, no control group was included so that we cannot be absolutely sure whether both groups score femininely or masculinely. Yet, this study gives us valuable information on the differences in gender-role adoption with regard to subtypes of schizophrenia.

McClelland and Watt (1968) used a modified MMPI Mf scale and found no significant gender X diagnosis interactions. Their scale did significantly differentiate males and females in both the schizophrenic and the non-schizophrenic groups.

Petzel and Gynther (1969) also failed to significantly differentiate paranoid and nonparanoid (mainly chronic undifferentiated) schizophrenics

on the MMPI Mf scale. Their groups were equivalent on age, education, and IQ. The lack of a significant difference held true whether a consensual diagnosis or a classification based on behavioral indices was used. However, they also failed to find a significant difference between males and females on the Mf scale. Therefore, while paranoids and nonparanoids do not differ and while schizophrenics and normals do not differ, we find that on a scale that differentiates normal males and females, male and female schizophrenics do not significantly differ.

One very interesting study was conducted by Mosher, Pollin, and Stabenau (1971). As part of a larger study, 11 monozygotic twins discordant for schizophrenia were administered the MMPI Mf scale. Seven of the 11 index cases attained more gender-inappropriate scores than did their co-twins. One set attained the same score. And one nonschizophrenic female, who had scored as more masculine than her index sister, herself later became schizophrenic. Other than this particularly intriguing report, it appears that gender-role adoption as assessed by the MMPI Mf scale is unaffected in schizophrenia.

Another often-used test of masculinity-femininity is the CPI Fe scale. It was originally developed in 1952 but has been revised and now contains 38 items selected on the basis of their ability to differentiate between males and females and between homosexual and heterosexual males (Gough, 1966). Items are similar to the type of items on the MMPI and the subject responds "true" or "false." Femininity is scored in the positive direction.

Biller and Poey (1969) matched male and female schizophrenics (first admission, good premorbid, mainly undifferentiated reaction) with male and female normal controls on age, education, and socioeconomic class. On the CPI Fe scale, there was a significant gender X diagnosis interaction with male schizophrenics responding most inappropriately.

In a subsequent study, Kayton and Biller (1972) administered the CPI Fe to 80 males: nonparanoid schizophrenics, paranoid schizophrenics, neurotics, and normal controls. These groups were matched for age, education, and socioeconomic class. The schizophrenics were all hospitalized; the nonparanoid schizophrenics were mainly of the chronic undifferentiated subtype. Half of the neurotics were hospitalized. The normal group scored significantly more masculine than did the three psychiatric groups, and the neurotics scored significantly more masculine than did the nonparanoid schizophrenics. The neurotics' scores were also more masculine than the scores of the paranoid schizophrenics, but not significantly. Unfortunately, length of hospitalization was not adequately controlled. The distribution of scores did seem to bear some relationship to the variable of hospitalization.

Butler and Bieliauskas (1972) used the Gough Brief Fe and failed to find significant differences between hospitalized male paranoid schizophrenics and hospitalized male passive-aggressives. Unfortunately, there is no normal control group in their design. Hence it could be that hospitalized groups in general are more disturbed in their gender-role adoption or that neither of the groups is disturbed.

There is, therefore, inconclusive evidence for the Fe scale, since no study has simultaneously controlled for hospitalization and employed a normal control group.

Gender differences have also been noted in ability to perform different subtests of the Wechsler Adult Intelligence Scale (WAIS) (Wechsler, 1958). A so-called masculinity-femininity (M-F) measure has been developed that is the algebraic difference between the sum of the weighted scores of the three subtests that favor the male (Information-general knowledge, Arithmetic-mathematical problems, and Picture Completion-finding what is missing in a picture) and of the weighted scores of the three subtests that favor the female (Similarities-how are two things alike, Vocabulary-defining words, and Digit Symbol-writing symbols under numbers in the proper association).

Coslett (1965) used the WAIS M-F index with groups of paranoid schizophrenics, neurotics, and normals. Cross-sex analysis revealed significant differences within all three groups. That is, normal gender differences were apparent within all three diagnostic categories. Further, same-gender groups of all three diagnostic categories did not differ.

There is some problem, however, with the WAIS index in that it may be tapping cognitive differences more dependent on biological than on psychological differences. At least it is questionable whether the WAIS index is a measure of gender-role adoption, since it is not significantly correlated to MMPI Mf scores, CPI Fe scores, or to Franck DC scores (McCarthy, Anthony, and Domino, 1970).

Berdie (1959) developed an adjective checklist of 148 words. Sixty-one of the words significantly differentiate males from homosexual males and from females. The remainder are neutral words added to help disguise the scale. The subject is asked to check those adjectives that he feels apply to or describe himself.

The Berdie adjective checklist was used to test 120 schizophrenics - 30 males and 30 females from open-door units for less disturbed patients and 30 males and 30 females from the more disturbed locked-door units (Ishiyama and Brown, 1965). The patients were equated for age, education, and length of hospitalization. Each patient was asked to complete the Berdie Femininity Adjective Checklist twice. The first completion was to represent self-description and the second completion was to represent the ideal person of the patient's own gender. The females from the open-door units were more feminine in their ideal and self-conceptions than were females from the closed-door units. In fact, the open-door females' self-concepts were more feminine than the locked-door females' ideal concepts. The open-door and locked-door males had similar ideal concepts; however, the self-concepts of the former were much more masculine than the self-concepts of the latter. In fact, the closed-door males described themselves as more feminine than did the closed-door females.

Unfortunately, no control group of normals was employed. In comparison to the standardization group of college males and females, however, the open-door groups attained scores similar to the standardization group, but the closed-door group attained gender-inappropriate scores. Since length of hospitalization was equated for all groups, this study

is evidence that degree of pathology and not hospitalization per se may be responsible for the different degrees of gender identity and gender-role adoption reported in studies using long-term and short-term patients.

Another test that has been used with schizophrenic groups is the Adjective Check List (ACL) (Gough and Heilbrun, 1965). The ACL consists of 300 adjectives thought to be more or less essential in describing personality from different theoretical viewpoints. In an attempt to derive psychological significance from the many adjectives, 24 scales were developed. The subject checks those adjectives that are self-descriptive.

Kayton and Biller (1972) administered the ACL to normals, neurotics, paranoid schizophrenics, and nonparanoid schizophrenics (the sample has been described previously). They compared the ACL scales relating to five masculine traits (achievement, aggression, autonomy, dominance, and endurance) and the average of the combination of these scores and found significant differences between their four groups. Differences existed almost exclusively among normals and each of the psychopathological groups. Comparisons were also made on scales relating to five feminine traits (abasement, affiliation, deference, nurturance, and succorance) and the average of the feminine scales combined. Significant differences were reported for all except the deference and nurturance scales, and, again, the differences were almost exclusively between the normal group and each of the psychopathological groups. The latter groups tended to score low on gender-appropriate scales and high on gender-inappropriate scales.

Thorne (1965) developed an 11-exercise test of femininity. It originally consisted of 200 items for each of which 10 clinical judges (5 males, 5 females) decided whether a "true" or a "false" response indicated a very feminine response to the item. Sannito et al. (1972) factor-analyzed the test and reported two factors that they labeled "delight in being feminine" and "enjoyment of homemaker role." A person scoring high on the factor "delight in being feminine" is happy to have been born female and enjoys acting feminine (being charming, coquettish, attractive). A high score on the factor "enjoyment of the homemaker role" indicates enjoyment in child care, sewing, cooking, housekeeping, and sexual activities in marriage.

This same group (Sannito et al., 1972) compared eight subgroups of females. One subgroup consisted of hospitalized schizophrenics, one of undergraduates (from different geographic locations, or religions, or majors). Schizophrenic females attained significantly lower (less feminine) scores on factor 1 than did all the other groups with the exception of a group of Jewish undergraduates. They also scored lower on factor 2 than did three groups of undergraduates from an eastern college. One confounding factor in their study is that the schizophrenic group was the oldest group, and age has been shown to have a positive relationship with increased femininity.

Another test of masculinity-femininity, which employs a more projective technique, is the deprivation-enhancement (D-E) sequence in stories given in response to Thematic Apperception Test (TAT) pictures. May (1966) found that the stories of college men, in comparison to the



stories of college women, more often involve a sequence of enhancement followed by deprivation (E-D). It is presumed to reflect the characteristic male approach of actively doing something that brings pleasure or success but is followed by loss or relaxation. The female-type D - E sequence represents going without in order to get.

McClelland and Watt (1968) analyzed the TAT stories of their subject sample (male and female schizophrenics and normals). They found that schizophrenic males showed the feminine D-E pattern and schizophrenic females tended to show the more masculine E-D pattern. Male employees showed the typical E-D sequence and female housewives showed the typical D-E sequence. However, female employees tended more often to emit the masculine E-D sequence. If the schizophrenics are compared to the male and the housewife samples, there is a significant reversal; but if the schizophrenics are compared to the male and employed female sample, there is no significant difference. It would seem that the more appropriate comparison would be made with the housewife sample, since the schizophrenic females were not working and had not been working for years.

Another type of analysis associated with gender differences and responses to TAT-like pictures is related to need for achievement (n Ach) (McClelland et al., 1953). Scoring involves simple classification of responses by objective criteria. Achievement motivation is defined as a relatively stable disposition to strive for success in any situation where standards of excellence are applicable. McClelland et al. found that in a neutral, slightly relaxed condition, the nAch scores of females were higher than the nAch scores of males. When given achievement-

involving instructions, males but not females show an increase in nAch scores.

Using the original procedure developed by McClelland et al. (1953), La Torre, Endman, and Gossman (1976) administered the TAT under the slightly relaxed condition to male and female schizophrenic patients, nonschizophrenic psychiatric patients (largely depressive neurotics), and normals. The schizophrenic group was younger, less often married, and had a lower educational level. However, all three groups were matched on employment status, and the two patient groups were matched on number of previous admissions and length of current hospitalization (25 days). There was only a significant gender effect with males (contrary to the original finding) having higher nAch scores. This finding, however, was largely attributable to the two patient groups where the difference between the males and the females was four times greater than the difference between normal males and females.

This same group of researchers also used one of the most recently developed tests of gender-role adoption, the Bem Sex Role Inventory (BSRI) (Bem, 1974). The BSRI is relatively unique because it scores masculinity and femininity independently. A subject rates himself on 7-point scales for 20 masculine and 20 feminine adjectives (a 20-item social-desirability scale is also included). The masculinity score is then subtracted from the femininity score to obtain the difference score. A *t* ratio can be determined using the difference score, and is known as the androgyny score since it reflects the relative amount of masculinity-femininity on a standardized scale. Greater femininity in relation to masculinity is shown by a positive score.

Results of the LaTorre, Endman, and Gossmann study failed to find significant differences between the three groups but did find the expected gender differences with females scoring as significantly more feminine than the males. While the normal males scored in the negative masculine direction, however, the two male patient groups scored as slightly feminine. The female patient groups also scored as more feminine than the normal females. A correlation supported the notion that increasing age was significantly correlated with increasing self-reports of femininity. Therefore, had their normal sample and nonschizophrenic psychiatric patient sample been as young as their schizophrenic sample, the trend that was observed might have reached significant levels.

In another study in which the BSRI was administered only to male subjects, schizophrenics scored as significantly more feminine than both a normal control group and a surgical patient group (LaTorre, Rozman, and Seltzer, 1975). A group of nonschizophrenic psychiatric patients also scored in a feminine direction - significantly more feminine than the surgical patients. There were no significant differences among these four groups for age, education, and marital status. There were also no significant differences between the surgical and psychiatric (schizophrenic and nonschizophrenic) patient groups for length of hospitalization (approximately 2 weeks). Hence, even in a very short-term group of patients, a gender-role adoption problem in self-reports appears. This inappropriate response pattern is mainly present in the schizophrenic sample, but other pathological groups also possess some degree of this inappropriateness. The lack of impairment in surgical patients suggests, again, that hospital-

ization per se has no effect on these test responses. This study is also evidence that failure of the LaTorre, Endman, and Gossmann (1976) study to find significant differences may have been due to their lack of control of the age variable.

Findings are equivocal in the area of gender-role adoption. Different patient samples and different experimental designs produce some of the problems. Another problem appears to be the lack of similarity between the various tests used to measure gender-role adoption. Many of these tests reviewed do have moderate correlations with each other. It is apparent, however, that each test is tapping some specific aspect of gender-role adoption that is not tapped by the others. That is, gender-role adoption must, itself, be composed of many subcategories. For example, a person could score high masculine gender-role adoption by choosing masculine occupations on the Strong Vocational Interest Blank and also score low masculine gender-role adoption on the BSRI by describing himself as gentle, warm, and loyal and not athletic, dominant, or competitive. Because there are many facets to gender-role adoption, it is possible for a male construction worker to have sexual relations exclusively with other males; it is possible that a male nurse will also be the best and roughest player on the hospital staff's hockey team; it is possible that an aggressive Army general will wear women's panties.

The complex nature of gender-role adoption, along with the lack of consistency or continuity between each study with regard to the test used and the experimental design employed, precludes a meaningful and exact interpretation of the studies dealing with gender-role adoption

and schizophrenia. At best we can say that gender-role adoption in some studies with some measuring devices seems to be less appropriate in schizophrenics than in normals. Many more studies, however, have failed to show such a difference. Hospitalization seems unrelated to this finding. Paranoids do not show more impairment of gender-role adoption than nonparanoids. Schizophrenic males respond more inappropriately than schizophrenic females. Further, other psychopathological groups also exhibit less marked impairment in gender-role adoption.

#### Gender-Role Preference

Gender-role preference deals with the preference for gender-typed items or behavior. As previously discussed, some of the items of the tests reviewed under gender-role adoption actually deal with gender-role preference (which could have added to the inconsistency of the findings). A few tests, however, do deal with gender-role preference exclusively.

Krout and Tabin (1954) developed a test, the Personality Preference Scale (PPS), derived from the dynamic character of the basic areas of personality development and based on the face validity of each item. The PPS consists of 10 subtests that range in developmental terms from the prenatal and natal aspects of personality (with items dealing with relaxation and comfort) to the highest form of social sublimation in what may be termed a genital type of adjustment (with items dealing with group participation and social relationships). On each subtest the individual rates his like (2 points), indifference (1 point), or dislike (0 points) of 10 different activities or types of people. Since it is

a measure of like-dislike, it can be contained under the area of gender-role preference. Three of the subtests significantly differentiated males and females. Two of these, Subtests VII and VIII, theoretically deal with the genital-differentiated, or gender-identified, stage of development. In fact, Krout and Tabin referred to these two exercises as measures of masculinity-femininity. Females score higher on Subtest VII and lower on Subtest VIII than males.

When revising their test, Krout and Tabin (1954) noted a significant difference between a group of schizophrenics and preschizophrenics (diagnosed on the basis of Rorschach responses) and a group of normals on Subtests VII, VIII, and X (social maturity). Unfortunately no data are reported.

Kokonis (1973) used Subtest VIII of the PPS (10 items dealing with such topics as parachuting, football, hunting, and preference for feminine females) with schizophrenic and nonschizophrenic males (his subject samples were previously described). The normal males scored as more masculine than the schizophrenic males. In fact, the scores of the normal males were identical to the standardized scores for males reported by Krout and Tabin (1954), and the schizophrenic males' scores were identical to scores obtained by females in the standardization sample. Hence, preference for male activities seems to be greater among normal males in contrast to schizophrenic males.

An even more straightforward test is the Role Preference Test (RPT), which was originally known as the Role Playing Test (McClelland and Watt, 1968). The RPT consists of seven pairs of roles from which

the individual chooses the one role from each pair that he would prefer to act out in a play or pageant.

McClelland and Watt (1968) found that male schizophrenics more often chose the opposite gender role than did normal males. There is also a tendency for female schizophrenics more often to prefer the opposite gender role than normal female employees and housewives (which is non-significant if housewives alone are used as a comparison).

Elfert (1971) found no significant differences between neurotic and schizophrenic ambulatory males on the RPT. Ambulatory neurotic females, however, more often chose the opposite gender role than did ambulatory schizophrenic females.

Ecker, Levine, and Zigler (1973) also attempted to replicate the McClelland and Watt findings with their sample of schizophrenic and surgical patients. They found no significant differences for females and only a tendency for male schizophrenics to prefer more often the opposite gender role than did male surgical patients.

LaTorre, Roozman, and Seltzer (1975), using male schizophrenic patients, nonschizophrenic psychiatric patients, surgical patients, and noninstitutionalized normal controls, reported a tendency ( $p < .06$ ) for the groups to differ on the RPT. A multiple comparison revealed no significant differences between any of the four groups. However, the means indicated that schizophrenics choose opposite gender roles most often ( $\bar{X} = 2.4$  opposite gender choices), followed, in order of more appropriate choices, by the nonschizophrenic psychiatric patients ( $\bar{X} = 2$ ), the noninstitutionalized normals ( $\bar{X} = 1.2$ ), and the surgical patients ( $\bar{X} = 1.1$ ).

Clearly, these three studies using the RPT and the study using the PPS indicate that in terms of preference, there is a clear tendency for male schizophrenics to express more of a preference for female activities and roles than for male normals and surgical patients to do so. Evidence for female schizophrenics is equivocal. It should be remembered that the McClelland and Watt (1968) study, which reported the most significant results, included the longest term patients (approximately 10 years), whereas the other studies dealt with patients who were not hospitalized or only hospitalized for a few weeks or months.

#### Gender-Role Ability

Gender-role ability is a person's ability to present manifest acquired skills. If roles exist, then individuals should play the roles with different degrees of accuracy or correctness. In short, gender-role ability deals more with what a person can do while gender-role adoption deals with what a person does.

Millgram (1960), using the Terman-Miles Word Association subtest, asked his subject samples to choose which of the response choices a male would make with the stimulus word and which response choice a female would make. He found that male schizophrenics (mainly chronic paranoids - hospitalization ranging up to 40 years), in comparison to normal controls, were unable to choose the word most males would associate with the stimulus word, but they did as well as the normals in choosing the feminine response word. They also did as well as normals with regard to their ability to differentiate child and adult responses on another test. A brain-damaged group was also tested and they were significantly impaired



in comparison to the normals for all the tests. Millgram (1960) postulated that the schizophrenic male had a specific deficiency in his ability to take the male role.

In order to move into a more behavioral assessment of gender-role ability, LaTorre, Roozman, and Seltzer (1975) asked four groups of schizophrenic patients, nonschizophrenic psychiatric patients, surgical patients, and noninstitutionalized normals to role play verbally in six different situations. These situations dealt with two gender roles (male, female), two age roles (child, adult), and two job roles (employee with boss and with customer). The verbal responses were made into typed transcripts, and two judges, who were blind to diagnostic group, rated them independently for masculinity, effectiveness, and assertiveness. There were no significant differences among the groups on the masculinity dimension. Scores for effectiveness and assertiveness, however, were lower for both psychiatric groups. Schizophrenics did not have any particular trouble with the male role.

These two studies suggest that the impairment in gender-role ability may be related to length of hospitalization or degree of pathology. Millgram's (1960) sample was long-term patients and the LaTorre, Roozman, and Seltzer (1975) study employed patients who had only been hospitalized a few weeks. Or, it may be, as Millgram suggested, that the impairment he observed was more related to empathy with the male role than to ability to play that role. In fact, a few studies have shown that the schizophrenic's conception of gender roles may itself be impaired. Zeichner (1956), using the TAT and the Rorschach, concluded that schizophrenic

males differed from matched normal males in their interpretation of the male role but did not differ in their interpretation of the female role. There were no differences between matched groups of paranoid and non-paranoid schizophrenics. Biller and Poey (1969) asked schizophrenic and normal subjects to discriminate adjectives denoting masculine or feminine behaviors. They reported a tendency for both male and female schizophrenics to label masculine and feminine behaviors less appropriately than did the normal control group. Ecker, Levine, and Zigler (1973) reported that schizophrenics, but not surgical patients, had less comprehension of cartoons dealing with ambiguous or inappropriate gender roles. There was no difference between the groups in their comprehension of gender-appropriate cartoons.

The implications are that any inappropriateness in playing the male role may be more related to an incorrect definition or incomprehension of that role than to an inability to play it. This would suggest that gender-role ability could be improved by carefully defining for the patient what constitutes a male role and by providing adequate models. The empirical research on this issue is sparse. Yet, clinical reports of an impoverished gender-role ability make this an area worthy of investigation.

#### Summary of Empirical Studies

The experimental literature reported thus far seems to suggest several things. First, there is a gender-identity difficulty observed in schizophrenia. This difficulty appears to be rooted at the more unconscious level. There is some evidence, however, that it pervades into the level of gender-role adoption, preference, and ability.

Second, the severity of this difficulty seems directly related to degree of pathology. That is, ambulatory schizophrenics have few observable difficulties, acute hospitalized schizophrenics have more, and chronic long-term schizophrenics show gender-identity and gender-role difficulties on several measures. What is yet to be answered is whether hospitalization results in gender identity-role difficulties, whether the degree of gender identity-role difficulties results in a comparable degree of pathology, or whether the relationship is incidental. The Ishiyama and Brown (1965) study is the best evidence that gender identity-role problems may be more associated with degree of pathology than with length of hospitalization.

Third, it is unclear to what degree paranoid dynamics account for the results thus far observed. Paranoids or undifferentiated subtypes (the latter often having some paranoid dynamics) seem to constitute the majority of subjects employed to date. The experimental literature is replete with evidence indicating that paranoid dynamics alone are associated with impairment in gender identity-role (see Wolowitz, 1971 for a review). Yet, a number of studies have failed to find significant differences between the paranoid and nonparanoid subtypes.

Fourth, few researchers examine the schizophrenic in comparison to other psychopathological groups matched in length of hospitalization. One exception is the Elfert (1971) study, which compared neurotics and schizophrenics, neither of which groups were hospitalized. Other exceptions are the LaTorre et al. (1975 and 1976) studies. These three studies suggest that psychopathology per se may be related to gender identity-role difficulties.

While there is much evidence to suggest gender-identity and some gender-role impairment in schizophrenia, there is a need for better research planning if more credible and unconfounded data are to be yielded.

#### Implications for Theory

It appears that there is gender-identity impairment, particularly at the more unconscious levels, in schizophrenia. Yet, to postulate that gender-identity impairment is the cause of schizophrenia may be erroneous. One of the main arguments against such a simplistic view is the nonspecificity of gender-identity impairment and the nonspecificity of family types that are potentially disruptive to the establishment of an appropriate gender identity. That is, schizophrenics are not the only people who exhibit gender-identity impairment. Gender identity impairment has been noted in psychiatric patients in general (Molholm and Dinitz, 1972), in neurotics (Kayton and Biller, 1972 and Kokonis, 1972b), in psychologically disturbed individuals (Lynn, 1969), in male homosexuals (Terman and Miles, 1936), in transsexuals (Doorbar, 1967), in female alcoholics (Wilsnack, 1973), in female hysterics (Jordan and Bempier, 1970), and in normal males subjected to stress (Goldstein, 1972).

Other studies have shown that the detrimental composite found in families of schizophrenics, which could harm gender identity, is also found in other families. Similar family types are reported for female alcoholics (Kinsey, 1966 and Wood and Duffy, 1966), male transvestites (Spensley and Barter, 1971), male homosexuals (Chang and Block, 1960 and Stephan, 1973), neurotic homosexuals (Hooker, 1969 and Seiglemen, 1974), transsexuals (Green and Stoller, 1971 and Stoller and Newman,

1971), sexual perverts (Rubins, 1969), psychotics in general from the United States, Italy, and Israel (Zwerling, 1971), psychopathological groups in general (Heilbrun, 1968), and poor psychosocially adjusted hemophiliacs (Behar and Spencer, 1969).

Further, there are numerous studies showing the key role of genetics in the appearance of schizophrenia. Even so, most of these have acknowledged that genes alone do not result in schizophrenia. One may inherit a vulnerability to schizophrenia; but there is the requirement of nongenetic, environmental factors for its development (Gottesman and Shields, 1973; Kety et al., 1971; Rosenthal et al., 1971, and Strahilevitz, 1974).

Given these facts, it is more realistic to consider gender-identity confusion as a leading stressor in a diathesis-stress model of schizophrenia. Therefore, while many more than just schizophrenic individuals develop gender-identity problems, only the schizophrenic has the inherited vulnerability to schizophrenia. The stresses involved with gender-identity confusion are a major, but by no means exclusive,<sup>1</sup> source of all the stresses that compound to increase the likelihood that the individual will become schizophrenic. One of the main factors responsible for this great stress in schizophrenia appears to be an inability to deal with it. Three published case studies (Cohen and Liebowitz, 1969; Lidz et al., 1962, and Smith and Lidz, 1964) of dizygotic and monozygotic twins discordant for schizophrenia indicate that while both siblings appeared to manifest a gender-identity confusion, the "healthier" twin was better able to adapt to the problem and incorporate it into his personality.

Further, the degree of gender-identity impairment also appears to be directly related to premorbid maladjustment, degree of pathology, and chronicity. For example, a high Mf (masculinity) score in female, first-admission, schizophrenic patients was correlated to a lengthier stay in hospital (McKeever, May, and Tuma, 1965). A female pattern of high anxiety and low ego strength was more indicative of a good prognosis for schizophrenic females than was a male pattern (Distler, May, and Tuma, 1965).

Another possibility is proposed by Penrose (1971). He holds out great hope that the genetic vulnerability is contained in the sex genes. He quotes evidence indicating low levels of the male sex hormone in schizophrenic males and that sex chromosomal anomalies have been mistaken for mental illness, particularly schizophrenia. The link between gender-identity impairment and genetic transmission, therefore, may be more direct than is suspected.

Another alternative explanation is that gender-identity impairment is the result of the stresses involved with mental illness, hospitalization, and so forth. Since there is usually more stress associated with schizophrenia than with other clinical subgroups, there could be a resultant greater degree of gender-identity impairment. This type of problem is inherent in most research efforts directed at examining any morbid end product. Definitive data, of course, can only be obtained from long-range studies which are currently coming into vogue (see Mosher and Feinsilver, 1970).

The diathesis-gender stress model can explain a good deal of related data and does not seem to conflict with any existing data. For example, Rosenthal (1962) reviewed epidemiological rates for concordance of schizophrenia and reported that the occurrence of schizophrenia between members of the same sex was greater than for those of the opposite sex between pairs of members within the same family. He went on to propose sex-role identification problems in the father-son and mother-daughter relationships. Even more convincing that sex-role development is an important variable is the Lidz et al. (1963) study demonstrating that same-sex siblings of schizophrenic individuals tend to be more disturbed than opposite-sex siblings. Hence, something within the family must be affecting one sex more than the other. It would be difficult to explain this observation without the use of the concepts involved in gender identity.

The model would also help to explain the literature on marriage rates in schizophrenia. Marriage presumes a sex-role-taking differentiation, particularly for the male. That schizophrenic patients are probably deficient in this ability is supported by the low marriage rates and high divorce rates in this group (Bromet, Harrow, and Tucker, 1971; Dube and Kumar, 1972; Farina, Garnezy, and Barry, 1963; Hartman, 1969, and Turner, Dopheen, and Labreche, 1970). Single schizophrenic patients out-number normal controls 2:1 and they outnumber other single psychiatric patients. Length of hospitalization for single schizophrenic patients is twice as long as for married schizophrenic patients. A nonrecovered group of schizophrenic patients was less likely to be married and had shown more inferior social and sexual adjustment before becoming ill than

a recovered group (Farina, Garmezy, and Barry, 1963). Such findings are not restricted to the United States but are also reported in countries such as India (Dube and Kumar, 1972) and Lower Saxony (Hartman, 1969).

Further, female schizophrenic patients are more likely to be married than male schizophrenic patients. This is probably the product of our society's unequal sex division, which burdens the man with being the initiator and aggressor in courtship - a role that schizophrenic males are unable to play with a great deal of success. This finding also supports the idea that schizophrenic females may marry with greater ease than schizophrenic males because the females's role in courtship is not so important in terms of establishing and supporting the family. Such an explanation would also account for higher fertility rates in schizophrenic females than in schizophrenic males (Mai, 1972).

According to Seyfried and Hendrick (1973), normal females show a significant preference for males who play the masculine role over males who do not. Normal males, however, demonstrate no preference for females who play a feminine role. Hence, females may prefer nonschizophrenic males as the schizophrenic male does not play the male role well. No such problem stands in the way of the female schizophrenic. Although she tends not to play her feminine role, males have no preference for those who do. This alternate line of reasoning, still within the limits of the model, is a plausible explanation for the lower marriage and fertility rates in schizophrenic males than in schizophrenic females.

The model presented here might also help to explain why, along with transsexuals and those with complex religious beliefs, schizophrenic



males have one of the highest rates of self-castration (Beilin, 1953; Blacker and Wong, 1963, and Mendez, Kiely, and Morrow, 1972). Genital mutilation in females is relatively rare. Yet, Standage, Moore, and Cole (1974) have reported a case of a schizophrenic female with paranoid ideation who mutilated her genitals. Psychological tests revealed gender-identity confusion.

It is one of the few models that can adequately explain the early onset of schizophrenia. The period of late adolescence and early adulthood is a time in which gender-identity consolidation is of primary importance. It is also the period during which schizophrenia usually develops. Gender identity seems more important for the male than for the female, and schizophrenia develops earlier in the male than in the female. The ability of the model to explain this phenomenon should not be undersold. Early onset was the key reason for Kraepelin's coining the term "dementia praecox." It has also led Penrose (1971) to suggest that the term "schizophrenia" should only be applied to those psychoses of early onset.

Finally, such a model would help to explain the results reported by Nell (1968). A small group of schizophrenic patients were encouraged to engage in sexual activity with one another. Improvement in symptomatology was apparent after such supportive heterosexual experiences. A clear implication is that recovery could be facilitated by directing efforts toward supporting gender identity in the schizophrenic patient.

This section of the introductory manuscript has presented a model concerned with the etiology of schizophrenia. A number of clinical and

empirical reports were discussed which related to the proposed model and it was noted that diathesis-gender-stress is a plausible explanation for many known corollaries of schizophrenia (e.g., low marriage rates, early onset). However, the ability to explain observed results is not the same as demonstrating direct cause and effect relationships. Although the model is tentative in nature, gender identity integration, restitution, and reinforcement can only help the patient achieve a stable, well-defined personal identity.

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## Footnote

<sup>1</sup>There are, to be sure, many stress sources which impact on the individual. These can be as specific as amputation of body parts or as general as anxiety about getting someplace on time. They can be as minor as a hot, humid day or as major as notification of terminal illness. Some stresses are believed to be so important they they become central to an etiological theory as communication confusion did in the double-bind theory. It is not proposed here that gender identity/role problems are the sole source of stress, or press, only that they may be a major source.

The introductory manuscript has identified a set of basic definitions and has provided an historical background of the problem area which was couched within these definitions. As noted in the preface and in the introductory manuscript, one of the problems in this area resides in the tests employed. The following manuscript reports the restandardization of the first three exercises of the Terman-Miles Attitudes-Interest Analysis Test. The Terman-Miles Test was chosen because it is the oldest standardized test attempting to measure gender identity or role, it remains the most thoroughly standardized of all such tests, it is one of the few tests that permits a profile analysis which recognizes the multidimensionality of gender roles, and it is currently successful in differentiating transsexuals and nontranssexuals. However, despite these attractive aspects, it was standardized a very long time ago and what was true of a 1920-1930 American sample may not be true of a 1975 Canadian sample. Therefore, the decision was made to restandardize parts of it prior to currently using those parts. The following manuscript reports the examination of the validity (ability to differentiate the sexes) and several types of reliability (test-retest and internal) of the first three exercises of the Terman-Miles Test.

MANUSCRIPT II. The Terman-Miles M-F Test:  
An Examination of Exercises 1, 2, and 3 Forty Years Later



### Abstract

This study tested the reliability (test-retest and internal) and validity (ability to differentiate the sexes) of three subtests of a well-known and historically influential masculinity-femininity instrument, the Terman-Miles Attitude-Interest Analysis Test. Exercises 1 (word association), 2 (inkblot association) and 3 (information) of Form A of the Terman-Miles Test were administered to 352 subjects which included both student and older, nonstudent samples. While all three subtests successfully differentiated the sexes, Exercise 3 was the most powerful differentiator. Test-retest and internal reliabilities were variable, with Exercise 3 having the best reliabilities and Exercise 2 having the worst reliabilities. The fakability of the subtests was investigated with an additional sample of 173 subjects. Exercises 2 and 3 were found to be nonfakable. Overall, Exercise 3 emerged as the most promising subtest. It is interesting and important to users of the Terman-Miles Test that its validity was reconfirmed in a different subculture some forty years after its original development.

From the time that Eve tricked Adam into eating the forbidden fruit, man has been aware of and interested in sex differences. However, it has only been within the last forty years that psychometric devices have been developed to measure psychological sex differences (commonly referred to as masculinity-femininity, M-F). Terman, who noted that boys and girls preferred to play different games, eventually developed the first test which differentiated the sexes (Terman and Miles, 1936). Terman and Miles believed that masculinity and femininity acted as a core around which the rest of personality was formed.

Since that time, numerous M-F tests have been developed: the Strong M-F scale, the MMPI Mf scale, the Guilford M scale, the Thorne Femininity Index, the It scale, the Bem Sex Role Inventory (BSRI), etc. Researchers already muddled by the masculinity-femininity dimension are even more confused when they try to choose which of the many tests would be most appropriate.

While many tests have been developed, none has matched the rigorous investigation which produced the first M-F test. Terman and Miles (1936) produced a test with seven different exercises and standardized it on thousands of subjects. They examined the effects of age, occupation, education, university major, homosexuality, etc. They determined the internal and test-retest reliabilities for many different subgroups. They determined the fakability and the transparency of the test. They correlated test scores with scholarship and IQ. And they developed two separate forms of the test. Compare their work with that which is normally undertaken to produce more current M-F tests. For example,

Bem's (1974) BSRI is a 60 item adjective check list type of test. Twenty items deal with masculinity, 20 with femininity, and 20 with social desirability. It was standardized on less than one thousand university students living within 100 miles of each other.

Considering the above facts, a grave misjustice would be done to the outstanding and laborious work of Terman and Miles if researchers passed over their test merely because it was 40 years old. At the same time, the current use of the subtests (Kokonis, 1972, 1973) might produce questionable results because of the test's age. In lieu of taking the extremes of abandoning the test because it is possibly "dated" or using the test without consideration for this possibility, the author undertook a study to obtain recent normative data. The last normative data was published over a quarter of a century ago and the population consisted entirely of college students (de Cillis and Orbison, 1950).

Few positive results were expected in the present replication due to (1) the lengthy time lag between the test's inception and the present normalization and (2) the cultural differences in the samples. At the same time it was apparent that any positive results would be most interesting and valuable for the same two reasons (Constantinople, 1973).

Such a replication is of crucial importance. Constantinople (1973) has questioned standard M-F tests because they appear to only tap an empirical difference between males and females at a particular point in time and in a particular culture. These tests may not, therefore, be dealing with a central trait or behavior which could be applied to

any abstract definition of M-F. Certainly, if our replication is successful in another culture and at another point in time, it would suggest that the Terman-Miles Test is measuring some central (i.e., transcultural and transtemporal) M-F trait.

Despite such an important issue, a justification is in order for examining such a test given current interest in "androgyny" tests which measure masculinity and femininity independently. Such tests as the Terman-Miles have been critiqued because they treat masculinity and femininity as endpoints on a single continuum. The construction of androgyny tests have assumed (and statistically demonstrated) an independence of masculinity and femininity (Bem, 1974; Heilbrun, 1976; Kanner, 1976; Spence, Helmreich, and Stapp, 1975). The androgyny score is the relative amount of one to the other.

First, we believe that many, if not all, of the traditional M-F tests could be adapted to score masculinity and femininity separately and independently. Second, we believe that it makes little difference whether one obtains an androgyny score from such independent scales or one uses the traditional summative score obtained from the same test. Proof for the first point comes from studies which have developed independent masculinity and femininity scales from the M-F scale of the Adjective Check List (Heilbrun, 1976) and the Fe scale of the California Personality Inventory (Kanner, 1976). Also, we were able to develop independent M-F scales from the Information Exercise of the Terman-Miles Test. Evidence to support the second point comes from relatively high correlations between the androgyny score and the traditional score which we found for the Terman-Miles Information Exercise and which Heilbrun (1976) reported

for the Adjective Check List, and from the data presented by Kanner (1976) for the CPI. We therefore believe that the current objection to traditional M-F tests has little basis in fact, and we feel very justified in pursuing a replication of the Terman-Miles Test.

In fact, the Terman-Miles is one of the few tests which allows a profile analysis. Even modern androgyny tests result in one overall score (or at best separate M and F scores) which is supposed to be a reflection of one's gender identity or gender role. But, the fact is that gender identity and roles are composed of numerous specifics. The Terman-Miles, by virtue of its many exercises, scored separately, allows a more precise picture and pattern of one's gender identity and role. In essence, the Terman-Miles is one of the very few tests that consider gender roles as multidimensional.

In the present replication, the authors looked not only at how well the exercises differentiated males and females, but also examined the effects of student status, religion, marital status, last educational level attained, and age. Internal and test-retest reliabilities were computed. Fakability was determined. An item analysis was performed to pick out those items which best differentiated the sexes in two age groups. Finally, an examination was conducted to determine the relationship between the Terman-Miles test and the BSRI.

The original Terman-Miles test is composed of seven exercises (subtests): Word Association, Inkblot Association, Information, Interests, Introversion, Emotional and Ethical Attitudes, and Opinions. However, current researchers tend to abstract one or two of the exercises.

Because of this, and limitations in resources, it was decided that a more significant contribution could be made by thoroughly investigating a few of the subtests. Considering the substantial overlap of Exercises 4, 5, 6, and 7 of the Terman-Miles test with the MMPI Mf scale (de Cillis and Orbison, 1950) and the Strong M-F scale, Exercises 1, 2, and 3 were reviewed. The most commonly used subtest in the literature is Exercise 1.

#### The Subtests

Exercise 1 is a word association task. The subject chooses one of four words which he believes "goes best or most naturally" with the association word. There are 60 items in this subtest. Each of the words is keyed so that it is scored as masculine (+), feminine (-), or neutral (0). Terman and Miles used percentage of overlap between the sexes as an indicator of how well each exercise as a whole differentiated the sexes. The smaller the percentage of overlap, the better the differentiation. Percentage of overlap was determined by taking the group (male or female) with the highest mean and cumulating upwards the percentages of subjects who attain each score. The group with the lowest mean is then cumulated downwards. Percentage of overlap is the percentage cumulated point where the percentages of both groups are about equal. In the original study, the percentage of overlap for Exercise 1 was 17% which, along with Exercise 3, is the smallest overlap next to Exercise 5 which deals with occupational preferences. Split-half reliability was .40 for single sex groups and .62 for the sexes combined. Terman and Miles suggested that this exercise not be used alone unless

both Form A and Form B were used (making a total of 120 word associations). De Cillis and Orbison (1950) using Form B found that Exercise 1 significantly differentiated male and female undergraduates at much less than a .001 level of probability.

Exercise 2 is an inkblot association task. Eighteen asymmetrical inkblots are shown with four words next to each. The subject chooses the word which the "drawing" makes him think of most. The percentage of overlap for this subtest was 30% - one of the highest of all the seven exercises. Further, calculations of its internal reliability ranged from .25 for single sex groups to .34 for the sexes combined. Terman and Miles thought poorly of this subtest and mentioned that it could be dropped from the battery. However, they included it due to its appeal to the subject and their hope that it would stimulate further research. De Cillis and Orbison (1950), using Form B, reported that this subtest did not significantly differentiate college males and females.

Exercise 3 is an information test. It is based on the observation that certain items of information are more often answered correctly by males and other items by females. It is composed of 70 incomplete sentences, followed by three or four choices of endings. The subject indicates which of the choices would make the sentence true. The percentage overlap for this subtest was 17%. The internal reliability was .50 for single sex groups and .68 for sexes combined. De Cillis and Orbison (1950) found that this subtest differentiated college males and females at a probability level much less than .001.

## Methodology and Results<sup>1,2</sup>

### Gender, Student Status, and Religion

The primary concern was whether after 40 years and in another culture (Montreal, Quebec), the first three exercises were still effective in differentiating the sexes. Our sample consisted of 352 individuals who completed Exercises 1, 2, and 3 of the Terman-Miles Attitude-Interest Analysis Test, Form A. This sample consisted of 98 male students, 119 female students, 67 male nonstudents and 68 female nonstudents. The mean ages for these groups are shown in Table 1. Naturally, the student

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Insert Table 1 about here.

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sample is younger than the nonstudent sample. Also, the male sample is older than our female sample.

A three-way analysis of variance (unweighted means solution) was performed for each of the three exercises. The three factors were gender (male, female), student status (student, nonstudent), and religion (Catholic, Protestant, Jew, other).

Males and females achieved significantly different scores on all three exercises. See Table 2 for the means and  $F$  scores,

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Insert Table 2 about here.

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along with comparable data from both Terman and Miles (1936) and de Cillis and Orbison (1950). In each case, the females' scores were significantly



more negative (in a feminine direction) than were the males' scores.

There were significant Gender x Student Status interactions on Exercises 1 and 2,  $F(1,336) = 3.82$ ,  $p < .05$ , and  $F(1,336) = 5.55$ ,  $p < .02$ , respectively. Subsequent tests of simple effects revealed for Exercise 1 that there were no differences between male students and nonstudents and between female students and nonstudents. There was a significant difference between nonstudent males and females and a tendency for student males and females to differ,  $t(336) = 3.25$ ,  $p < .01$ , and  $t(336) = 1.87$ ,  $.10 < p > .05$ , respectively. In both cases the males attained less negative scores than the females. On Exercise 2 there was no significant difference between student and nonstudent males, but student females attained less feminine scores than did nonstudent females,  $t(336) = 2.30$ ,  $p < .05$ . There was no difference between male and female students and only a tendency for male nonstudents to score less femininely than female nonstudents,  $t(336) = 1.80$ ,  $.10 < p > .05$ . Thus, like de Cillis and Orbison (1950), we found that Exercise 2 does not differentiate male and female college students; and, like Terman and Miles (1936), we found it marginally useful with nonstudents.

In sum, the three exercises differentiate males and females. Males attain less negative scores than do females.

#### Gender, Marital Status, and Education

The student sample was too homogeneous with respect to certain variables (e.g., less than 5% of the students were married) to be included in further analyses of variance. However, a three-way analysis of variance (unweighted means solution) was conducted for the nonstudents. The three

factors were gender (67 males, 68 females), marital status (77 married, 58 single - including seven separated or divorced), and last educational level attained (64 high school or less, 71 at least some university). The mean ages of the subgroups are quite disparate and hence are shown in Table 3 for the reader's inspection.

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 Insert Table 3 about here.  
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There again was a significant main effect for gender on all three exercises,  $F(1,127) = 23.29$ ,  $p < .0001$ ,  $F(1, 127) = 11.93$ ,  $p < .0008$ , and  $F(1,127) = 56.83$ ,  $p < .0001$ , respectively. The nonstudent cell means in Table 2 show that females appropriately scored in a more feminine direction.

#### Gender and Age

Since the main problem in lack of control was the age of the subjects, a final two-way analysis of variance (unweighted means solution) was performed for each exercise. The two factors were gender and age (divided by decade between 20 years of age to 59 years of age). We could not consider age with a large number of other factors as there was not a minimum number per cell (e.g., there were no single Jewish students who were 50 years old). The subjects were the nonstudents from our sample with the exception of one male under 20 years and nine males 60 years or older because we had no comparable female subjects.

Our analyses again revealed significant differences for gender, but that was expected since there was little difference between this

sample and the previous sample. Age grouping had a significant main effect only on Exercise 2,  $F(3,117) = 2.60$ ,  $p < .06$ . A Newman-Keuls test revealed near significance between those subjects in the 50-59 year age range ( $\bar{X} = -2.59$ ) and those in the 20-29 year age range ( $\bar{X} = -.25$ ),  $q(4,117) = 3.59$ ,  $.10 < p > .05$ . This is in line with the findings of Terman and Miles (1936) and others who have found increasing feminization with increasing age.

The overall lack of significance between age groups and its lack of interaction with gender indicates that the lack of control for age was not as serious a problem as it might have been.

#### Internal Reliability

Assured that the subtests still differentiated males and females, split-half reliabilities were computed. An odd-even split was chosen since fatigue could have had an effect.

Internal Reliability statistics were calculated for the first 100 students (50 males, 50 females) and the first 66 nonstudents (33 males, 33 females) who took the test. The mean age for the male students was 20.8 and for the female students was 19.4. For the nonstudents, the mean age for the males was 35.6 and for the females was 32.4. There was little differences for the nonstudent sample with regard to the last educational level attained as about 60% had had at least some university. All but 4 males and 7 females (nonstudents) held jobs outside the home.

A Spearman-Brown correlation was used to obtain the reliability coefficient. While current usage favors the alpha correlation, we decided upon the Spearman-Brown because (1) it would allow a more direct

comparison with the Terman-Miles' reliabilities and (2) Cronbach (1970) has noted that the difference between the alpha correlation and other methods is negligible. Results are shown in Table 4 along with the reliabilities as reported by Terman and Miles (1936). As can be seen,

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 Insert Table 4 about here.  
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Exercise 3 has the highest internal reliability and comes the closest to the reliabilities reported by Terman and Miles (1936). Reliabilities for Exercises 1 and 2 vary from extremely poor to good.

#### Test-Retest

Test-retest data was obtained from 32 students (11 males and 21 females) and from 42 nonstudents (23 males and 19 females) over a four week period. A Pearson Product-Moment correlation was performed to determine the reliability coefficient. Reliability levels are shown in Table 5. With few exceptions, the test-retest reliabilities are

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 Insert Table 5 about here.  
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moderate, with Exercise 1 having the most consistency over the groups.

#### Fakability

Terman and Miles (1936) reported that their test was fakable if the subject knew the purpose of the test and tried to answer in an opposite-sex way. Unfortunately, only overall scores were given with no data for the individual exercises. It seems likely that some of the

exercises of the original test might be more fakable than other exercises. Millgram (1960) did report that for Exercise 1, normal males can respond in either a masculine or feminine manner when asked.

In order to assess all three exercises, a new sample of 44 students (21 males and 23 females) and 45 nonstudents (21 males and 24 females) was used. The subjects were informed that the three exercises were a measure of gender identity or sex-role differences and were asked to respond in as masculine a way as possible. Another new sample of 41 students (21 males and 20 females) and 43 nonstudents (21 males and 22 females) were informed of the nature of the exercises and were asked to respond in as feminine a way as possible.

Data were analyzed with three-way analyses of variance using an unweighted means solution. The three factors were instructions (answer masculinely, answer femininely), student status (student, nonstudent), and gender (male, female).

Instructions had a significant main effect only on Exercise 1,  $F(1,165) = 45.8$ ,  $p < .0001$ . There was also a tendency for instructions to affect Exercise 3,  $F(1,165) = 3.07$ ,  $p < .10$ . Cell means are shown in Table 6. In each case, individuals responded appropriately for the

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Insert Table 6 about here.

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instructions they were given.

There were no main effects for student status. Gender had a main effect for Exercise 3,  $F(1,165) = 26.67$ ,  $p < .0001$ . Males attained

more masculine scores and females more feminine scores regardless of instructions. See Table 7 for cell means.

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Insert Table 7 about here.

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To summarize our fakability results, Exercise 1 is clearly fakable when the purpose of the subtest is known. Exercise 3 is most dependent on the gender of the subject. As many students know, you cannot fake information that you do not know.

It should be kept in mind that faking is made possible when the purpose of the test is known. Terman and Miles (1936) reported that subjects cannot see through the purpose of the test. It is our observation, too, albeit there is no present empirical evidence, that while some of the subtests may be fakable when their purpose is known, the subtests are not transparent (at least not the first three exercises).

#### Additional Correlations with the BSRI and the Terman-Miles Test

The next analysis was to determine the correlations between the three exercises and to determine the correlations between the BSRI and the three Terman-Miles exercises. A subsample of 33 males (22 nonstudents, 11 students) and 37 females (17 nonstudents, 20 students) completed the 40-item M and F subscales of the BSRI (Bem, 1974) after completing the three exercises of the Terman-Miles test.

Pearson Product Moment correlations were computed between all pairs of the following scores: BSRI M scale, BSRI F scale, BSRI  $\frac{M}{F}$  ratio (obtained by the "approximate method" described by Bem, 1974), and the

Terman-Miles Exercises 1, 2, and 3. Results are shown in Table 8.

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Insert Table 8 about here.

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Bem has suggested that her M and F scales are independent. This was found to be true except for a large and significant negative correlation for nonstudent females (Bem used only students in the development of her test).

Correlations among the three Terman-Miles exercises yielded only one significant correlation. This was a positive correlation between Exercises 1 and 3 for student females.

For the student group, correlations between BSRI scores and Terman-Miles exercises showed two significant correlations - both for males. One is a positive correlation between Exercise 3 and the BSRI M scale. The other is a negative correlation between Exercise 3 and the BSRI  $\underline{t}$  ratio. (The BSRI  $\underline{t}$  ratio is keyed so that masculinity shows itself by a negative value.) For the nonstudents, there was a significant positive correlation for males between Exercise 2 and the BSRI M scale and a significant negative correlation for males between Exercise 2 and the BSRI  $\underline{t}$  ratio.

Overall, the BSRI M and F scales and the Terman-Miles Exercises 1, 2, and 3 seem to be measuring different aspects of sex differentiation. Yet, the few significant correlations indicate some minor overlapping.

#### Discussion

Exercise 1 does well in differentiating the sexes; however, the score that one attains is affected by religion, and by an interaction of

student status and gender<sup>1</sup>. It has a moderate internal reliability and good test-retest reliabilities. The main problem with this subtest is that it is fakable when the purpose of the test is known. An item analysis revealed that few of the individual items clearly differentiated the sexes<sup>3</sup>. Hence, while the subtest is usable, it is not recommended to use it alone and/or with small samples to determine masculinity-femininity.

Exercise 2 seems marginally capable of differentiating the sexes. It is affected by student status, marital status, and age, and by interactions of student status and gender, student status and religion, and marital status and education<sup>1</sup>. It has the poorest internal and test-retest reliabilities. This subtest is not recommended for use.

Exercise 3 is the strongest sex differentiator of the three exercises. It is affected by religion and last educational level attained<sup>1</sup>. It has the best internal and test-retest reliabilities. It is resistant to being faked and is, in fact, the only exercise which differentiates the sexes despite instructions to answer masculinely or femininely. Approximately one-half of its items still differentiates the sexes<sup>3</sup>. This test should be seriously considered by those looking for sex differentiating tests and especially by those who use such tests as a measure of something, such as gender identity, which one acquires earlier in life and is relatively resistant to change and faking.

Low correlations among the three exercises supports our position that each exercise taps some particular aspect of gender role or identity. Gender role and gender identity are multidimensional and the Terman-Miles Test is one of the very few that allows a profile analysis to be



obtained. This is a very strong point in favor of this test.

One of the weaknesses in the present replication may be found in the lack of some outside validation group. In the past, male homosexuals have served as such a group. First, since only one sex is used, a difference in their score and their heterosexual counterparts' may be a reflection of anxiety brought about by their being asked to participate because of their homosexuality (Note 1). Second, there is no evidence that homosexuals, as a group, have gender role reversal. An appropriate validation group would be transsexuals (individuals whose gender identity and gender role are discrepant with their biological sex and who seek sex-change surgery). While we did not include such a validation group in the present replication, Paitich (1973) reports that he uses the Terman-Miles Test to distinguish transsexuals from nontranssexuals.

The most interesting and significant aspect of the current study, however, is that sex differences in a 1920-1930 American subculture have remained true for over 40 years and in another subculture (Montreal, Quebec). Given that Terman and Miles (1936), de Cillis and Orbison (1950), and we have all reported data demonstrating the validity of the Terman-Miles M-F Test, we believe that the inference of historical continuity is probable. However, we certainly agree that only three studies do not conclusively support our inference. The thoroughness that went into developing the test is surely a major factor in its continued success.

## Reference Notes

1. LaTorre, R. A. Gender role queries. Manuscript submitted for publication.

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## Footnotes

The authors wish to thank the following individuals who have contributed their assistance and advise in the statistical evaluation of the data: Rhonda Amsel, Dr. George Ferguson, Lorne Hartman, Dr. Chet Olson, and Dr. Jim Ramsay. The authors also wish to express appreciation to Dr. Don Taylor for his comments on an earlier version of this paper. This study was supported, in part, by a McGill University Graduate Studies and Research grant. The research was conducted while the senior author was a McConnell Fellow.

<sup>1</sup>In order to both increase readability of the manuscript and conserve journal space, only those results directly related to gender are presented. Additional material concerning main effects of the other variables and interactions in which gender is not involved can be obtained from the authors free of charge.

<sup>2</sup>It was brought to our attention that we might want to determine either the percentage of variance accounted for or the size of effect. Whether these give more information than the simple  $p$  level is a current debate in the nonpsychological statistical literature. While this debate would certainly apply at low  $p$  levels, it seems that high  $p$  levels need not be subjected to such additional tests. Since the effects in which we are most concerned are highly significant, such additional tests would have been redundant and are unwarranted.

<sup>3</sup>An item analysis was performed but was not cross-validated. The item analysis may be obtained from the authors free of charge.

Table 1  
Cell Means and Averages for Gender and Student Status  
for Subject's Ages

<u>Student Status</u>	Gender		
	Males	Females	Averages
Students	20.8	19.9	20.3
Nonstudents	39.9	35.6	37.7
Averages	30.3	27.7	

Table 2

Cell Means and Averages for Gender and Student Status on Exercises 1, 2, and 3.

<u>Student Status</u>	<u>Exercise 1</u>		<u>Exercise 2</u>		<u>Exercise 3</u>	
	Males	Females	Males	Females	Males	Females
Students	-4.77	-9.68	.36	.19	3.08	-10.87
Nonstudents	-3.92	-12.44	-.42	-2.58	1.99	-10.48
Averages	-4.35	-11.06 <sup>c</sup>	-.33	-1.20 <sup>d</sup>	2.54	-10.68 <sup>e</sup>
Students <sup>a</sup>	-4.25	-12.16	----	----	5.18	-4.54
Students <sup>b</sup>	0	-14	0	-1	7	-7

a. Based on the de Cillis and Oribson (1950) sample.

b. Percentile norms based on the 50th percentile of a group of college sophomores reported by Terman and Miles (1936).

c.  $F(1,336) = 52.59, p < .0001.$

d.  $F(1,336) = 7.59, p < .007.$

e.  $F(1,336) = 146.02, p < .0001.$

Table 3

Cell Means and Averages of Gender and Last Educational Level Attained  
and Marital Status for Subjects' Ages.

Last Educational <u>Level Attained</u>	Males			Females		
	Married	Single	Average	Married	Single	Average
High School	48.63	37.83	43.23	45.24	28.56	36.90
University	44.33	25.18	34.76	38.38	26.48	32.43
Averages	46.48	31.51	38.99	41.81	27.52	34.66



Table 4  
Internal Reliabilities for Exercises 1, 2, and 3.

<u>Group</u>	<u>Exercises</u>		
	1	2	3
Males			
Students	.27	.25	.44
Nonstudents	.25	.04	.36
Females			
Students	.54	.45	.77
Nonstudents	.29	.24	.66
Average Single Sex <sup>a</sup>	.40	.25	.50
Sexes Combined			
Students	.46	.24	.77
Nonstudents	.41	.06	.51
Average Sexes Combined <sup>a</sup>	.62	.34	.68

a. These are the reliabilities as reported by  
Terman & Miles (1936).

Table 5  
Test-retest Reliabilities over a 4-week period for  
Exercises 1, 2, and 3.

<u>Group</u>	<u>Exercises</u>		
	1	2	3
Males			
Students	.65	.73	.24
Nonstudents	.76	.65	.71
Females			
Students	.64	.80	.65
Nonstudents	.63	.28	.94

Table 6  
Cell Means and Averages of Instructions and  
Student Status for Exercises 1, 2, and 3.

Instructions (Answer As)		
<u>Student Status</u>	Masculine	Feminine
Exercise 1		
Student	1.3 <u>a</u> , <u>b</u>	-11.6 <u>b</u>
Nonstudent	-3.8 <u>a</u> , <u>c</u>	-10.3 <u>c</u>
Average	-1.25	-10.94
Exercise 2		
Student	.29 <u>d</u> , <u>e</u>	-1.17 <u>e</u>
Nonstudent	-1.59 <u>d</u>	-.81
Average	-.65	-.99
Exercise 3		
Student	-1.48	-4.81
Nonstudent	-3.92	-6.47
Average	-2.70	-5.64

a.  $t(87) = 2.51, p < .02$     d.  $t(87) = 2.52, p < .02$

b.  $t(83) = 6.37, p < .001$     e.  $t(83) = 2.26, p < .05$

c.  $t(86) = 3.19, p < .01$

Table 7  
 Cell Means of Gender and Instructions for  
 Exercises 1, 2, and 3.

<u>Gender</u>	Instructions (Answer As)	
	Masculine	Feminine
Exercise 1		
Male	-2.45	-10.29
Female	-.38	-11.61
Exercise 2		
Male	-.33	-1.05
Female	-.97	-.94
Exercise 3		
Male	1.83	-1.52
Female	-7.24	-9.75

Table 8

Correlations Between the BSRI and the Terman-Miles (T-M) Exercises

	BSRI			Terman-Miles		
	M	F	<u>t</u>	Exercise 1	Exercise 2	Exercise 3
BSRI M						
Males		.02	-.73 *****	-.04	.42 *	-.10
Females		-.90 *****	-.19	.27	.28	.21
BSRI F						
Males	-.13		.67 *****	.13	-.16	-.10
Females	.10		.39	-.21	-.14	-.40
BSRI <u>t</u>						
Males	-.88 *****	.59 *		.12	-.43 **	.01
Females	-.67 *****	.67 *****		.37	.37	-.26
T-M Exercise 1						
Males	.34	.19	-.18		.11	.19
Females	.30	-.23	-.05		.17	-.21
T-M Exercise 2						
Males	.32	.19	-.17	-.02		.29
Females	.18	-.26	-.33	-.37		.28
T-M Exercise 3						
Males	.69 ***	-.24	-.67 ***	-.39	.32	
Females	.19	-.05	-.18	.58 *****	-.11	

Table 8

(cont.)

Note. Correlations above and to the right of the diagonal are for nonstudents. Correlations below and to the left of the diagonal are students.

\*  $p < .06$

\*\*  $p < .05$

\*\*\*  $p \leq .025$

\*\*\*\*  $p = .008$

\*\*\*\*\*  $p \leq .001$

After having investigated the validity and several types of reliability of the Terman-Miles Test, we sought to validate other tests of sex differences which might be useful as measures of gender identity or gender role. We wished to investigate nonverbal tests for several reasons. First, traditional verbal tests are notorious for their fakability and, to some extent, transparency. Second, nonverbal tests used in conjunction with verbal tests could strengthen experimental results by virtue of converging methodologies. Hence, the following manuscript examines the predictive and concurrent validities of several nonverbal sex-differentiating tasks. A major strength of the following manuscript is its employment of a transsexual validation group.

MANUSCRIPT III. Cognitive Style, Hemispheric Specialization, and  
Tested Abilities of Transsexuals and Nontranssexuals



## Abstract

Tests on which the 12 males and the 8 male transsexuals differed significantly and might be useful to clinicians for differentiation were the Embedded-figures Test, the Porteus Mazes, and the O'Connor Finger Dexterity Test. Sex differences emerged on the Embedded-figures Test and the first half of the dexterity test. There were no significant differences between 12 males and 14 females or males and 8 transsexuals on conjugate lateral eye movement, eye dominance, Digit Span, and Digit Symbol. Embedded-figures Test appears to tap some aspect of gender identity (males with female identities respond like females) while the first half of the O'Connor taps a biologically determined sex difference (males respond alike whether they have male or female identities).

The purpose of this study was threefold: (a) to determine which of several psychological tests might assist clinicians in differentiating transsexual males from nontranssexual males, (b) to determine which tests, that differentiate the sexes, reflect gender-identity and which tests reflect biological differences, and (c) to determine (a) and (b) on the basis of nonverbal tests since self-report (verbal) tests are notorious for their fakability.

It is important, here, to discuss (b) in more depth. In the past, tests of gender identity and gender role have relied heavily - if not exclusively - on sex differences. In many cases a homosexual criterion group was included in the cross validation sample. However, it has been posited that gender identity and role reversals are not necessary concomitants of homosexuality. The only known valid criterion group, then, is the transsexuals (individuals whose gender identity and role are in contradiction to their biological sex). Certainly, a basic sex differentiation should exist in any attempt to assess gender identity. The problem with accepting that as a sole criterion is that a sex difference could be a mere reflection of biological sex without any reflection of gender identity (take as an extreme example the possession of a penis or a vagina). If, along with a sex difference, the transsexual group acts in contradiction to their biological sex, then the item or test would seem to assess psychological sex or gender identity and not biological sex. If, however, the transsexual group acts in accord with their biological sex, then the item or test would be an assessment of biological sex rather than gender identity. This study assesses tests of sexual differentiation using a transsexual

criterion group to determine whether these tests measure gender identity or reflect biological sex differences.

A very consistent finding deals with cognitive style. Field-dependent persons cannot easily separate the parts of a field whereas field-independent persons see the parts of the field as discrete units. That males tend to be more field-independent than females is reported cross-culturally (9, 10). There is evidence too that males may be more lateralized (have more hemispheric specialization) than females. It has been demonstrated that males, when asked a question, make a conjugate lateral eye movement to one particular side whereas females look to either side with not greater than chance frequency (2). It has also been reported that there are more right-handed males than right-handed females who are right-eye dominant (2, 3). Other evidence of greater hemispheric specialization in males than females comes from studies of dot enumeration and localization (2, 5). A number of tested abilities have also differentiated the sexes. Porteus (8), in a review of studies which used his maze test, reported that 99 out of 105 studies showed a slight difference in favor of the male. Maccoby and Jacklin (4) noted that boys' superiority in visual-spatial tasks is one of only 4 sex differences that are fairly well established. Maccoby and Jacklin also noted that the evidence favors greater tactile sensitivity in the female infant. This difference could lead to the greater manual dexterity observed in adult females with the use of such tests as the O'Connor Finger Dexterity Test (1, 9). Females have also been shown to excel in clerical skills such as the Digit Symbol Test from the WAIS (1, 9).

One study showed that male eonists (transsexuals and transvestites) scored lower on the Digit Symbol than did female eonists but groups did not differ on Digit Span (6).

#### Method

Twelve males, 14 females, and 8 pre-operative male transsexuals received the test battery. Male transsexuals are defined as biological males who identify themselves as females, i.e., have a female gender identity, and present themselves for sex-change surgery. There were no significant differences among these three groups for the control variables of age, education, number of languages spoken, and hand dominance (0 = left handed, 10 = right handed).

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Insert Table 1 about here.  
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The test battery was administered in the following order: conjugate lateral eye movement, eye dominance, Porteus Mazes, Digit Span, Digit Symbol, Embedded-figures Test, and O'Connor Finger Dexterity Test. Handedness was determined with a 10-point questionnaire (7) following completion of the test battery. Nontranssexuals were paid for their assistance, the transsexuals were administered the test battery as part of their pre-operative assessment.

The eye-movement test had 20 verbal and 20 spatial questions and the direction of the person's first eye movement following the question was noted. This test and the eye-dominance test were administered in the manner described by Gur and Gur (2). The remainder of the tests

were administered in standard manner. For the Porteus Mazes, the Vineland Year X was a practice item and Vineland Year XIV, Vineland Adult, and Extension Adult were the test items. Form A of the embedded-figures was used.

### Results and Discussion

Chi-square analyses were done on eye movements and eye dominance data but comparisons were nonsignificant. However, a greater proportion of males (25%) and male transsexuals (25%) had eye movements in one direction at least 70% of the time than females (7%). For all other test scores, one-way analyses of variance with unweighted means solutions were performed with subsequent application of the Newman-Keuls procedure for significant Fs. Means, standard deviations, and statistical results are shown in Table 1 for those comparisons that attained significance. Nonsignificant comparisons were: the two Vineland Mazes (time to complete), number of trials needed to complete all three mazes, Digit Span, and the number of incorrect solutions for embedded-figures.

The results indicate that males and females attain significantly different scores on embedded-figures (males are more field independent) and on the first half of the O'Connor (males have poorer manual dexterity). Male transsexuals attain significantly different scores from nontranssexual males on the Extension Adult Maze (transsexuals take longer), on the second half and over-all score of the O'Connor (transsexuals have poorer manual dexterity), and for embedded-figures over-all score, number of times the simple figure was reshowed, and the number of failures (transsexuals are more field-dependent).

It appears that of the entire test battery, only embedded-figures is a possible indicator of gender-identity. It is the only test in which transsexuals responded like females (in accord with their gender-identity) and unlike males (their biological sex). Only the first half of the O'Connor reflects a biological sex difference as transsexuals responded like their biological sex (male) and not in accord with their gender-identity (female). That is to say, of all the tests used in this study, psychological maleness is only associated with field independence while psychological femaleness is only associated with field dependence (regardless of biological sex). And, biological maleness (regardless of psychological identification) is associated with poorer manual dexterity than is biological femaleness.

There is a possible alternate explanation for the transsexuals' over-all poorer performance in comparison to that of males and females. As the test battery was presented to the transsexuals, but not the nontranssexuals, as one part of an assessment package, it may have aroused anxiety about performance specifically in the transsexual group. This anxiety could have been great enough to interfere with the transsexuals' optimal functioning. Hence, it is possible that the transsexuals' performance is not a pure reflection of ability. It is a good reflection of responses in a psychological test situation and our results may be useful for clinicians making differential diagnoses. To the extent that the tests are unaffected by the anxieties about the test situation, our results are meaningful for research on gender-identity and biological sex differences.

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## Footnote

This study was supported by a grant from the McGill University Faculty of Graduate Studies and Research. Address reprint requests to R. A. LaTorre, Dept. of Psychology, McGill University, Montreal, P.Q., Canada.



Table 1

Means, Standard Deviations, and Statistical Results for

Males (M), Females (F), and Male Transsexuals (T)

Variable		Males	Females	Transsexuals	F <sub>2,31</sub>	q		
						M vs. F	M vs. T	F vs. T
Extension Adult Maze Time (sec.) <sup>§</sup>	M	124.81	140.07	231.60	8.60 ‡		5.42 +	4.65 +
	SD	79.74	37.82	33.46				
Mazes (No. failures)	M	.25	0	.63	4.05 *			4.00 *
	SD	.62	0	.74				
Digit Symbol	M	55.33	62.79	50.63	3.90 *			3.92 *
	SD	13.41	6.05	10.36				
EFT (Over-all score)	M	35.86	61.93	79.34	7.28 ‡	3.21 *	5.36 +	
	SD	18.27	23.70	39.46				
EFT (No. times simple figure reshown)	M	6.75	7.79	14.50	3.78 *		3.58 *	3.10 *
	SD	6.03	6.47	9.37				
EFT (No. failures)	M	.58	1.79	3.13	6.70 ‡		5.18 +	
	SD	.67	1.37	2.70				
O'Connor (1st half)	M	357.25	296.93	367.38	4.86 *	3.49 *		4.08 *
	SD	59.32	51.40	61.17				
O'Connor (2nd half)	M	323.67	326.57	493.38	4.26 *		3.61 *	3.54 *
	SD	50.59	175.40	209.75				
O'Connor (Over-all)	M	356.63	328.08	454.98	4.46 *		3.12 *	4.03 *
	SD	51.70	118.02	130.74				
Age	M	26.25	27.00	30.25	1.81			
	SD	2.34	4.92	8.08				
Education	M	14.08	13.36	12.75	.67			
	SD	2.58	2.17	3.54				
No. languages spoken	M	2.50	2.21	2.88	1.07			
	SD	1.45	.80	.64				
Hand dominance	M	8.67	9.21	8.44	.23			
	SD	2.76	2.66	2.78				

<sup>§</sup>df = 2,27. \*p ≤ .05. +p ≤ .01. ‡p ≤ .005.

Having examined the validities and reliabilities of several tests, we sought to make a detailed investigation into the area of gender identity and gender role in schizophrenia. This detailed investigation is the basis for the final manuscript. This manuscript can be viewed as a culmination of the work reported in the previous three manuscripts. It bases its investigation around the set of definitions presented in the introductory manuscript and seeks to deal with many of the problems also presented in that manuscript. It does this through the use of tests whose validities were determined in manuscripts two and three and through the use of more commonly used and accepted tests.

This final manuscript has both strength and uniqueness in two separate areas. One area concerns methodological sophistication and improvement over previous studies. Methodological improvement is brought about in several ways. First, rather than relying on psychiatric diagnoses which are believed to be unreliable, a research-diagnosis procedure is used. This procedure lays out specific requirements for inclusion into any diagnostic group and thereby allows a high inter-rater reliability to be obtained. Second, rather than confounding our schizophrenic sample with subgroups believed to have gender identity or role problems themselves, we excluded both paranoid schizophrenics and undifferentiated schizophrenics who had paranoid symptoms from our sample. Third, we included males and females from each diagnostic category. Few people would try to standardize a gender identity or role test on only one sex and it seems almost as inappropriate to examine the gender identity or role status of a group by testing only one sex from that group. Fourth, a number of demographic

variables are assessed. This is for the purposes of defining our groups as exactly as possible and of examining the effects of those variables - which are discrepant among the groups or sexes - on our gender identity and role scores. Fifth, a nonschizophrenic psychiatric patient sample is included to control for variables outside of the diagnosis of schizophrenia. This allows us to also assess specificity and nonspecificity of gender identity and role problems.

The second area concerns goals and specific hypotheses. Three points should be noted. First, the hypotheses deal with male/female differences within each group rather than group differences for any one sex. As noted in the Preface to this thesis, there has been too much of the latter and not enough of the former. Second, the relationship between gender identity and role and length of hospitalization is carefully delineated. This is examined and accomplished by comparing recently admitted and long-term schizophrenics, and by correlating data obtained shortly after admission with subsequent length of hospitalization. Third, several sources of gender identity or role problems are investigated. The sources which are provided (by patient self-reports) include parents, hospital staff, and the limitations imposed by the individual's own knowledge of society's prescriptive gender roles.

MANUSCRIPT IV. Gender Identity and Gender Role in Schizophrenia:

An Experimental Investigation

### Abstract

Four research diagnostic groups (recently-admitted affective disorders, recently-admitted nonparanoid schizophrenics, long-term non-paranoid schizophrenics, noninstitutionalized controls) were administered a battery of gender identity, gender-role adoption, and gender-role preference tests. Appropriate sex differences emerged for all groups on both tests of gender identity (Embedded Figures Test, Information Exercise of the Terman-Miles M-F test) and one test of gender-role adoption (MMPI Mf Scale). But schizophrenics endorsed Bem Sex Role Inventory (another gender-role adoption test) items in a non-gender-typed manner. This difference was not related to a knowledge deficiency of appropriate gender roles, and the source of this difference could not be traced to a differential perception of encouragement or discouragement by parents or hospital staff of appropriate gender-role behavior. Regarding gender-role preference, schizophrenics chose more opposite-sex roles on the Role Preference Test, but this difference failed to remain true when the number of word associations remembered was covaried with the results. Length of hospitalization was unrelated to gender identity, gender-role adoption, and gender-role preference scores.

Gender identity and gender role research has proven to be a most confusing area in psychology (Constantinople, 1973; Note 1). It consists of imprecise and intermixed terminology, poor test construction and validation, hypotheses based more on emotion than reason, and apparent lack of communication among the various independent researchers. Similarly, the concept of schizophrenia has become a frustrating one for many. With hundreds of research studies completed and hundreds more in progress, a continually growing number of researchers are acknowledging the fact that the label schizophrenia is often not applied in any reliable way. Different diagnosticians diagnose differently. This poses problems both for the validity of the schizophrenia construct and the generalizability of research findings. Fortunately, a number of individuals, cross-culturally, have turned their efforts to developing a more precise and reliable diagnostic method.

This study seeks to fuse these two areas for research purposes. Such a combination is neither random nor novel. Early in this century theoreticians linked paranoid schizophrenia to a problem in gender identity (basic sense of being a male or a female) or gender role (public expression of those things which differentiate the sexes and are culturally determined) (Freud, 1925; Krafft-Ebing, 1933). Adler (1964) proposed a less specific theory by stating that psychopathology has its roots in gender identity or role-conflicts.

Research dealing with gender identity and role in paranoid schizophrenia dates back almost to the development of the first gender identity/role test (Page and Warkentin, 1938). And research linked schizophrenia to

gender identity and role problems beginning in the 1950s. This research has been reviewed elsewhere (LaTorre, 1976).

The articles reviewed by LaTorre (1976) suggest the existence of gender identity or role problems which have been variously described as confusion, alienation and reversal. Yet there is a noticeable room for methodological improvement to yield more credible and generalizable results.

High on the list of necessary methodological improvements is the inclusion of a nonschizophrenic psychiatric patient sample. Psychopathologies other than schizophrenia have been linked to gender identity and role problems (Jordan and Bempler, 1970; Kayton and Biller, 1972; Kokonis, 1972; LaTorre and Gregoire, in press; Lynn, 1969; Wilsnack, 1973). The inclusion of such a group would therefore allow us to determine whether such problems are specific to schizophrenia or whether they are more general and possibly a result of emotional illness/turmoil or psychiatric hospitalization. The three studies that, to date, have contrasted a schizophrenic group with another psychopathological group matched in length of hospitalization lend evidence to the belief that psychopathology per se is related to gender identity and role confusion (Elfert, 1971; LaTorre, Endman and Gossman, 1976; Note 2).

Another problem with previous studies has rested in their incomplete analysis of the effects of hospitalization. Studies with clearly chronic samples consistently report gender identity or role problems (Kayton and Biller, 1972; McClelland and Watt, 1968; Millgram, 1960) while studies with more recently admitted patients usually have equivocal or negative

findings (Ecker, Levine, and Zigler, 1973; Elfert, 1971; LaTorre, Endman, and Gossman, 1976). This leads to one of three apparent explanations. Either the cases with more severe gender identity and role problems become the chronic patients, or hospitalization produces such difficulties, or some combination of these two interacting. Only one study gives us a clue to this problem. Ishiyama and Brown (1965) tested schizophrenic patients from both a closed ward for severely disturbed patients and from an open ward for less disturbed patients. These patients were matched for length of hospitalization and other important demographic variables. Patients from the locked ward displayed more gender-inappropriate self and ideal ratings than did the open-ward patients. Hence, severity of gender identity or role problems seems associated with degree of disturbance; but the study only controlled for hospitalization and cannot, therefore, give us information concerning effects of hospitalization. Methodological improvement here could consist of direct comparison of long-term and recently-admitted patients, and correlations between scores obtained upon admission with subsequent length of hospitalization.

A third methodological sophistication necessary is the exclusion of paranoid subsamples in the schizophrenic samples being tested. The area of gender identity and role problems associated with paranoia or paranoid schizophrenia is an area in its own right (see reviews by Lester, 1975; Wolowitz, 1971). Whether paranoids are distinct from nonparanoid schizophrenics with regard to gender identity and role problems is equivocal (Kayton and Biller, 1972; Musiker, 1952; Petzel and Gynther, 1969; Rosenweig and Shakow, 1937; Watson, 1965). The problem with past studies is that the



subtype of schizophrenic samples, when noted, tends to be largely paranoid (Millgram, 1960; Smith, 1953) or undifferentiated (Kayton and Biller, 1972; Kokonis, 1973; Biller and Poey, 1969). Undifferentiated subtypes often possess some paranoid features. Therefore, much of the evidence suggesting gender identity or role problems in schizophrenia has been based on samples containing subgroups with paranoid symptoms which, alone, have been associated with such problems.

Superimposed on these basic issues have been two relatively recent developments. The first centers about the problem of diagnosis. There has traditionally been a lack of a clearly defined and reliable criterion for inclusion into the group labeled schizophrenic. The common criterion of psychiatric diagnosis is not sufficiently defined and lacks sufficient reliability as has been demonstrated by a lack of conformity to standard nomenclature guides (Ellis and Sells, 1964), differential frequency with which various diagnostic entities are used by various hospital psychiatrists despite random patient assignment (Mehlman, 1952; Pasamanick, Dinitz, and Lefton, 1959), and poor inter-rater reliability for the diagnosis of schizophrenia within a single institution (Ash, 1949; Schmidt and Fonda, 1956).

Alleviation of such diagnostic problems has been the goal of recently developed computerized systems for diagnosis. One widely used system is DIAGNO III (Spitzer, Endicott, Cohen, and Fleiss, 1974). Diagnosis is made through a logical tree analysis and reflects the diagnostic categories found in the American Psychiatric Association's Diagnostic and Statistical Manual II. Another well known system is CATEGO. It, too,

involves a logical tree analysis. However, CATEGO, in contrast to DIAGNO III, is based only upon current patient information and does not include the psychiatric history, and it is designed to conform more to the British/European approach to diagnosis. Finally, DIAGNO III has a manual logical tree analysis counterpart, the Research Diagnostic Criteria, which removes the necessity of computer facilities.

The second recent development has emerged in the area of gender role research. Traditional tests of masculinity-femininity have been critiqued on the basis of their unidimensional and bipolar treatment of masculinity and femininity (Constantinople, 1973). In response to this problem, BEM (1974) devised the Bem Sex Role Inventory (BSRI) which possesses statistically independent masculinity and femininity scales. It is possible to then obtain an "androgyny" score by subtracting the one from the other. Androgyny, as originally defined by Bem, is a relative balance of masculinity and femininity. She went on to posit that androgyny should be the new standard of mental health and demonstrated that androgynous individuals demonstrated greater behavioral flexibility (Bem, 1975). In one study dealing with psychiatric patients, LaTorre, Endman, and Gossman (1976) reported no significant group or group X sex interaction for schizophrenic patients, nonschizophrenic psychiatric patients, and noninstitutionalized controls. However, using Bem's approximate  $t$ , the two groups of psychiatric males were the only ones who obtained mean scores which were "androgynous."

Spence, Helmreich, and Stapp (1975) challenged Bem's classification system. Her classification of androgyny included not only truly androgynous

individuals who balanced masculinity and femininity at high levels, but also those whom Spence et al. referred to as undifferentiated or those who balanced at very low levels of both masculinity and femininity.

Spence et al. noted that androgynous individuals reported the greatest self-esteem and were followed in decreasing order by masculine, feminine, and undifferentiated individuals. Heilbrun (1976) found less behavioral variation across situations for androgynous individuals and claimed that this was psychologically advantageous (a direct contradiction to both Bem's findings and her proposed relationship between psychological health and flexibility). Heilbrun also reported a greater proportion of androgynous to undifferentiated types in a random sample of college students than in a sample receiving psychological and academic counselling. LaTorre (in press) found that feminine individuals obtained significantly greater neuroticism scores than did androgynous and masculine individuals and that androgynous males obtained lower alienation scores than did feminine or undifferentiated males.

As is evident, the short history of androgyny has generated various definitions, various tests with which to measure it, various results, and has been used to assess psychologically maladjusted groups which themselves were determined variously. All of these factors make any summary statement or conclusion pretentious at this time. Androgyny has succeeded in causing sufficient problems and concerns which warrant more detailed investigations.

This study attempts to circumvent the problems and answer questions posed above in the following ways. First, the specificity of the problem to schizophrenia is assessed by inclusion of a nonschizophrenic (affective

disorder) patient group. Second, the relation between length of hospitalization and gender identity or role problem severity will be explored in the following ways: (1) assessment of what patients believe are staff expectations to act in masculine or feminine ways, (2) correlation between test scores obtained from a recently admitted patient group with subsequent length of hospitalization, and (3) direct comparison of long-term and recent-admission schizophrenic patients. Third, in order to rule out the possibility of contamination, those patients who fit the paranoid category (or undifferentiated with paranoid symptoms) are omitted. Fourth, and a crucial aspect of this study, there is a careful delineation and description of the groups examined. This is accomplished through the use of a structured interview with a logical tree analysis to arrive at a diagnosis, and through the use of various psychological tests which have been shown to discriminate schizophrenics from other groups. Fifth, important data is obtained concerning the relationship of androgyny to psychological health by administering the BSRI.

In essence, the objectives of the present study are as follows:

- (1) to examine differences between long-term and short-term schizophrenics,
- (2) to assess the relationship between degree and appropriateness of gender identity and role and subsequent length of hospitalization, (3) to assess the specificity of gender identity or role problems by inclusion of a non-schizophrenic psychiatric sample, (4) to examine sex-typed expectations that the schizophrenic believes others have of him, (5) to assess the schizophrenic's knowledge of socially desirable gender role traits, (6) to define, as accurately as possible, inclusion criteria for schizophrenia

and affective disorders, and (7) to assess the relationship between androgyny and psychiatric inpatient status.

These objectives were achieved as follows. One part of the testing battery was devoted to diagnosis and sample description. Diagnosis was based on material from a structured interview, case records, and personal observation of staff members. Psychological tests used in differential diagnosis were also administered.

The other part of the testing battery dealt with gender identity, gender role adoption, gender role preference, biological sex differences, the individual's perception of sources of influence on his gender role adoption, and his knowledge of appropriate gender roles. And, in contrast to the bulk of previous research which has analyzed group differences within each biological sex, this study also assesses sex differences within the diagnostic groups.

Our hypotheses are: (1) male/female differences on gender identity and gender role tests exist in affective disorders and noninstitutionalized controls but not in recently-admitted and long-term schizophrenics, (2) there is no difference between affective disorders and noninstitutionalized controls nor between recent-admission and long-term schizophrenics on gender identity and gender role adoption scores, (3) there will be a significant difference in the distribution of androgynous, masculine, feminine, and undifferentiated individuals in the four groups and two sexes with schizophrenics having the greatest number of undifferentiated and noninstitutionalized controls having the greatest number of androgynous individuals, (4) the affective disorders and recent-admission schizophrenics with the most

inappropriate gender identity, gender-role adoption, and gender-role preference scores have the longest lengths of hospitalization, (5) recent-admission and long-term schizophrenics choose more opposite-sex roles than do affective disorders and noninstitutionalized controls with no difference between the affective disorders and noninstitutionalized controls nor between the long-term and recent-admission schizophrenics, (6) male/female sex differences on biological measures exist in all four groups, (7) all groups possess the knowledge of appropriate gender role characteristics, (8) all groups perceive the ideal psychiatric patient role as more feminine than masculine, (9) perceived parental pleasure with gender role adoption is more sex-typed (i.e., individuals report that their parents reinforced appropriate gender roles more than they did inappropriate ones) among affective disorders and noninstitutionalized controls than among recent-admission and long-term schizophrenics.

### Method

#### Tests

Diagnosis. A major part of our research effort was devoted to clearly defining criteria for group inclusion. Our diagnosis was eventually based on two instruments, but we did administer several more which the literature noted were useful for differential diagnosis.

Our research diagnosis was determined through the combined use of the Schedule for Affective Disorders and Schizophrenia (SADS - Spitzer and Endicott, 1973) and the Research Diagnostic Criteria (RDC - Spitzer, Endicott, and Robins, 1975). The SADS is a structured interview intended to obtain information necessary either for a computer diagnosis or to

determine a research diagnosis on the RDC. The RDC is a checklist of symptoms rated as present or absent from information obtained during the SADS, from case records, and from hospital staff. The RDC is basically a logical tree model for deciding, relatively objectively, upon a diagnosis. It is because of the problems with computer diagnosis and the need for explicit clinical rules that the RDC was developed. As the SADS is a lengthy interview, and as we were only interested in a small number of possible diagnoses, relevant SADS and RDC items were abstracted and used. The major diagnoses in this study were schizophrenia, major depression, and mania. The major diagnosis of schizophrenia was broken down into subtype diagnoses. If a patient did not fit one of the three major categories (which are mutually exclusive), if he was subtyped paranoid, or if he was subtyped undifferentiated but had paranoid symptoms, he was excluded from further study. Noninstitutionalized controls were asked a series of screening questions from the SADS to rule out major psychopathology.

During the SADS, information was also obtained about the person's premorbid, or recent, social aspects of their sexual life, such as whether they had formed a strong heterosexual attachment prior to hospitalization or whether they maintained a sexual relation with a person of the opposite sex to whom they were deeply attached. This allowed the interviewer to complete the Phillips' Premorbidity Scale (Phillips, 1953). Higgins (1969) reviewed current literature on premorbidity scales and reported a relatively high correlation among all such scales and pointed out that only the Phillips' has not declined in popularity because of its greater simplicity and specificity. The

Phillips' scale is used as one might expect socio-sexual adjustment to be related to gender identity or gender role. The Phillips' score allows us to either have confidence in our control of this variable or at least, given a lack of control, to assess its impact on test scores.

The Epstein test of overinclusiveness (Epstein, 1953) was administered. It is a 50-item test. Each item consists of a key word and several other words. The participant must choose those alternatives which are "absolutely necessary to make a complete thing" which is represented by the key word. This test allows assessment of overexclusiveness (not including things which are absolutely necessary), overinclusiveness (including too many things which are not essential), and use of neologisms (choosing make-believe words or choosing alternatives for key words which are make-believe). Diagnostic groups have been shown to respond differentially on this test which is one measure of thought disorder, a key concept in schizophrenia. As such it is another aid to classify our diagnostic groups.

A word association test, as another measure of thought disorder, was also given to each person. The first and last 10 words from the Rapaport, Gill, and Schafer (1970) word association test were used as stimulus words. Measures were obtained for mean latency of response, difference between longest and shortest response latencies, number of disturbed associations (e.g., blocking, clang, perseveration), and number of original responses recalled upon second presentation of the list of stimulus words. These measures were chosen for use in the differential diagnoses of our groups.



The Mini-mult (Kincannon, 1968) was administered. This is a 100-item version of the MMPI exclusive of the masculinity-femininity and social introversion scales. The Mini-mult yields a clinical profile which is useful, but not sufficient, in differential diagnoses. That the Mini-mult adequately approximates the MMPI has been demonstrated (Hedlund, Cho, and Powell, 1975; Kincannon, 1968).

Gender Identity. Gender identity is a self-definition of oneself as being male or female. Since it is often regarded as a deep belief which may be unconscious, its measurement is difficult and interpretations derived from such measurement must remain tenuous. In this study, two measures were used to assess gender identity, the Embedded Figures Test (EFT) and Exercise 3 (Information) of the Terman-Miles Attitudes-Interest Analysis Test. These tests, and the reasons for their inclusion here are discussed below.

The EFT requires that a simple figure, embedded in a complex design, be found. The score is the average length of time required to find the embed. This test is more commonly known as a measure of cognitive style. Those with an articulated or field independent style more easily separate parts of a field or are more analytical than those with a global or field dependent style. However, a long and consistent history indicates it differentiates males and females and has a relationship to gender identity/role tests (Tyler, 1965; Witkin, Dyk, Faterson, Goodenough, and Karp, 1962). Males are able to see the parts of the field as discrete units and can, therefore, more quickly find the embed. Further, LaTorre, Gossman, and Piper (1976) have demonstrated that transsexual males respond

in the more female-type manner. This leads us to include the EFT as a measure of gender identity.

The Terman-Miles Attitudes-Interest Analysis Test (Terman and Miles, 1936) is the oldest, but most systematic, test dealing with gender differences. Exercise 3 has recently been shown to differentiate males and females and, in contrast to other paper and pencil inventories, is not fakable (LaTorre and Piper, in press). This exercise consists of 70 incomplete sentences with three or four alternative sentence endings. The individual is asked to choose the alternative which would make the sentence true. Masculinity is scored in the positive direction and femininity in the negative direction. This type of information is learned early in life, and the test is not fakable. For these reasons and because the test is not very susceptible to exogenous factors, this exercise is used as a reflection of gender identity.

The designation of these two tests as measures, or reflections, of gender identity is an arbitrary one based largely on their nonfakability, the early age at which gender differences emerge on these tests, and the ability of one (the EFT) to distinguish transsexuals from their biological sex but not from the opposite biological sex. One could likewise argue that these tests are measures of gender role adoption (for the EFT) or gender role knowledge (for the Terman-Miles Information subtest). However, as pointed out in the introductory manuscript, gender identity and gender role affect each other and are not developed completely independently. While no pretention is made that either the EFT or the Information subtest are direct measures of gender identity, they are most likely in the domain of

measures which reflect the area of interaction of both gender identity and gender role. That is, they would seem to be indirect measures of gender identity - a gender identity which begins to make itself known through an almost unconscious adoption of various gender roles.

These tests, by further virtue of their more subtle character and nonfakability and nontransparency, yield data which are less suspect than more direct measures of gender identity. Certainly, we could have asked individuals very openly and directly, "What sex do you firmly believe yourself to be?" However, the problems with such a question are similar to those encountered when, for example, we might ask a criminal, "Did you commit that crime?" or we ask an individual on the street, "Have you ever engaged in any overt homosexual activity?" People are reluctant to admit things which have negative stigmas. Patients, especially the more acute, would be hesitant to admit to something that might influence their stay in hospital. And everyone hesitates to disclose personal items to relative strangers. Hence, an oblique approach, for this highly charged area, is necessary. The oblique instruments chosen were the EFT and the Information subtest.

Gender Role Adoption. Gender role adoption consists of characteristics such as traits and behavior which differentiate the two genders and which an individual has himself acquired. Most "masculinity-femininity" tests are aimed at assessing this particular construct. In our study two such instruments were used: the Bem Sex Role Inventory (BSRI) and a shortened version of the MMPI Mf Scale.

The first test administered was the BSRI (Bem, 1974). The original BSRI consists of 60 items; but for the purpose of this study, 20 filler

items were discarded. The 40 remaining items are divided equally between items that are socially desirable for males in our society (e.g., self-reliant, aggressive) and items that are socially desirable for females in our society (e.g., compassionate, affectionate). The individual is asked to rate how well each item describes himself on a 7-point scale from 1 indicating "never or almost never like me" to 7 indicating "always or almost always like me."

Scoring the two sets of items separately, one obtains both a masculinity and a femininity scale score which are independent of each other (Bem, 1974). A difference score, obtained by subtracting the masculine score from the feminine score, can then be transformed to an approximate  $t$  score by multiplying with a given constant. This approximate method is preferred because, unlike the actual  $t$  score, it does not confound mean level difference with variability of ratings (Strahan, 1975). Yet, the approximate  $t$  is so similar to the actual  $t$  ( $r = .98$ ) that it allows a direct comparison to Bem's data. Bem originally identified five categories: feminine ( $t \geq 2.025$ ), near feminine ( $1 < t < 2.025$ ), androgynous ( $-1 \leq t \leq 1$ ), near masculine ( $-2.025 < t < -1$ ), and masculine ( $t \leq -2.025$ ).

The Spence et al. classification system, on the other hand, is determined by masculinity and femininity scale median splits for the sample used in a study. From these splits, four groups are defined: undifferentiated (below median on both masculinity and femininity scales), feminine (above median on femininity scale, below median on masculinity scale), masculine (above median on masculinity scale, below median on femininity scale), and androgynous (above median on both the masculinity and femininity scales).

The second gender role adoption test administered was a version of

the MMPI Mf Scale. Since the Mini-mult which we were using excludes the Mf Scale, the Mf Scale from the MMPI-168 (Overall and Gomez-Mont, 1974), another shortened version of the MMPI, was added. The MMPI Mf Scale is of particular interest since it has been used in this area of research more often than any other single scale or test.

Gender Role Preference. Gender role preference is an individual's preference for gender-typed items or behavior. The test used in this study to assess this preference was the Role Preference Test (RPT) which was originally called the Role Playing Test (McClelland and Watt, 1968). From seven pairs of contrasting roles (one male and one female), the individual selects the one from each pair that he would prefer to play in a play or pageant. The number of opposite-gender role choices preferred is the score for this test.

Biological Sex Differences. Tests of gender identity, gender role adoption, and gender role preference deal with socio-psychological aspects of being male or female. The differences are largely learned and/or culturally determined. In contrast, a biological sex difference is a biological consequence of being a male or female. The extreme example is possession of a penis or a vagina. In this study, biological sex differences were assessed with the O'Connor Finger Dexterity Test and with measures of hand and eye dominance.

The O'Connor Finger Dexterity Test requires that the individual place three small pins into each of 50 holes (this actually represents  $\frac{1}{2}$  the number of holes in the entire test) as quickly as possible. The score is the total amount of time necessary to complete this task. This test

was selected as a biological sex differentiator because, in addition to a history of differentiating males and females, transsexual males responded more like their biological male sex, by taking longer to complete the task, than like their female gender identity (LaTorre, Gossmann, and Piper, 1976).

Hand and eye dominance were assessed as estimates of hemispheric specialization. Hand dominance took into account which hand was used for writing, for placing pins into the O'Connor board, and for taking a cone presented to the person. This allowed a 0 (all left hand) to 3 (all right hand) scale of measurement. Eye dominance was determined by noting to which eye the cone was placed in order to see something across the room but directly in front of the person, and which eye was covered by a pen the individual held when he aligned it - keeping both eyes open - with another pen held by the experimenter. This technique, used by Gur and Gur (1974), along with other techniques have demonstrated greater hemispheric specialization among males than females (Bakan, 1971; Kimura, 1969; Landsell, 1961; McGlone and Davidson, 1973).

Sources of Gender-Role Adoption. Based on personally collected data (LaTorre, Endman, and Gossmann, 1976), we felt confident that, if any results were significant, they would be with the BSRI. Rather than merely replicate our previous study, then, we decided to determine a possible "source" for any obtained difference. There were three areas which we believed might promote problems in gender role adoption. First was the parents' expectations of the child's behavior; second was the hospital staff's desire for certain types of behavior; and third was the patient's knowledge of appropriate gender roles.

To assess the patient's perception of parental expectations, he was asked to rate each BSRI item according to how pleased or displeased his parents would have been if he had adopted that trait. Again a 7-point scale was used which ranged from 1 "parents would be very displeased" to 7 "parents would be very pleased." Interest here was in a possible differential perception of parental force or expectation among the different groups.

To assess the patient's perception of staff expectations, the BSRI items were administered with the instructions to rate how desirable/undesirable psychiatric staff members would find each item if possessed by a patient in their charge. The scale ranged from 1 "always or almost always undesirable" to 7 "always or almost always desirable." Of interest here is the comparison of the male and female scale scores for each group to determine a possible influential effect imposed by psychiatric staff or psychiatric hospitalization.

Gender Role Knowledge. Finally, in an attempt to assess gender-role knowledge, the participant was requested to indicate whether each item was more socially desirable for males or for females in our society. Again a 7-point scale was used with 1 indicating "most desirable for males" and 7 indicating "most desirable for females."

Order of Administration. The tests previously mentioned were administered or completed in the following order: SADS and RDC, Phillips, BSRI-self, Terman-Miles Exercise 3, BSRI-parents, Mini-mult (with MMPI-168 Mf Scale), BSRI-staff, Epstein Test, RPT, Word Association Test, EFT, O'Connor, hand and eye dominance, and the BSRI-knowledge. Noninstitutionalized

controls normally completed the entire battery between two and three hours, psychiatric patients were interviewed or tested over at least a one-week period.

Participants. Psychiatric patients, diagnosed or suspected of either schizophrenia or manic-depression, were solicited from five English hospitals in the Montreal area. A research diagnosis was determined for each patient on the bases of the SADS, case record material, and staff reports. Using this method of diagnosis, 22 recently admitted patients (10 males, 12 females) were judged to be manic or major depressive, 23 recently admitted patients (12 males, 11 females) were judged to be non-paranoid schizophrenics, and 21 long-term patients (10 males, 11 females) were judged to be nonparanoid schizophrenics. In addition, 21 noninstitutionalized controls (11 males, 10 females) also participated.

None of the participants had evidence of organicity, mental retardation, drug or alcohol addiction. None were under 18 or over 60 years of age. Further, none of the noninstitutionalized controls were now or ever had been treated or hospitalized for psychiatric problems. More detailed information about the characteristics of these individuals is shown in Table 1. Analyses of variance with unweighted means solution were performed

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Insert Table 1 about here.

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for the two factors of diagnostic group and biological sex on the control variables. The statistical results are also shown in Table 1. Tests of simple effects revealed fairly consistently that the long-term schizophrenic



sample was significantly different from the other samples. Chi-square analyses were performed for the nominal control variables: marital status, religious affiliation, whether currently employed - excluding long-term schizophrenics, and whether raised by natural parents. Only marital status was significantly different among the groups and sexes,  $\chi^2 = 17.90$ ,  $p < .02$ . Long-term male and female schizophrenics and recently admitted male schizophrenics were overwhelmingly not married. The most consistent finding in the analyses, then, is that the long-term schizophrenics are different from the other three groups. They are older, have poorer pre-morbid adjustment, are more overinclusive, have slower word association response latencies, remember fewer of their associations, and have more disturbed associations.

Analyses of variance were also performed for the two short-term groups and the two biological sexes for number of previous admissions and length of current hospitalization. There were no significant results for number of previous admissions with both groups averaging 2.4. However, the schizophrenics' current length of hospitalization upon completion of testing was longer (37.4 days) than was that for the manic/depressives (25.8 days),  $F(1,41) = 6.92$ ,  $p < .05$ . One-way analysis of variance between male and female long-term schizophrenics for length of hospitalization showed no significant effect ( $\bar{X} = 11.5$  years).

MMPI profiles obtained from each person were analyzed using two actuarial guides (Gilberstadt and Duker, 1965; Marks and Seeman, 1963). A frequency count was made for our four diagnostic groups in relation to the following categories based upon their MMPI profiles: invalid profile

(L, F, or K Scale above 80 T's), paranoid schizophrenic, nonparanoid schizophrenic, schizo-affective or equally possible manic-depressive/schizophrenic, other category, fits no diagnostic category according to the rules. A chi-square analysis of this table showed no significant differences,  $\chi^2 (15) = 18.62$ , n.s. It appears that the MMPI, or at least the Mini-mult is relatively useless in order to make or confirm diagnoses. The most frequent category was "profile fits no diagnostic category" with 40 of our 87 participants being placed there. The second largest category was "invalid profile" with 22 of the 87 participants placed therein.

More success was obtained for the concurrence between the research diagnosis and the psychiatric diagnosis. Table 2 shows this concurrence.

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 Insert Table 2 about here.  
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There was an 86% agreement between our research diagnosis and the psychiatric diagnosis for major diagnostic categories (schizophrenia, affective disorder, other). This dropped to 62% when the subtype of paranoid vs. nonparanoid schizophrenia was considered. Obviously, the RDC and Montreal psychiatrists do not have the same criteria for diagnosing paranoia.

During the course of the study, inter-rater reliability was checked 17 times. In these cases, one rater would be randomly assigned as "chief diagnostician" and would conduct the interview. Following this interview, both raters would determine a diagnosis independently. Inter-rater agreement for the major diagnostic categories was 100% which agreement dropped slightly to 94% when the paranoid vs. nonparanoid subtype diagnosis was included.

### Results

Data from the EFT, Terman-Miles Information Exercise, MMPI-Mf Scale (raw scores), BSRI-self (approximate  $t$ ), O'Connor Finger Dexterity Test, RPT, and BSRI-parents (difference score) were first analyzed with two-factor analyses of variance with unweighted means solution. The first factor was diagnostic groups which were noninstitutionalized controls, affectively-disordered controls, recent-admission schizophrenics, and long-term schizophrenics. The second factor was biological sex which was male and female. Cell means and marginals are shown in Table 3 and the summary results of the analyses of variance are shown in Table 4. Because we wished to investigate certain specific hypotheses which were formulated a priori, the strategy employed was to subject the data to orthogonally contrasting analyses

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 Insert Tables 3 and 4 about here.  
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of variance rather than to multiple-comparison or simple effects tests. The orthogonal contrasts consisted of three sets of two-by-two analyses of variance. The first set contrasted the two control groups with the two schizophrenic groups as the first factor and biological sex as the second factor. The second set contrasted the noninstitutionalized with the affectively-disordered controls as the first factor and biological sex as the second factor. The third set contrasted recent-admission with long-term schizophrenics as the first factor and biological sex as the second factor. These results are shown in Table 5 and will be discussed subsequently.

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 Insert Table 5 about here.  
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Next, because of the lack of control for some variables (see Table 1), an additional parallel set of analyses of covariance were conducted. From the original set of uncontrolled control variables, those which correlated with the dependent variables homogeneously among the four groups by two sexes were used as covariates and orthogonally contrasting 2 x 2 analyses of covariance (similar to the orthogonally contrasting analyses of variance) were performed. The orthogonally contrasting analyses of variance and covariance results are also shown in Table 5.

Hand and eye dominance data were subjected to  $x^2$  analyses (see Table 6). The BSRI-knowledge and BSRI-staff data were analyzed with

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 Insert Table 6 about here.  
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t-tests computed between the masculine-scale and feminine-scale scores for each of the four groups. These results are shown in Table 7. Correlations

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 Insert Table 7 about here.  
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were performed between lengths of hospitalization and the dependent variables.

The remainder of this section will discuss the results as they apply to the specific hypotheses investigated.

### Hypothesis 1

Male/female differences on gender identity and role tests exist in affectively-disordered and noninstitutionalized controls but not in recent-admission and long-term schizophrenics. Statistical support for this hypothesis would consist of a significant interaction effect for the first set of analyses (schizophrenic versus nonschizophrenic), a significant sex effect for the second set of analyses (affective disorders versus noninstitutionalized controls), and a nonsignificant sex effect for the third set of analyses (recent-admission versus long-term schizophrenics).

The analyses of variance show no support for this hypothesis for the EFT, the Information Exercise, or the MMPI Mf Scale. The BSRI results yield a significant sex effect for the nonschizophrenic groups and a nonsignificant sex effect for the schizophrenic groups. Nonetheless, the lack of a significant interaction in both the orthogonal contrast between schizophrenics and nonschizophrenics and the more conservative 4 X 2 analysis of variance temper the impact of the two supportive results.

The BSRI self approximate t scores in Table 3 show that three of the four schizophrenic groups have attained androgynous scores. The long-term schizophrenics are particularly outstanding as they have attained a mean score that hedges toward the feminine side of the scale.

The analyses of covariance results with overinclusion as a covariate produced a nonsignificant sex effect for the nonschizophrenic groups on the EFT (see Table 8 for a comparison of the adjusted and non-adjusted means). Also, a significant group by sex interaction emerged in the

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 Insert Table 8 about here.  
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schizophrenic vs. nonschizophrenic analysis for the Information Exercise. Tests of simple effects revealed that the schizophrenic females were significantly less feminine in their test responses than were nonschizophrenic females. See Table 9 for adjusted means, nonadjusted means, and tests of simple effects results.

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 Insert Table 9 about here.  
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#### Hypothesis 2

There is no significant difference in the sex effect for the two control groups, and there is no significant difference in the sex effect for the two schizophrenic groups. The relevant parts of the analyses to test this hypothesis are the interaction effect for the second and third sets of analyses of variance and covariance. As indicated by the results in Table 5, this hypothesis is supported in its entirety. Nonetheless it should be pointed out that support for a null hypothesis, as is the case, is easier to achieve and has, inherent, a larger possible source of error.

#### Hypothesis 3

There is a significant difference in the distribution of androgynous, masculine, feminine, and undifferentiated individuals in the four groups and two sexes with schizophrenics having the greatest number of undifferentiated individuals and noninstitutionalized controls having the greatest number of androgynous

individuals. The distribution of undifferentiated, feminine, masculine, and androgynous individuals across groups and sexes is shown in Table 10.

The distribution in this table was determined by median splits in a manner similar to that used by Spence et al. Chi square analyses were performed

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Insert Table 10 about here.  
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on this overall table, for the sexes separately, with the sexes combined, and with the schizophrenics combined against the nonschizophrenics combined. No significant level of probability was attained for any of these analyses. Only the males, analyzed separately, approached significance ( $\chi^2(9) = 16$ ,  $p < .10$ ) with a greater number of short-term male patients clustering at the extremes of undifferentiated and androgynous. The hypothesis is rejected.

#### Hypothesis 4

There is a positive relation between inappropriateness of gender identity, gender-role adoption, and gender role preference scores and length of hospitalization. This hypothesis was tested by correlating (Pearson Product-moment correlation) the gender scores with length of hospitalization for these groups. As several individuals were still hospitalized at the time of this analysis, a ceiling of 150 days was imposed for length of hospitalization subsequent to completion of testing and a ceiling of 171 days for total length of hospitalization. These ceilings were determined by the one individual, still hospitalized, with the shortest length of hospitalization. Of the sample of 45 patients, seven had this limit imposed upon them.

None of the correlations obtained significance when all subgroups were computed together or when diagnostic groups were computed separately.

When the sexes were computed separately, the RPT obtained an  $r = .36$  ( $p < .05$ ) with total length of hospitalization for females.

#### Hypothesis 5

Recent-admission and long-term schizophrenics choose more opposite-sex roles than do affectively disordered and non-institutionalized controls with no difference between the two schizophrenic groups or between the two nonschizophrenic groups. Statistical support for this hypothesis would consist of a significant group effect for the first analysis of variance (schizophrenic versus nonschizophrenic) and the second part would be supported by the lack of a significant group effect in the second (affectively disordered versus non-institutionalized controls) and third (long-term versus recent-admission schizophrenics) analyses of variance. Table 5 shows this hypothesis to be supported in its entirety. However, the analyses of covariance results indicate that there is no significant difference between the schizophrenic and nonschizophrenic groups when the number of word associations remembered is used as a covariate (see Tables 5 and 11).

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Insert Table 11 about here.

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#### Hypothesis 6

Male/female differences on biological sex measures exist in all four groups.

The O'Connor results in Table 5 reveal no sex effect for any analysis. The hand and eye dominance results also failed as a biological sex difference indicator. While a greater proportion of nonschizophrenic males than females who were right-handed were also right-eye dominant, the difference is not



significant (see Table 6).

#### Hypothesis 7

All groups possess the knowledge of appropriate gender-role characteristics.

Results for the BSRI-knowledge test are shown in Table 7. The results support the hypothesis. Masculine items were rated more socially desirable for males while feminine items were rated more favorably for females among all four groups.

#### Hypothesis 8

All groups perceive the ideal psychiatric patient role as more feminine than masculine. Results for the BSRI-ideal patient are given in Table 7.

The hypothesis is supported for the noninstitutionalized control and the recent-admission schizophrenic groups but not the affectively disordered and long-term schizophrenic groups.

#### Hypothesis 9

Perceived parental pleasure with gender-role adoption is more gender-typed among affectively disordered and noninstitutionalized controls than among recent-admission and long-term schizophrenics. Each of the analyses of variance for the BSRI-parents (see Table 5) produced a significant sex effect. This hypothesis is therefore rejected. Perceived parental pleasure coincided with appropriate gender-role differentiation for all four groups. Analyses of covariance with marital status as a covariate did not change this result (see Table 5).

### Discussion

The tests of gender identity and gender role were unsuccessful at detecting differences in male/female reaction patterns among the four groups.

One of the reasons for these negative results may have been the samples studied. As we indicated previously, in an attempt to purify a schizophrenic sample, we purposely excluded schizophrenics with paranoid symptoms. This was due to the paranoid's unique theoretical position of defending against homosexual impulses. Perhaps they are unique in this respect. Since we did not employ such a sample, it would be useful if future researchers, using diagnostic instruments such as the SADS and the RDC, examined differences on gender identity and role tests between paranoid and nonparanoid schizophrenics. The supposition that "schizophrenic" sex role alienation or confusion is an artifact of sampling bias produced by saturating research samples with paranoid subtypes could in this way be examined.

The lack of such a diagnostic group in the present study has turned out to be a liability. The inclusion of such a group, at the time, was beyond the means available in terms of manpower and money. To have included a paranoid group would have necessitated excluding one of our other groups. And, although with our present hindsight we might feel one of our groups could have been substituted, the foresight we possessed suggested that the least information would come from a paranoid group. From our hypotheses it is evident we did not anticipate paranoia to be a major factor. Hence, even with this group excluded we hypothesized positive results. If I were to repeat this study, now, I would certainly add a paranoid schizophrenic group.

Another possible explanation for our negative findings could be that, in contrast to previous studies reporting results of group differences within a single sex as the criterion, we used sex differences within groups as the criterion. Because gender identity and role are defined within the

limits of sex differences, the sex difference analysis is the more appropriate criterion. It was also previously pointed out that studies which sample long-term schizophrenics consistently yield more significant findings than do studies which sample recent-admission schizophrenics. A perusal of the data indicates that had we performed an analysis solely between long-term schizophrenic males and noninstitutionalized males - as have several previous studies - we might have had more statistically significant results. In order to assess this, a direct analysis was performed for these two single-sex groups. Significant differences emerged for three out of six measures: the RPT, the EFT, and the O'Connor,  $t(19) = 2.67$ ,  $p < .02$ ,  $t(12.65) = 6.53$ ,  $p < .001$ , and  $t(11.82) = 5.01$ ,  $p < .001$ , respectively. So, previous research which compared two such extreme groups may have accounted for some of the reported positive findings.

Additional findings were that schizophrenics do not suffer from faulty gender-role knowledge nor do they differ in perceived parental pleasure with inappropriate gender-role adoption. And, although two of our groups perceived the psychiatric patient role as more feminine than masculine, only one of these was a patient group.

One other major finding in the current study is that the two schizophrenic groups differed from the two nonschizophrenic groups in gender-role preference. The schizophrenics chose significantly more opposite-sex role choices than did nonschizophrenics on the RPT. It is not clear why we lost this effect when the number of word associations remembered was covaried with the RPT score. Perhaps attention underlies this phenomenon. An impaired attention on the part of the schizophrenics would result in their

remembering fewer of their original word associations because they did not attend to their own original associations or to the stimulus word, or because they did not attend to the task of trying to remember their original associations, or because they did not attend to the stimulus word the second time it was given, or some combination of these. Such an impaired attention might result in more opposite-sex role choices through a more random responding to the items rather than a careful attention to each pair.

Of particular interest among the control variables used as covariates is overinclusion. Overinclusion was related to both of our gender identity measures. The interesting point is that we found very significant sex differences for overinclusion with females being more overinclusive than males in all their respective groups. Epstein (1953), on a small sample, originally reported a lack of sex differences. Subsequent researchers, examining overinclusion, have often haphazardly combined males and females in their various groups. Perhaps the inconsistent results in the literature for this variable are due, in part, to this fact. Also, the similarity between the overinclusion test and the EFT are remarkable. In both one must attend to and pick out relevant and important specifics from some background. It may very well be that overinclusiveness and field dependence are the same construct. A Pearson Product-Moment Correlation between these two variables performed for the entire sample supports this speculation ( $r = .62, p < .001$ ).

The biological sex difference results were disappointing. The hand and eye dominance data were suggestive but did not reach significance. The O'Connor results might be explained by their position in the test

battery. It was one of the very last tests to be administered. It could be that fatigue affects females more than males, thus impairing their speed on this test most and lowering their scores to the same level as that of the males tested. The additional complication of medication given to the psychiatric samples may also have contributed to this result.

The widespread use of medication might also help to explain our failure to obtain significant correlations between our gender identity and role scores with length of hospitalization. We had suspected that gender identity and role problems could produce a greater severity of the problem with subsequently longer lengths of hospitalization. However, since medication acts largely on the biological substratum with probably no interaction with one's psychological sex, it would be no surprise to find that drug responsiveness and not gender identity determines length of hospitalization. Unfortunately, we were not allowed to withdraw medication from our subjects; therefore, the investigation of the importance of gender identity and role, without benefit of medication, remains a question to be answered by future research.

A final aspect with which this study dealt was the relation between androgyny and mental health. Our statistical analysis revealed no significant relationship despite a tendency by short-term psychiatric male patients to cluster at either the undifferentiated or the androgynous poles. While there are, to be sure, certain drawbacks to defining mental health as the absence of psychiatric hospitalization, the fact that so many of our male psychiatric patients obtained androgynous scores in comparison to the normal controls seriously questions the contention that androgyny should be the standard of mental health.

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Table 1

Means and Statistical Results for Control Variables.

Variable	Groups								F ratio		
	Control Male	Control Female	Manic/Dep Male	Manic/Dep Female	S.T.Sch Male	S.T.Sch Female	LT Sch Male	LT Sch Female	Groups <sup>a</sup>	Sex <sup>b</sup>	GXS <sup>a</sup>
Age (years)	35.0	32.3	35.2	41.9	25.0	38.7	40.0	48.5	7.15****	9.94**	2.73*
Education (yrs.)	11.2	11.8	12.6	10.1	12.3	11.2	10.6	9.4	1.51	2.59	.97
Phillips	13.0	10.6	14.4	13.3	17.0	12.5	20.9	20.0	12.24*****	4.41*	.63
<u>Epstein Test</u>											
Overexclusion	13.6	11.2	17.2	15.4	12.5	15.5	17.7	9.8	.74	1.44	1.41
Overinclusion	12.3	23.4	24.6	48.1	31.5	64.9	61.9	86.6	13.75*****	13.21**	.52
Neologisms	.8	2.3	1.8	3.3	4.2	2.5	5.6	5.0	2.83*	.01	1.17
<u>Word Association</u>											
Latency ( $\bar{X}$ ) sec.	1.6	1.6	2.3	2.6	1.3	2.4	3.0	3.6	6.22***	2.44	.54
Latency (diff-sc)	3.3	5.3	9.9	11.3	4.2	8.7	10.3	14.4	4.94**	3.20	.22
Resp. Remb.	18.8	18.4	17.1	17.6	17.3	17.6	14.1	14.3	12.27*****	.07	.14
Disturb. Resp.	2.3	2.9	2.4	2.5	4.8	2.8	4.9	3.5	3.13*	1.81	1.52

Table 1  
(cont.)

a.	<u>df</u> = 3, 79
b.	<u>df</u> = 1, 79
	* <u>p</u> < .05
	** <u>p</u> < .005
	*** <u>p</u> < .001
	**** <u>p</u> < .0005
	***** <u>p</u> < .0001

Table 2  
Concurrence Between Psychiatric Diagnosis and  
Diagnosis Based on the Research Diagnostic Criteria  
Psychiatric Diagnosis

	Nonparanoid Schizophrenia	Paranoid Schizophrenia	Schizo- Affective	Affective Disorder	Other
Research Diagnosis: Mania or Major Depression					
Males	0	3	1	6	0
Females	0	2	1	9	0
Total	0	5	2	15	0
Research Diagnosis: Nonparanoid Schizophrenia (Recent Admission)					
Males	4	8	0	0	0
Females	6	3	0	1	1
Total	10	11	0	1	1
Research Diagnosis: Nonparanoid Schizophrenia (Long-Term)					
Males	9	2	0	0	0
Females	7	3	0	0	0
Total	16	5	0	0	0

Table 3

## Cell Means and Marginals for Dependent Measures

	Embedded Figures			Terman-Miles Ex. 3		
	Male	Female	Avg.	Male	Female	Avg.
Control	49.1	87.4	69.2	6.60	-15.55	-5.00
Manic/Dep	107.6	125.7	117.4	-5.60	-19.83	-13.36
S. T. Sch	74.2	138.8	105.1	1.58	-7.36	-2.70
L. T. Sch	122.7	165.8	143.2	-9.27	-21.40	-15.05
Avg.	88.5	128.5		-1.70	-16.00	
	BSRI-self			MMPI MF		
Control	-1.35	1.25	.02	27.5	33.5	30.7
Manic/Dep	-1.58	1.65	.63	31.0	37.8	34.7
S. T. Sch	-.77	.74	-.05	26.7	31.4	28.9
L. T. Sch	.23	1.11	.46	29.2	32.4	30.7
Avg.	-.60	1.21		28.5	33.9	
	O'Connor (first half)			BSRI-parents		
Control	304.2	314.5	309.6	-.15	.38	.13
Manic/Dep	460.1	429.2	443.2	-.76	.30	-.18
S. T. Sch	431.5	422.5	427.2	-.26	.27	0
L. T. Sch	572.6	586.7	579.3	-.83	.39	-.25
Avg.	444.7	434.6		-.50	.34	
	RPT					
Control		.80	2.18	1.52		
Manic/Dep		1.10	1.33	1.23		
S. T. Sch		2.08	2.45	2.26		
L. T. Sch		2.36	1.70	2.05		
Avg.		1.63	1.91			



Table 4

Summary ANOVA - 4 Groups X 2 Sexes

Source	<u>df</u>	Mean Square	F Ratio	
Embedded Figures Test				
Group	3	21388.0	15.89	****
Sex	1	36413.5	27.06	****
Group X sex	3	1974.3	1.47	
Error	79	1345.7		
Terman-Miles Information Exercise				
Group	3	805.74	8.23	****
Sex	1	4464.27	45.58	****
Group X Sex	3	171.16	1.75	
Error	79	97.94		
MMPI Mf Scale (raw score)				
Group	3	111.64	5.31	**
Sex	1	580.11	27.60	****
Group X Sex	3	13.16	.63	
Error	79	21.02		
BSRI-self				
Group	3	.39	.58	
Sex	1	11.87	17.59	****
Group X Sex	3	.85	1.27	
Error	79	.68		

Table 4

(cont.)

Source	df	Mean Square	F Ratio
O'Connor Finger Dexterity Test			
Group	3	265166	16.70 ****
Sex	1	327.9	.02
Group X Sex	3	2313.4	.15
Error	79	15876.8	
BSRI-parents			
Group	3	.72	.60
Sex	1	6.90	5.69 *
Group X Sex	3	1.18	.98
Error	79	1.21	
RPT			
Group	3	5.05	2.68
Sex	1	2.37	1.25
Group X Sex	3	3.80	2.01
Error	79	1.89	

\*  $p < .05$ \*\*  $p < .01$ \*\*\*  $p < .001$ \*\*\*\*  $p < .0001$

Table 5

## Analyses of Variance and Analyses of Covariance Results

Source	Schizophrenic vs. Nonschizophrenic		Affective Disorder vs. Control		Recent Admission vs. Long-Term Schizophrenic	
	ANOVA <u>a</u>	COVAR <u>b</u>	ANOVA <u>c</u>	COVAR <u>d</u>	ANOVA <u>e</u>	COVAR <u>f</u>
EFT						
Group	12.09**	2.53	19.50***	10.91**	11.08**	14.66***
Sex	20.92***	7.19**	6.62*	2.13	22.59***	13.62***
Group X Sex	1.93	.42	.84	2.34	.90	3.43
Overinclud- siveness		23.86***		12.88***		2.86
Terman-Miles Information Exercise						
Group	.01	2.25	7.05*	4.16*	18.27***	11.93***
Sex	36.03***	22.55***	34.30***	25.88***	13.09**	7.39*
Group X Sex	2.69	4.13*	1.62	2.01	.30	.44
Overinclud- siveness		10.87***		1.24		2.72

Table 5

(cont.)

MMPI Mf Scale						
Group	6.68*	6.13*	7.42**	11.03**	1.67	8.99**
Sex	26.46***	30.67***	20.47***	24.59***	8.30**	19.06***
Group X Sex	1.51	.69	.06	.60	.29	1.14
Age		3.46		5.16*		9.63**
BSRI-self						
Group	0		1.17		.66	
Sex	18.22***		21.04***		2.65	
Group X Sex	2.93		.15		.64	
BSRI-parents						
Group	.07	.84	2.05	2.40	.91	1.99
Sex	23.28***	30.12***	10.87**	14.56***	13.57**	16.78***
Group X Sex	.04	.09	1.23	1.71	2.10	.87
Marital Status		6.10*	4.21*		2.67	

Table 5

(cont.)

O'Connor Finger Dexterity Test						
Group	15.58***		18.28***		12.20**	
Sex	.01		.11		0	
Group X Sex	.02		.43		.07	
RPT						
Group	7.54**	3.14	.42	2.09	.33	2.51
Sex	1.27	1.50	3.63	4.23*	.13	.07
Group X Sex	2.38	2.34	1.84	1.29	1.58	1.76
Word Associa- Associations Remembered		6.16*		6.68*		4.36*
a. <u>df</u> = 1,83	d. <u>df</u> = 1,38	* p < .05				
b. <u>df</u> = 1,82	e. <u>df</u> = 1,40	** p < .01				
c. <u>df</u> = 1,39	f. <u>df</u> = 1,39	*** p < .001				

Table 6

Eye Dominance for Right-Hand Dominant Males and Females

	Pen Test		Cone Test	
	Males	Females	Males	Females
<u>Eyedness</u>	<u>Affective Disorders &amp; Controls</u>			
Right	11	11	13	11
Left	7	10	6	10
$\chi^2$	.30		1.07	
	<u>Schizophrenics</u>			
Right	12	9	9	12
Left	7	10	11	7
$\chi^2$	.96		1.29	

Table 7

Cell Means and Statistical Results for BSRI-Ideal Patient and BSRI-Knowledge.

	Ideal Patient			Knowledge		
	Masculinity Scale	Femininity Scale	<u>t</u>	Masculinity Scale	Femininity Scale	<u>t</u>
Control <sup>a</sup>	4.51	5.30	2.95 **	2.83	4.79	8.50 ***
Affective Disorder <sup>b</sup>	5.05	4.94	.87	2.76	4.77	7.86 ***
S. T. Sch <sup>c</sup>	4.87	5.30	2.69 *	2.52	4.80	7.82 ***
L. T. Sch <sup>a</sup>	4.99	5.20	.75	2.71	4.81	8.64 ***

<sup>a</sup>. df = 20<sup>b</sup>. df = 21<sup>c</sup>. df = 22\*p < .02\*\*p < .01\*\*\*p < .001

Table 8

Adjusted and Non-adjusted Cell Means for Embedded Figures Test and MMPI Mf Scale.

	Control		Affective Disorder		Recent-admission Schizophrenic		Long-term Schizophrenic	
	Male	Female	Male	Female	Male	Female	Male	Female
	EFT							
Non-adjusted	49.14	87.38	107.57	125.67	74.17	138.80	138.87	165.79
Adjusted	61.11	90.90	110.15	110.33	81.17	137.59	138.39	159.26
	MMPI Mf Scale							
	Male	Female	Male	Female	Male	Female	Male	Female
	MMPI Mf Scale							
Non-adjusted	27.50	33.55	31.00	37.75	26.67	31.36	29.18	32.40
Adjusted	27.31	32.94	30.84	38.60	23.75	31.64	29.76	34.96



Table 9

Adjusted and Non-adjusted Cell Means, and Tests of Multiple Comparisons  
for the Terman-Miles Information Subtest

	Nonschizophrenic		Schizophrenic	
	Male	Female	Male	Female
Non-adjusted	.50	-17.78	-3.61	-14.05
Adjusted	-2.63 <sup>a</sup>	-18.74 <sup>ab</sup>	-3.38 <sup>c</sup>	-10.27 <sup>bc</sup>

Note: Adjusted means with the same subscript are significantly different. Results of tests of multiple comparisons are shown below.

a.  $t(82) = 5.00, p < .001$

b.  $t(82) = 2.67, p < .01$

c.  $t(82) = 2.17, p < .05$

Table 10

Distribution of Undifferentiated, Feminine, Masculine,  
and Androgynous Individuals

	Undifferentiated	Feminine	Masculine	Androgynous
Control Male	2	1	6	1
Control Female	3	3	0	5
Manic/Dep Male	4	0	1	5
Manic/Dep Female	4	4	1	3
S. T. Sch Male	5	0	2	5
S. T. Sch Female	4	1	2	4
L. T. Sch Male	3	3	3	2
L. T. Sch Female	4	2	1	3

Table 11

Adjusted and Non-adjusted Cell Means for the Role Preference Test.

	Affective				Recent-admission				Long-term			
	Control		Disorder		Nonschizophrenic		Schizophrenic		Schizophrenic		Schizophrenic	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Non-adjusted	.80	2.18	1.10	1.33	.95	1.74	2.08	2.45	2.36	1.70	2.22	2.10
Adjusted	1.02	2.29	.88	1.24	1.09	1.86	2.30	2.71	2.09	1.46	2.07	1.98

## GENERAL DISCUSSION

The area of gender identity and gender role has been a most confusing one for psychology. It has consisted of imprecise and intermixed terminology and tests of questionable validity. In an attempt to sort out the terminology, we have herein proposed a set of concepts. The first is gender identity which is a self-definition of oneself as male or female. The second is gender role which constitutes publicly observable characteristics that differentiate the sexes. When one desires to assume a certain gender role, it is called a gender-role preference; when one actually displays certain roles, it is called gender-role adoption. Gender-role ability refers to the fact that gender roles can be adopted better by some than by others.

The problem with the measurements of gender identity and gender role were dealt with in Manuscripts 2 and 3. Three of the seven Terman-Miles exercises, parts of the first such test ever developed, were analyzed on a sample which differed from the original sample and even a different subculture. It was determined that one of these three exercises would be particularly useful for future research. It differentiated the sexes at a high level of significance, was resistant to intentional faking, and was little influenced by variables such as marital status and age. This was the Information Exercise of the Terman-Miles.

Looking toward nonverbal sex differentiating tests and using a transsexual comparison group, we determined that the Embedded-figures Test (a test developed to assess psychological differentiation but which has a history of differentiating the sexes) seems to assess some psychological

aspect of sex differences while the O'Connor Finger Dexterity Test assesses a biologically-based difference. The use of a transsexual group was a strong point of this study as this group is the only group with a psychological orientation contrary to their biological sex. While the Terman-Miles study did not employ such a group, researchers elsewhere have used the Terman-Miles M-F Test with transsexuals and nontranssexuals.

But the gender identity and role problems were only primary obstacles to the area of research in which we were most interested, that is gender identity and role in schizophrenia. The first manuscript in this thesis reviewed the studies dealing with the psychological assessment of gender identity and gender role in schizophrenia, pointed out several important problems with this research, and proposed a model in which gender identity and gender role problems were a leading stressor in a diathesis-stress model of schizophrenia. Manuscript 4 addressed itself to one or more of the problems noted in the introductory review.

The problem of saturating samples with paranoids and undifferentiated subtypes was avoided by excluding all paranoid schizophrenics or undifferentiated schizophrenics with paranoid symptoms. Our findings, which contradicted the results of past research, may have been due, in part, to our exclusion of such patients. Yet, we did not have such an exclusion criterion in one of our previous studies (LaTorre, Endman, & Gossman, 1976) and our findings there were also not significant. It would be most beneficial for future research to address itself to a comparison between paranoid and nonparanoid schizophrenics. While this is highly desirable, the increase in cost, manpower, and time was beyond the scope of the present thesis.

A problem with previous research has been its lack of an adequate control group. Our final manuscript included a nonschizophrenic psychiatric patient sample which served as an additional control group. It appeared that this sample responded similarly to the schizophrenic sample hospitalized on a short-term basis.

This thesis, in order to alleviate another problem apparent in previous research, reported a good deal of demographic and psychological testing information (especially in the final study) to facilitate comparison of findings of these studies with findings of other such detailed studies. In fact, many of these factors were analyzed to determine their impact on the test scores. The result that some of these factors had an influence on gender identity and role scores underscores the problem in previous studies which have not reported such factors, much less analyzed their influence.

And, in contrast to previous studies reporting group difference results as their criterion, this study used sex differences as its criterion. Certainly, this may have been involved in our non-significant findings. Had we used group differences as our criterion, we would most likely have found more significant results. But, because gender identity and role necessarily have inherent in their definition a basis of sex differentiation, a sex difference analysis seems the more appropriate criterion. Thus, while schizophrenics attained significantly different scores from nonschizophrenics, they maintained appropriate sex differences.

A final problem addressed in this thesis was the lack of clearly defined criteria for inclusion into the schizophrenic group. The final

study employed a highly reliable research instrument in order to obtain a research diagnosis based upon such clearly defined criteria. The effect that this, too, may have had upon our eventual results (by virtue of excluding patients who would normally be included in a schizophrenic sample) is uncertain. It would, indeed, be interesting to note differences between those schizophrenics who fit a research diagnosis of schizophrenia and those who do not.

This thesis, then, has dealt with several methodological and conceptual problems. The data failed to show gender identity or gender role problems related to schizophrenia. The lack of significant differences may have rested with one or several of the following facts: (1) exclusion of schizophrenics with paranoid symptoms, (2) hypotheses based on sex difference results and not group difference results, (3) the criteria used to determine schizophrenia excluded several individuals with the psychiatric diagnosis of schizophrenia.

We also determined that the schizophrenic did not have a faulty gender-role knowledge, did not differentially perceive the desired patient role as more feminine than masculine, and did not perceive parental pressures as making him conform to anything but an accepted and appropriate gender role.

Finally, we found a significant difference in gender role preference with schizophrenics preferring more often opposite-sex role choices. This finding may turn out to be more important than even gender-role adoption problems. An inappropriate preference coupled with apparently appropriate gender role behavior could produce more stress than would inappropriate preference coupled with inappropriate behavior. More research is needed with regard to the role that inappropriate preference might play in the lives and stresses of schizophrenics.

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