A PSYCHOMETRIC INVESTIGATION OF THE BEM SEX ROLE INVENTORY AMONG WESTERN CAPE PSYCHOLOGY ONE STUDENTS

JOHN DAVID BETTS

THESIS SUBMITTED TO THE DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF CAPE TOWN IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS.

CAPE TOWN

SOUTH AFRICA

1988

ACKNOWLEDGEMENTS

I would like to express my appreciation to the following people for the role they played in facilitating the completion of this thesis:
Leslie Swartz, my thesis supervisor, for his critical guidance and encouragement
Frank Bokhorst, for his computer and statistical assistance
The Departments of Psychology at the University of Cape Town and of Stellenbosch, for their granting my access to their student body
and Jennifer Parsons, for her encouragement and support.

CONTENTS

CHAPTER 2 : PSYCHOMETRICS OF SEX ROLE MEASUREMENT

CHAPTER 3 : METHODOLOGY

7. COPY OF CAPE TOWN DEPARTMENTAL REGISTRATION CARD

8. UCT RAW DATA

9. US RAW DATA

10. LETTER OF THANKS TO STELLENBOSCH PSYCHOLOGY DEPARTMENT

11. LETTER OF THANKS TO CAPE TOWN UNIVERSITY DEPARTMENT

REFERENCES

ABSTRACT

The purpose of this descriptive study was to explore the performance of the Bem Sex Role Inventory (BSRI) (Bem, 1974) amongst South African students. Little information exists about student sex roles in this country. The BSRI is widely used as a research instrument in South Africa, without investigation of the applicability of the American norms on which it is based to the behaviour of the instrument in South Africa. The primary aims were twofold: firstly, to describe the inventory's behaviour and establish norms for local students; and secondly, to translate the BSRI into the Afrikaans language and establish norms for Afrikaans students.

Subjects were two samples of students (N=150, n females = 109, n males = 41, each). All subjects were classified "white", were full time bona fide Psychology One students from the Universities of Cape Town and Stellenbosch. Stratified random samples were drawn from the student populations.

Quantitative methods were used to gather the data, namely the BSRI. The BSRI was translated into Afrikaans using back-translation and decentering methods. A BSRI protocol, a letter of motivation, and a stamped, addressed envelope were sent to the subjects by mail. Completed protocols were mailed to the researcher. All results were anonymous.

Completed protocols were coded, scored and analysed using statistical software resident on the UCT Sperry-Univac mainframe. The main findings were that the University of Stellenbosch (US) male students were more masculine sex typed than their University of Cape Town (UCT) counterparts. UCT students were found to be more androgynous than US; the BSRI demonstrated high internal reliability, with subscale

internal reliability scores demonstrating strong homogeneity of items. The UCT BSRI protocols were factor analysed into two clearly independent dimensions called masculinity and femininity. It was found that the US BSRI protocols did not factor analyse into two clearly independent dimensions. A large factor in the US sample is representative of an androgynous individual in that the factor loaded with positive masculine and feminine BSRI items that Bem (1974) regarded as indicative of androgyny.

The implications of the study are that the BSRI masculinity norms developed in the United States are not applicable to South African students. The Afrikaans translation of the BSRI cannot be used to determine sex roles in the same manner as the original BSRI intends. Future research could involve the qualitative assessment of sex role, especially in a multi-cultural design.

CHAPTER 1 : ANDROGYNY

CHAPTER 1 : ANDROGYNY

1. INTRODUCTION

This study explores the behaviour of the Bem Sex Role Inventory (BSRI) (Bem, 1974) among South African students. The primary aims of the research were twofold: first to describe the inventory's performance and establish norms for local students, and second, to translate the BSRI into the Afrikaans language and establish norms for Afrikaans students.

This chapter examines the controversial sex role construct that the Bem Sex Role Inventory and other instruments like it all measure - androgyny. The term androgyny, at a simple level, denotes the simultaneous possession of feminine and masculine traits by an individual. Androgyny research generally refers to "the body of psychological theory, assessment, research, and counselling/therapy approaches that recognise masculinity and femininity as independent psychological domains desirable for both sexes." (Cook, 1985, 20).

This chapter will introduce the core terms and concepts involved in androgyny, followed by a review of androgyny.

An examination of the historical roots of androgyny and attempts to demystify certain misconceptions about the concept will be made. Various theoretical models of androgyny are detailed. Bem's (1974) androgyny work and later theory is covered. Research evidence for particular psychological phenomena that have been found to correlate with androgyny is mentioned. This is due to the fact that much research in androgyny is correlative, linking androgyny and personality attributes. A critique of the theories of androgyny is offered. Mention is made of the relationship between sex roles, and in particular, androgyny, and mental health.

2. TERMS/CONCEPTS

Before discussing the notion of androgyny, it is useful to detail core terms and concepts used in this chapter.

SEX or GENDER is the physical structure of the reproductive system determined by genes; this is therefore ascribed at birth based on the appearance of external genitalia. There are thus two sexes or gender, male and female. GENDER IDENTITY alternatively, is an individual's understanding of being female or male which follows from the gender ascription at birth. It should be noted that gender identity may not be consonant with gender ascription ie. one may be physically male, yet have a female gender identity. Gender identity is thus self ascription of gender. (Bem, 1976).

MASCULINITY refers to characteristics traditionally [1] associated with men; FEMININITY with characteristics associated with women. SEX TYPING is the process whereby a person acquires culturally-defined sex-appropriate characteristics. The nature of these characteristics associated with men and women which imply masculinity and femininity respectively, are well researched (cf. Broverman, Broverman, Clarkson, Rosenkrantz, Vogel, 1970). These are:

1. By 'traditionally' is meant that this is a sex role stereotype held by many cultures. (cf. Williams and Best, 1982)

MASCULINITY

"aggressive, independent, unemotional, objective, dominant, competitive, logical/rational, adventurous, decisive, self-confident, ambitious, worldly, acts as leader, assertive, analytical, strong, sexual, knowledgable, physical, successful, good in mathematics and science, and the reverse of the feminine characteristics listed below.

FEMININITY

emotional, sensitive, expressive, aware of other's feelings, tactful, gentle, security-oriented, quiet, nurturing, tender, cooperative, interested in pleasing others, interdependent, sympathetic, helpful, warm, interested in personal appearance and beauty in general, intuitive, focused on home and family, sensual, good in art and literature, and the reverse of the masculine characteristics above." (Cook, 1985, 4)

However, little consensus exists as to exactly what these characteristics are.

The constellations of attitudes, personality traits, behaviours,and preferences that are learnt during the sex typing process are termed SEX ROLES. An individual's SEX-ROLE IDENTITY is the result of their sex-typing process. The TRADITIONAL SEX ROLE IDENTITIES are represented by a high degree of masculine characteristics in men and feminine characteristics in women to the relative exclusion of the other dimension. (Kessler and McKenna, 1978). Individuals displaying traditional sex role identities are defined as SEX-TYPED. GENDER ROLES are groups of expectations about

behaviours regarded as appropriate for individuals of a gender. These are ascribed roles in that they are ascribed on the basis of characteristics over which an individual has no control. The term gender role also used to describe sex role. "SEX ROLE STEREOTYPES are widely held conceptions about the sexes that attribute certain sets of characteristics uniquely to one sex." (Cook, 1985, 3).[2].

ANDROGYNY denotes the simultaneous possession of feminine and masculine traits by an individual. (Cook, 1985). MENTAL HEALTH is typically defined as a "relatively enduring state wherein the person is well adjusted, has a zest for living, and is attaining self-actualization, and self realization. It is a positive state, and not mere absence of mental disorder." (English & English, 1968, 318 in Kessler and McKenna, 1978, 31).

This subsection discussed briefly the core terms and concepts which are frequently used in sex role research and will therefore impact upon the present research. Following these definitions, a review of the concept of androgyny may be undertaken to further explicate the basis of the present study.

2."According to the traditional perspective, someone is "born into" the category "male" or "female", and by virtue of his or her birth becomes obligated to perform the male or female role. The obligatory nature of gender roles is so firm that when dictionaries attempt to define woman or man, they often do so by listing gender role behaviours." (Cook, 1985,11). "The primacy of gender attributions becomes obvious when we recognise that assignment and identity can be seen as special cases of attribution, and, even more importantly, that in order to meaningfully interpret someone's assignment, identity, and role, and the relationship among them, one must first attribute gender. Identity, role and assignment are not the same as attribution but they can only be interpreted when placed in context by the gender attribution process." (Kessler and McKenna, 1978, 11).

Miles' (1936) article entitled "Sex and Personality" in which the authors state

> "The belief is all but universal that men and women as contrasting groups display characteristic sex differences in their behavior, and that these differences are so deep seated and pervasive as to lend distinctive character to the entire personality." (1936, 1)
>
> "..there is growing a tendency to concede equality or near equality with respect to general intelligence and the majority of special talents, the belief remains that the sexes differ fundamentally in their instinctive and emotional equipment and in the sentiments, interests, attitudes, and modes of behavior which are the derivatives of such equipment." (Terman and Miles, 1936, 2).

This attitude is expanded to the personality issues 'unique' to men and women -

> "In modern Occidental cultures, at least, the typical women is believed to differ from the typical man in the greater richness and variety of her emotional life and in the extent to which her everyday behaviour is emotionally determined. In particular, she is believed to experience in greater degree than the average man the tender emotions, including sympathy, pity and parental love; to be more given to cherishing and protective behavior to all kinds. Compared with man she is more timid and more readily overcome by fear. She is more religious and at the same time more prone to jealousy, suspicion and injured feelings. Sexually, she is by nature

> less promiscuous than man, is coy rather than aggressive, and her sexual feelings are less specifically localised in her body. Submissiveness, docility, steadfastness of purpose, and a general lack of aggressiveness reflect her weaker conative tendencies. Her moral life is shaped less by principles than by personal relationships, but thanks to her lack of adventurousness she is much less subject than man to most types of criminal behavior. Her sentiments are more complex than man's and dispose her personality to refinement, gentility, and preoccupation with the artistic and cultural."(Terman and Miles, 1936, 2).

They further argue that their concept of M-F individuals can be concretised in the form of a scale. This was achieved by the development of the M-F scales that represented masculinity and femininity as a bipolar unidimensional construct. (refer to Chapter 1, section 2 for the psychometric issues involved in this approach).

An interesting historical analysis of the male and female role by Bell and Williams (1981) assists us in appreciating the changing role of the sexes in their historical-material context. He examined three eras in history that differed in economic productive conditions, in terms of male and female behaviour. These periods were firstly the Preindustrial 17th and 18th Centuries ; secondly, the Industrial Age - namely the 19th Century to mid-20th Century; and finally, the Late Industrial era of today.

> "Work defines who we are...throughout recorded history, male work has been a fundamental determinant of the male role and the way in which men have thought, behaved and identified themselves in the world. ...the preindustrial era saw a greater sharing of work and emotional roles by men and women than the industrial era which followed." (Bell and Williams, 1981, 307).

In the Preindustrial period, family life, work, production and emotional issues were less sex segregated than in the later Industrial stage, whereas power relations within the family were divided along sex-based lines. Factory production and the division of labour towards the end of the 18th century resulted in an increased sexual division of labour which in the late Preindustrial era had been seen as `natural'.

According to Bell and Williams (1981) this clear division of roles both within and without the family continued until the mid 20th Century during which time socioeconomic changes resulted in a restructuring of sex roles, with men working outside and women inside the home. The Late Industrial stage has seen a change in the sex role patterns, in which men and women are increasingly having to adapt to functioning in both the work and home environment.

3.2. MISCONCEPTIONS ABOUT ANDROGYNY

In this section mention will be made of how the term androgyny is to be used in the present study. As indicated in section 3.1. it is important to make clear the problematic use of the term in the literature.

As was mentioned earlier, androgyny is not synonymous with "(a) economic or sexual emancipation, (b) the absence of any sex role differentiation, or (c) physical hermaphroditism or bisexuality." (Cook, 1985, 19).

Firstly, androgyny refers to an individual ascription of both masculine and feminine personality characteristics. Cook (1985) distinguishes between the psychological and economic androgyny. "It is important to distinguish descriptions of individual functioning (androgyny) from projected social changes that involve the removal of traditional sex-role ascriptions." (Cook, 1985, 19). The development of psychological androgyny will not necessarily imply economic emancipation. Conversely, economic emancipation is not sufficient cause for the development of psychological androgyny.

Secondly, androgyny is not the absence of differentiation between sex roles. This does not distinguish between significant differences in roles that have major impacts upon behaviour and the secondary differences in sex roles that have a lesser impact. And finally, androgyny does not imply physical sex ambiguity. "The possession of both masculine and feminine physical sex characteristics (chromosomes, hormones, genitalia etc) or the failure to develop clearly into those of one sex is termed hermaphroditism." (Cook,1985, 20). Such a physical ambiguity seldom produces undifferentiated sex role identity.

3.3. BASIC ASSUMPTIONS OF ANDROGYNY

In this section, the basic assumptions of the term androgyny are explored. These assumptions are based on Bem's (1974, 1976) work and are therefore important to discuss.

Masculinity and femininity are for Bem (1974) independent dimensions. As previously mentioned little consensus exists in the literature as to what variables constitute these dimensions. ie. what personality attributes are considered to be masculine or feminine. Bem (1974) does, however, categorise people on the degree to which they endorse the two sets of characteristics on a sex role inventory such as the Bem Sex Role Inventory.

Bem (1974) describes androgynes as affectionate, flexible, situationally appropriate and understanding. Therefore ascribing positive aspects of femininity and masculinity to the concept of androgyny. Irrespective of biological sex, the combination of the characteristics of the two dimensions, masculinity and femininity is understood by Bem to have desirable implications for behaviour.

> "Under this assumption, the negative consequences of the traditional sex roles accrue from the elimination of one set of characteristics from a person's personality or behavioral repetoire (Bem, 1974, 1975). This integration/blending is seen by Bem (1974) to promote healthy adjustment. For this to occur, there has to be a close link between the possession of personality traits of masculinity and femininity and the overt sex role characteristics such as behavior-specific performance and attitudes. Also, the masculinity and femininity traits should be equally desirable for both sexes. (Cook, 1985, 21)

Underlying androgyny theory is the notion that the traditional sex role distinctions are behaviourally and psychologically dysfunctional. (Kaplan, 1979). Androgyny is regarded as a desirable (and possibly ideal) state of existence. Therapists and counsellors often regard

characterised as androgynous as the aim of their work. (Baker, 1980 in Cook, 1985, 21). Therefore the androgynous person is seen as the ideal.

3.4. THE NOTION OF ANDROGYNY

In this subsection, particular theoretical explanations of androgyny will be examined. A wide variety of theories of androgyny are available, however, three models in particular will be focussed on. The conjoint models and developmental models are discussed. Following this is an examination of Bem's notion of gender schema. These models have all influenced the development of the notion of androgyny. Therefore, it is important to briefly elucidate these models and show how they have impacted upon androgyny.

3.4.1.CONJOINT MODELS

These models are associated with specific scoring procedures of sex role inventories/measures. They may be categorised as the modulation, addition or multiplicative/interactive approaches.

MODULATION/BALANCE: masculinity and femininity are regarded as extreme traits, mutually exclusive of each other. When they are conjointly represented, each moderates the influence/effects of the other, so that they 'mitigate' each other (Bakan, 1966). This balance approach was Bem's (1974) first scoring procedure.

The two other conjoint models concern absolute and relative levels of Masculinity and Femininity.

ADDITIVE: androgyny is the combination/addition of masculinity and femininity's independent influence. High levels of both masculinity and femininity qualify the individual for the label androgynous. (Spence, Helmreich, & Stapp, 1975).

MULTIPLICATIVE/INTERACTIVE: Here the focus is on the unique results of the combination of masculinity and femininity. Androgyny is viewed as the 'emergent property' of such an interaction. (Spence, 1983).

3.4.2. DEVELOPMENTAL MODELS

Androgyny is seen to be the overcoming of the traditional dichotomy between masculinity and femininity, and the development of new, unique attributes. Kaplan's (1976) hybrid stage is the end product of such a synthesis. These models contains aspects of the balance model. The core theory in the developmental model is termed Sex Role Transcendence. (Hefner, Rebecca and Oleshansky, 1975).

3.4.2.1. SEX ROLE TRANSCENDENCE

This approach was first introduced by Hefner, Rebecca and Oleshansky (1975). They regard sex role transcendence as an improvement over androgyny because "..androgyny still postulates the organisation of personality into masculine and feminine components, even if it holds that these components are not mutually exclusive." (Rebecca, Hefner and Oleshansky, 1976, 273). Sex role transcendence proposes that the ideal state is not one in which the person has a balance between masculinity and femininity (as is seen in androgyny) but rather one in which the person transcends masculinity and femininity. A stage theory of sex role development is used to explain this process.

Rebecca, Hefner and Oleshansky (1976) propose a three stage model of development of sex roles that can account for sex role socialisation (an issue which traditional models do not address). The socialisation of sex role passes through three phases: Stage 1 - "undifferentiated conception of sex roles", Stage 2 - "polarised, oppositional view of sex roles", and Stage 3 - "transcendence of sex roles". (Rebecca, Hefner and Oleshansky, 1976). They argue that their model describes the emergence of sex roles and allows for explanation of sex role discrimination. The traditional model of sex roles, they hold, is based on stereotypic conceptions of male and female roles. This approach perpetuates discrimination.

In Stage 1, the child's's thinking is seen to have a global capacity. S/he is not aware of the culturally imposed dictates of sex appropriate behaviour but soon learns value-laden distinctions eg. smallness-bigness polarities, which are associated with power ie. s/he associates bigness with power and maleness. S/he develops a dichotomised value structure which forms "the basis for future exploitation." (Rebecca, Hefner and Oleshansky, 1976, 94).

This structure is reinforced in Stage 2 by parental socialisation in which conventional beliefs are adopted and a rigid notion of sex typed behaviour and roles is developed.
In Stage 3, individuals have situational and behavioural flexibility vis-a-vis their sex roles. "Inherent in a stage III approach is a process orientation allowing and fostering adaptation to varying occupations, life styles, and expressive roles." (Rebecca, Hefner and Oleshansky, 1976, 95).

> "We wish sex role transcendence to imply flexibility (over time, over situation, and over personal moods), plurality, personal choice, and the development of new or emergent possibilities once individuals and society move away from present oppressed-oppressor sex roles. ..the concept of transcendence includes, but goes beyond, situational flexibility, since very often situations demand responses that would compromise the personal integrity of the individual." (Rebecca, Hefner and Oleshansky, 1976,95).

Sex role transcendence is seen as contrasting drastically with the concept of androgyny, the reason being that behavioural adaptation may occur at various levels to accomodate the situation, role or person.

3.4.3. BEM'S ANDROGYNY THEORY

It is clear that androgyny theory is influenced by definitions of androgyny. Bem (1974) examined how situationally behavioural flexibility is influenced by the possession of masculine and feminine characteristics. Masculinity and Femininity were regarded by Bem as positive, complementary traits where traditionally, they were viewed as bipolar and mutually exclusive characteristics associated with a particular sex. Bem states that the degree to which certain individuals are sex typed in that the sex-typed person has internalised society's standards for sex-appropriate behaviour.

Bem believes that internalising society's sex role values would markedly affect an individual's behaviour in that the sex typed individual would behave in terms of society's expectations of sex appropriate behaviour (ie. conform); their limited behavioural repetoire would produce

situational adjustment difficulties. The androgynous individual is less hampered by these societal expectations and is thus behaviourally flexible. (Bem, 1974, 1979).

These ideas reflect Kagan's (1964) notion. Both Bem and Kagan see the individual as internalising societal values and attempting to match their sex role behaviour to these values. However, Kagan (1964) understood traditional sex typing as inherently desirable and psychologically healthy, in that the expression of sex appropriate, societally accepted gender characteristics was fostered. Those individuals that do not conform to this, are simply labelled as deviant. Bem viewed this approach as producing a negative result, as behaviours not regarded as clearly sex typical are avoided (these behaviours may be adaptive). Kagan's 'deviants' are seen as the healthier.

The traditional view of the healthy personality has centred around three basic issues in sexual identity, according to Bem (1976). These are 1. sexual preference for opposite sex partners, 2. clear sex role identity as feminine if female gender or masculine if male gender, and 3. clear gender identity ie. secure sense of being male or female in the world.

Bem's aim in all her androgyny research is to "help free the human personality from the restricting prison of sex role stereotyping and to develop a conception of mental health which is free from culturally imposed definitions of masculinity and femininity." (Bem, 1976, 49).

In line with this research, Bem (1974) developed the Bem Sex Role Inventory, a scale which determines an individual's self ascription of personality characteristics that may be viewed as socially desirable for either men or women. On the basis of these responses, the individual may be categorised

as androgynous or not (ie. masculine, feminine, or undifferentiated). (refer to chapter 2, section 3 for a psychometric discussion of the BSRI).

3.4.4. BEM'S GENDER SCHEMA THEORY

Bem (1981a) now emphasises differences in the cognitive processing between the sex typed and the androgynous person. The extent to which individuals use culturally based definitions of masculinity/femininity or masculine/feminine sex appropriate behaviour is emphasised. Gender schema theory attempts to explain the differences in these definitions and how they influence behaviour. This theory did not influence the formulation of the original BSRI, but may be viewed as a cognitive theory of androgyny, and thus deserves comment. The theory has influenced Bem's later work on androgyny inasmuch as her understanding of androgyny as determined by the BSRI, is seen to have a cognitive basis.

Bem's (1981b) gender schema theory is an attempt to explain how individuals process information in a sex typed fashion.

Individuals are exposed to more information than they can adequately process. Hence selective information attention/selection and processing occurs. "Individuals' information processing is aided by internal, cognitive structures that permit them to perceive, interpret and organise incoming information effectively. These cognitive structures that assist individuals are schemas." (Cook, 1985, 26) (cf Bem, 1981; Markus, 1977; Markus, Crane, Bernstein & Siladi, 1982).

A stage developmental approach to learning feminine and masculine attitudes is posited. The child initially learns sex distinctions/attitudes that are sex appropriate for him/herself. A set of 'sex-linked associations' is learned

through this information processing. This set becomes the gender schema which then predisposes the child's view of the world to be sex-linked.

The gender schema serves as a yardstick for evaluation of personality characteristics. " When individuals observe their own conformity to these standards, the sex-based differentiation of the self concept is strengthened. A traditional sex role identity is the result. " (Cook, 1985, 27).

> "Firstly, one may distinguish sex typed and non-sex typed people on the basis of their gender schematic processing. ..in Bem's latest theoretical statements, the content of what constitutes the classes of masculinity/femininity is not emphasised, but rather the type of cognitive processes : whether a person has a generalised readiness to classify perceptions into one of the two classes and then act advisedly based upon this processing." (Cook, 1985, 27). Secondly, Bem suggests that "androgyny measures can be used to identify people who engage in gender-schematic processing." (Cook, 1985, 27).

3.5. CORRELATES OF ANDROGYNY

As mentioned in the introduction section above, a large degree of the research in androgyny concerns correlative investigations between androgyny (or sex roles) and personality attributes. It is therefore important to mention some of the core findings of such research. The most widely used method in sex role correlational work applying androgyny measures is that of analysing masculinity and femininity scores with dependent variable scores representing various characteristics or personality traits.

The masculine and feminine scores are derived from responses on sex role inventories such as the BSRI [4] , PAQ [5], ACL [6].

Some research findings on the correlations between androgyny and personality variables will now be briefly reported.

Androgynous people have been found to rate highly on friendly-assertive behaviour (Berzins, Welling & Wetter, 1976); social poise (Berzins, Welling & Wetter, 1978); are characterised as social, leaders, responsible, outgoing, mature and high achieving (Baucom, 1980); attribute positive characteristics to themselves (Wiggins & Holzmuller, 1981); rate highest of the four sex role categories on self esteem (Spence, Helmreich & Stapp, 1975); are rated by others as well adjusted (Major, Carnevale & Deaux, 1981); are seen as attractive (Bridges, 1981; Kulik & Harachiewicz, 1979); are assertive (Campbell, Steffen & Langmeyer, 1981); find it easy to self disclose (Lombardo & Lavine, 1981; Stokes, Childs & Fuehrer, 1981).

Such people also favour egalitarian marriages (Pursell, Banikiotes & Sebastian, 1981); are role consistent across situations (Heilbrun, 1981); utilise both feminine and masculine self schemas in cognitive information processing (Markus, Crane, Bernstein & Siladi, 1982); are behaviourally adaptive (Orlofsky & Windle, 1978); display sex role adaptability across situations (Bem, 1975); rate highly in interpersonal performance (Kelly, O'Brien & Hosford, 1981); experience positive daydreaming (Golding & Singer, 1983); are less depressed, anxious, tense and less socially introverted than other sex roles (Adams & Sherer, 1982); rate stressful life events as less undesirable than other

4. Bem Sex Role Inventory (Bem, 1974)
5. Personal Attributes Questionnaire (Spence, Helmreich and Stapp, 1974, 1975)
6. Adjective Checklist (Gough and Heilbrun, 1965)

sex roles rate stressful life events (Shaw, 1982); are least lonely as students (Berg & Peplau, 1982).

They also perceive themselves as having higher self esteem (Sappenfield & Harris, 1975); are socially competent (Campbell, Steffen & Langmeyer, 1981); rear children in an 'androgynous' manner (Flake-Hobson & Robinson, 1981); have positive mental health (Hinrichsen, Follansbee & Ganellen, 1981); offer assistance more readily than other sex roles do in an emergency situation (Senneker & Hendrick, 1983); androgynous-androgynous couples rate significantly higher on mental adjustment than do other sex role dyads (Kenderdine, 1983); and have superior ego-development (Circle, 1980).

The implications of such research are wide. It is clear that the androgyne is in a better level of psychological health than his/her non-androgynous counterparts. However, an area of research has opened that contends that it is the masculine aspect of androgyny that is at the root of such a high level of psychological health. (see section 4 later). The androgyny research has created the strong impression that to be androgynous is the ideal sex role state.

3.6. CRITIQUE OF THE THEORY OF ANDROGYNY

In this section an outline of particular critiques of the theories of androgyny and sex roles is offered. The section is by no means comprehensive, but rather focusses attention on certain recurrent criticisms of the theories.

3.7.1. KAPLAN'S CRITIQUE OF BEM'S DEFINITION OF ANDROGYNY

Kaplan (1979) finds Bem's (1974) definition of androgyny empirically and theoretically inconsistent.

Bem noted that

> "The androgynous individual should be able to remain sensitive to the changing conditions of the situation and engage in whatever behavior seems most effective at the moment, regardless of its stereotype as appropriate for one sex or the other." and that "for fully effective and healthy functioning, both masculinity and femininity must each be tempered by the other, and the two must be integrated into a more balanced, a more fully human, a truly androgynous personality." (Kaplan, 1979, 24).

The androgyne is thus an equal self-ascription of both feminine and masculine personality attributes, and a balance between the two. What Bem appears to be saying here is "that the essential parameters of situational appropriateness, flexibility, effectiveness, and integration are being measured in testing for an equal balance between masculinity and femininity." (Kaplan, 1979, 223) However, it may be argued that "while these parameters may be likely outcomes of an equal balance between masculinity and femininity, they are not necessary outcomes." (Kaplan, 1979, 223).

This criticism refers to the particular problem inherent in extrapolating from an operational definition of androgyny to the behavioural manifestation of the sex role. Bem's original (1974) work concentrated on the operational definition of androgyny (as per the BSRI). It was only later that her work offered a set of behavioural correlates of androgyny. Therefore, one may argue that this association of androgyny and a particular behavioural repetoire is simply that - an association.

Kaplan argues that the BSRI is not measuring this behavioural repetoire by assessing the levels of masculinity and femininity.

3.7.2 METAPHORICAL MODELS IN ANDROGYNY THEORIES

Berzins (1979) argues that conceptualisations (of androgyny) involve a range of metaphorical models in which masculinity and femininity are seen to be 'tempered, balanced' by each other and in so doing, integrated or transcended. (cf. Hefner, Rebecca and Oleshansky 1975; Garnets and Pleck, 1979)

Berzins argues for the application of Stephen Pepper's (1942) 'root metaphor theory' to models of androgyny in validation research. Based on this approach, Berzins (1979) maintains that there is no empirical support for the process of tempering, transcending or balancing. Pepper's model will now be examined in detail as a critique of androgyny theories.

Pepper (1942) noted that an examination of the history of scientific/philosophical enquiry shows that a few adequate and internally consistent models for classifying hypotheses about the world have been developed. These particular `world hypotheses' - formism, mechanism, contextualism, and organicism - "derive their cognitive power from distinctive `root metaphors', ie. metaphorical models, for organising each theory's basic categories of analysis, lines of structural corroboration, and stances on truth'".(Berzins, 1979, 249+50).

One may examine androgyny in general, and Bem's notion of androgyny in particular, using these world hypotheses. It is therefore important to describe these hypotheses to comprehend their impact upon the concept of androgyny.

FORMISM

Masculinity and femininity are seen to refer to a collection of behaviours that approximate cultural values for the behaviour of men and women. Behaviours can be judged according to these norms. This model is used in the traditional approach to the M-F scales, where androgyny is seen as a metaphorical balance between these two extremes. Bem (1974) used this approach in her operational definition of androgyny - the scores balanced. The cognitive operation involved is one in which individuals are assigned to a class or category on the basis of a judgement of similarity.

MECHANISM

This approach uses machine metaphor where sex roles are the result of socialisation, modelling etc. (ie. the influence of the external agents of socialisation). Differential reinforcement of certain behaviour reinforces the notion of gender. In this approach "an androgynous person generally would be seen as one who has a large rather than a small number of social and other learned skills in his/her behavioural repetoirs." (Berzins, 1979, 251).

CONTEXTUALISM

Here situational relativity and the immediacy of events are emphasised. The context in which the person finds him/herself is crucial. "To the contextualist, sex roles are gender linked personifications of the self and others which tend to render relevant interpersonal situations functionally equivalent."(Berzins, 1979, 251). Strong pragmatic focus is given to sex roles - ie determining how well they work for the individual (eg. an androgynous behaviour).

ORGANICISM

This approach emphasises the gradual growing or unfolding of the organism from an undifferentiated state. Through the dialectical process disparate elements are gradually resolved and integrated into a higher level of being. "Androgyny...becomes coextensive with moral maturity, self actualisation, and transcendence." (Berzins, 1979, 252).

On the basis of the above four arguments, Berzins (1979) holds that androgyny is not an internally consistent theory, and as such has no theoretical or empirical validity.

3.7.3. BERNARD'S CRITIQUE OF SEX ROLE RESEARCH

Bernard (1981) examines sex differences and sex role research from a sociology of knowledge perspective.

With the beginning of the 20th century, feminist work attempted to find scientific evidence for sex equality. In the 20's and 30's emphasis was placed on the emotional aspects of sex differences, especially from the Freudian work- clinical and therapeutic work found priority. In the 1950's the emphasis shifted to the study of sex roles and how children learned them. Today, research is re-emphasising the equality of the sexes, having come full circle from the start of the century. "The objective is now...to extricate scientific fact from wishful fancy concerning the behavioural attributes of structural sex differences and (to show) how both are, covertly and more grossly, reinforced and bent to social ends." (Bernard, 1981, 11).

Bernard (1981) argues that (1) sex difference research has achieved few of its overt objectives. (to demonstrate sexual equality); (2) it rationalises women's inferior position in

research suffers from strong male bias in variable selection, methodology and interpretation of findings; and (4) has in effect preserved sex role stereotypes. Sex role research has thus failed to move from its patriarchal origins. These criticisms may be levelled at androgyny research as well.

3.7.4. THE USE OF SEX ROLE MEASURES

Sayers (1979) criticises the methods used to describe and determine the constructs of masculinity and femininity, from toy choice to questionnaire response. "..an item response is described as 'masculine' if it accords within the male norm, 'feminine' if it accords with the female norm (as established in the standardisation of the test)." (47). Construct validity of toy choice or questionnaire response approaches to asertaining individuals' levels of masculinity or femininity depends on the assumption that toy/questionnaire response can actually be taken as masculine or feminine simply as these responses are made in most cases for one particular test than for another. ie. that a behavioural difference is indicative of levels of masculinity or femininity.

> "It is difficult to determine what behaviours are, and what are not, linked to sex roles. The mere existence of a behavioral sex difference does not constitute evidence of such linkage." (Maccoby and Jacklin 1975, 277).

> "..current research in the content of sex-role stereotypes tends to be impervious to many of the important and contradictory features of people's ideas about the difference between the sexes. Since these ideas serve an ideological function in

> a sexist society, in that they are often used to justify and explain existing inequalities in the social lot of men and women, research into them can have the effect of bolstering sexist ideology." (Sayers, 1979, 54).

3.7.5. THE NOTIONS OF MASCULINITY AND FEMININITY

Spence (1984) questions the whole notion of masculinity/femininity and gender identity. The words masculinity and femininity "..are labels for those properties of persons, objects, or behaviours that the descriptive or prescriptive stereotypes of a given culture consider associated with or more characteristics of one sex than the other." (Spence, 1984, 62). When they are used as nouns, the terms appear to denote 'a fundamental essence', particularly when referring to one's sense of experience of masculinity or femininity. Spence (1984) questions how these 'fundamental essences' may not fulfil the normative descriptions of masculinity or femininity for an individual and still remain a feminine woman or a masculine man.

> "Despite the absence of contextual cues to give some hint about their meanings, despite the inability of the lexicographers as well as ordinary people to supply satisfactory definitions in their abstract senses, writers and speakers continue to use the words masculinity and femininity, seemingly secure in the knowledge that they are meaningful, a confidence that seems to be shared by their unquestioning audience."(Spence, 1984, 62).

Since the Terman and Miles tests of 50 years ago, psychologists have continually attempted to devise tests to measure masculinity and femininity. This occurs under

circumstances where there are no explicit definitions of the constructs and where a thorough theoretical framework within which one may test the constructs is lacking. The lack of criteria for item selection of personality attributes for sex role tests, apart from the attributes being differentially regarded by males or females, does not suggest that the constructs of masculinity and femininity have been viewed by tests developers as simply empirical constructs.

It is argued (Bernard, 1981) that the majority of sex role researchers subscribing to a two-factor approach to masculinity and femininity have retained their traditional bipolar notions as represented by constructs such as sex role identification or orientation.

In the traditional, single-factor approaches to masculinity and femininity, the M-F scales utilised heterogenous item selection content from a variety of domains.

The use of these earlier scales is based on three assumptions:

(1) the hypothetical qualities of masculinity and femininity form a unidimensional bipolar continuum on which most males are represented in the masculine end of the continuum, and most females on the feminine end of the continuum.

(2) the behaviours, attributes and attitudes that are normatively viewed in a particular culture as being more characteristic or descriptive of males as opposed to females are seen as valid indicators of masculinity. The absence of such indicators is viewed as indicative of femininity.

(3) Statistically, the categories of attributes that differentiate genders are highly correlative within each gender, and as a whole comprise a single bipolar factor detectable using factor analysis.

A similar set of assumptions underly the use of the toy choice test of masculinity and femininity.

If we accept the single bipolar assumption, then any particular characteristic able to discriminate between genders is, in theory, entirely sufficient to act as an indicator of masculinity or femininity. "..items could equally well be randomly drawn from the entire universe, be a nonrepresentative sample from several domains, such as personality traits, recreational interests, or, for children, toy preferences." (Spence, 1984, 67)

Traditional sex role tests have as an underlying assumption the notion that masculinity and femininity cannot coexist in the same individual. However, scores high in both construct in the same individual have been recorded demonstrating that characteristics associated with males and those associated with females can exist in the same person.

To bolster this argument that roles and responsibilities normally accorded to males can be assumed by either sex, it became necessary to posit that masculine and feminine qualities may coexist. Bem (1974) presented a theory with her BSRI, based on two core assumptions. Firstly, that attributes and behaviours of both gender can be statistically divided into two independent categories - masculine and feminine. As masculinity and femininity are independent qualities, they may occur in the same person. Secondly, the self images of the global aspects of masculinity and femininity (or the global aspects of

masculinity and femininity) are also independent. The self reports of the degree to which these gender-discriminating attributes are able to describe masculinity or femininity indicates the strengths of the constructs.

Although, at one stage this approach differs radically to that of the traditionalists, at another, it is only relatively slightly different from a bipolar, unidimensional model. Even though the gender-discriminating attributes are now theorised to belong to one of two categories, masculine or feminine, the other assumptions of a traditional, unidimensional approach are unchanged." ie. the behaviours, attributes and attitudes in each category are seen to compose a single factor, masculinity or femininity. This, of course, implies that all types of masculine or feminine qualities are presumed to be reliable diagnostic indicators of the masculinity or femininity concepts." (Spence, 1984, 71).

A re-reading of Bem's works suggests that "although nominally promoting the notion that masculinity and femininity are independent and that the BSRI measures this pair of constructs, her theoretical speculations and empirical tests of them using the BSRI have typically been based on unidimensional concepts related to sex typing. In this theory a single continuum is implied, a continuum in which those who are strongly sex typed in their self images and role identification (ie. masculine men and feminine women) are assigned to an extreme; at the other extreme are those who are not sex typed, identifying with neither the masculine or feminine role."(Spence, 1984, 72). This approach has recently been formulated in Bem's gender schema theory (1981a).

If masculinity and femininity were each a single factor and independent of each other, a factor analysis would reveal

two orthogonal factors. However, "studies reporting correlations between various bipolar masculinity-femininity tests or the results of factor analysis involving both individual masculinity-femininity measures of heterogeneous and pooled items drawn from several measures do not suggest the presence of only one or even two factors.(see Constantinople 1973). Instead, they unambiguously indicate that the classes of traits, attributes, values, interests, preferences and behaviour that differentiate the genders are multifactorial, with varying degrees of relation among factors. " (Spence, 1984, 75).

Spence's arguments here are not entirely supported by factor analytic investigations of sex role inventories, in particular the Bem Sex Role Inventory. (see later under subsection Factor Analysis in Psychometric chapter).

Spence (1984) regards this multifactorial evidence as discrediting the current theories of masculinity and femininity. She also argues that it is fundamentally incorrect to assume from a collection of statistical facts that distinguish between two categories of individuals (masculine or feminine individuals) can be regarded as 'vignettes' of the typical (read representative) member of each category.

In fact, it has become apparent that few males or females demonstrate the majority of the attributes, attitudes and behaviours 'typical' of their sex or dictated to by cultural stereotypes.

3.7.6. VARIOUS IDEOLOGICAL POSITIONS UNDERLYING SEX ROLE RESEARCH

Pyke (1982) argues that "..the major source of variance in psychological research is less a result of the manipulation

of independent variables than it is a function of the ideological substructure underlying the research." (125).

He notes that there are broad ideological positions used in androgyny and sex difference research.

The concept of androgyny is regarded as having a range of definitions, where these usually imply some form of integration or fusion of masculinity and femininity in an individual. An example of such an approach is that of Jung (1973) who theorised that the male's consciousness is masculine in form, yet is tempered by his anima, or the unconscious feminine content of his psyche. The individuation task for a male is to discover and integrate this feminine content into his consciousness. In contrast, the female's individualisation process is to "use her animus to nurture a man's anima so as to assist him in his psychological growth. Thus, androgyny in its most complete, sense, is reserved for the male in Jung's model." (Pyke, 1982, 129).

Pyke (1982) maintains that feminist research into androgyny assumed that men and women 'are equal' and that women's inferior position in society was the result of ideological issues and/or socialisation that differed for boys and girls. This may be seen as an 'ideology of difference'and is like trying to prove the null hypothesis - a statistical impossibility.

It is apparent, notes Pyke (1982) that the androgyne is regarded as the healthiest individual in terms of sex roles. However, androgyny research tends to reaffirm an ideology of 'females are less than males' in that a high masculinity loading in an androgynous sex role is correlated with better mental health, flexibility and adaptability in comparison to the other three sex roles.

3.7.7. CONCLUSIONS

Critiques of the theories of androgyny focus on the following: - definition of androgyny; the hypotheses inherent in androgyny theories; issues involved in sex role research; the use of androgyny measures; the notions of masculinity and femininity; and the ideological positions that underly such theories.

Kaplan finds Bem's (1974) definition of androgyny empirically and theoretically inconsistent. Bem's linkage of the levels of masculinity and femininity with a particular behavioural repetoire is seen to be theoretically lacking. Berzin's (1979) use of Pepper's (1942) 'root metaphor theory' is an attempt to demonstrate the lack of empirical support foe the notions of tempering, transcending or balancing of masculinity and femininity.

The research involved in sex role work is shown by Bernard (1981) to have core assumptions that may be seen a sexist. The use of item choice in sex role measures is seen by Sayers (1979) as resulting in poor construct validity. The notion of masculinity and femininity, as mentioned in section 2 above, is questioned by Spence (1984).

Finally, a critique of the ideological positions underlying the theories of androgyny was mentioned.

4. SEX ROLES AND MENTAL HEALTH

In this subsection, a brief mention is made of the relationship between androgyny and mental health. The relationship between the two constructs has become more clear due to the strong moves in androgyny research towards attempts at linking sex roles to positive mental health. This approach contrasts strongly with the traditional notion

that the sex typed individual is psychologically healthier than the other sex roles. A fierce debate exists in this area - is it androgyny per se that is linked to optimal mental health, or the high ascription of masculinity that serves the link? The strongest proponents of the 'masculinity' argument have been Antill and Cunningham (1979, 1982) amongst others.

> "Kaplan (1976) elucidates the major theoretical components of psychological androgyny: situational appropriateness, flexibility, effectiveness, and integration. Bem (1976) adds the parameter of psychological health. Particular research indicates (Bem, 1975; Bem & Lenny,1976; Bem et al 1976) that the behavior of the androgynous individual is situationally appropriate, flexible and effective. Recent research has indirectly supported the idea that the androgynous individual is more psychologically healthy than the highly sex typed individual". (Bem, 1976, 285)

However, the masculinity aspect of androgyny may be the key element here. Erdwins, Small and Gross (1980) argue that the masculinity score on a sex role inventory is the crucial factor in personal adjustment. The best predictor of self esteem, according to Antill and Cunningham (1979, 1982) is the masculinity score. The feminine and undifferentiated categories on the BSRI received the lowest scores on measures of self esteem (LaTorre, Endman and Grossman, 1978; Antill and Cunnigham, 1982; Flaherty and Dusek, 1980; Hinrichsen, Follansbee and Ganellen, 1981).

Kelly and Worrell (1977), in a review of androgyny literature, concluded that masculine and androgynous

individuals share similar attributes that indicated better mental health status than the feminine and undifferentiated, of which both categories were associated with poor mental health." Kelly and Worrel hypothesised that masculinity typed behaviours have higher social utility value than feminine typed behaviours because they lead more reliably to reinforcers in our culture." (Adams, and Sherer, 1982, 608)

This was supported by Jones, Chernovetz and Hansson (1978) who found that masculinity itself, as opposed to androgyny was correlated with higher flexibility and adjustment in female and male college students. This they argue "agrees with a growing body of literature that points to equally good adjustment in persons with masculinity sex role orientations as well as in persons with androgynous sex role orientations." (Adams and Sherer, 1982, 611)

5. SUMMARY

Androgyny denotes the simultaneous possession of feminine and masculine traits by an individual. The core concepts used in the present research and introduced in this chapter included SEX, GENDER, GENDER IDENTITY, MASCULINITY and FEMININITY. As has been shown, there is little consensus as to exactly what characteristics constitute the concepts of masculinity and femininity. The historical conceptions of androgyny are well established and vary between Jung's (1973) contrasexual aspects of the psyche to Bakan's (1966) agentic and communalistic properties. The strongly patriarchal biases within earlier sex role research were demonstrated with the use of Terman and Miles' (1936) research. Misconceptions about androgyny were clarified. These included the views that androgyny is synonymous with "(a) economic or sexual emancipation, (b) the absence of any

The basic assumptions of androgyny as operationalised by Bem (1974, 1976) are:

1. Independence of masculinity and femininity as separate dimensions;
2. The positive aspects of masculinity and femininity;
3. The desirable contribution of the two dimensions;

and 4. That traditional sex role dichotomies are behaviourally and psychologically dysfunctional.

Models of androgyny were examined, including Conjoint, Developmental and Sex Role Transcendent approaches. Bem's (1974) theories of androgyny and Gender Schema Theory were covered. Correlates of androgyny were listed to give the reader a view of the forms of research conducted linking the construct of androgyny and various personality traits.

Critiques of the theory of androgyny were mentioned. Berzin's (1979) use of Pepper"s (1942) metaphorical models demonstrates the lack of an internally consistent theory of androgyny. Bernard (1981) and Sayers' (1979) critique of the construct validity of androgyny, in particular the use of toy choice or questionnaire items to measure androgyny, were covered.

A brief mention of particular findings in the examination of the relationship of androgyny and mental health was made.

This chapter served to offer a review of the relevant literature in androgyny research. With this review, an indepth discussion regarding the psychometric properties of the BSRI may be attempted. Thus the following chapter concerns the psychometric issues involved in sex role measures in general, and the BSRI in particular.

CHAPTER 2: PSYCHOMETRICS OF SEX ROLE MEASURES

CHAPTER 2: PSYCHOMETRICS OF SEX ROLE MEASURES

CHAPTER 2: PSYCHOMETRICS OF SEX ROLE MEASURES

1. INTRODUCTION

In this chapter the psychometric issues involved in sex role measurement instruments in general, and the BSRI in particular, will be examined.

In the following subsection, a brief description of the Bem Sex Role Inventory (Bem, 1974) will be offered. Following this is a summary of the methodology Bem (1974) employed to select the items for the inventory, and attempts at replication of this methodology by Walkup and Abbot (1978), Edwards and Ashworth (1977) and Ramaniaha and Hoffman (1984).

2. THE MEASUREMENT OF SEX ROLE

A indicated in Chapter 1, (section 3.1.) the constructs of masculinity and femininity have been regarded as composed of a single continuum, with the constructs being the bipolar ends of this continuum.

It was with Bem's (1974) work on a new approach to measurement of sex roles that this notion was placed under serious question. "Numerous investigators have contested the traditional assumption that masculinity and femininity represent the opposite ends of a single dimension (Bem, 1974; Block, 1973; Carlson, 1971; Constantinople, 1973; Spence, Helmreich and Stapp, 1975)" (Heilbrun, 1978, 183).

Bem's primary concern was androgyny and its accurate measurement. For this, she developed the Bem Sex Role Inventory (BSRI) a psychometric test that has served as the basis for the bulk of androgyny and sex role research for the past 14 years.

3. THE BEM SEX ROLE INVENTORY (BSRI)

3.1. DESCRIPTION OF THE BSRI

The Bem Sex role Inventory (refer to Appendix A) consists of 60 items where the respondent is asked, on a 7 point Likert scale, to indicate the extent to which each of these describes him/herself. (Bem, 1974). Based on these answers, the respondent is awarded three scores, a Masculine, a Feminine and a Social Desirability score.

"The Masculine and Feminine scores indicate the extent to which a person endorses masculine and feminine personality characteristics as self-descriptive." (Bem 1974, 158). On the basis of these scores the subject is classified as Masculine, Feminine, Androgynous or Undifferentiated. The classification procedure is detailed in section 3.4. below.

3.2. CONSTRUCTION, AND ITEM SELECTION

In this subsection, the BSRI's construction will be examined. This will enable a discussion regarding replication studies to be made.

3.2.1. BSRI CONSTRUCTION

A pool of 400 personality characteristics (adjectives and phrases) was compiled by Bem and her students. In their opinion, this pool contained personality characteristics that appeared to be socially desirable (ie. positive) and either masculine or feminine in emphasis. It was from this pool that the final list of masculine and feminine items of the BSRI was selected.

The Bem Sex Role Inventory (BSRI) contains three subscales: the Masculinity scale (M scale); the Femininity scale (F scale) and the Neutral or Social Desirability scale (SD scale).

> "The BSRI M scale consists of items rated by both male and female judges [1] as more desirable in American society for men than for women, while the BSRI F scale contains items rated by both male and female judges as more desirable in American society for women than for men." (Ramanaiah and Hoffman 1984, 145)

A similar procedure was followed for the Neutral or Social Desirability scale. A pool of 200 items was chosen that appeared to Bem and her students to bear no relationship to masculinity or femininity, which were however desirable for men and women in America.

> "...judges were asked to utilise a 7-point scale...to rate the desirability in American society of each of the approximately 400 personality characteristics mentioned above." (Bem 1974, 157). An item (personality characteristic) was regarded as masculine if all judges independently rated it as significantly more desirable for a male as opposed to a female. (Bem, 1974).

---

1. The judges were postgraduate Psychology students and colleagues of Bem.

Bem (1974) is never quite clear as to the actual approach in selecting the initial item pool for her inventory. Firstly, what was the contribution of each judge to the selection of the item. ie. how much say did Bem have in item selection as opposed to the students? Second, what students were these? ie. What was their gender? [8]. Third, how did Bem end up with exactly 60 items (and not 57 or 59 say) neatly divided up into three categories?

Bem initially administered the BSRI to 444 male, and 279 female students, as well as 117 male and 77 female paid volunteers. Results were used as normative data. The BSRI was shown to be internally consistent (ie. with high coefficient alpha scores). Results show that the masculine and feminine scales are empirically independent, thus supporting the initial claim that they were theoretically independent. [9].

Masculine and Feminine scales were correlated with the Social Desirability scale. Near-zero correlation exists between androgyny and social desirability confirming "that the Androgyny score is not measuring a general tendency to respond in a socially desirable direction." (Bem 1974, 157).

The test-retest figures obtained for the BSRI are high.(0.9-0.92). (Bem 1974). The masculine and feminine scales of the BSRI are internally consistent. (alpha=0.91 and 0.89 respectively). (Miznah and Choo, 1986).

At this stage, replication studies of the approach Bem used in the construction of the inventory are examined.

---

8. One may assume that the rater's gender would influence his/her decision in this instance. Research into ascription of mental health and it's relationship to sex role of the judge and subject indicate this to be the case.
9. This empirical independence of the masculine and feminine subscales of the BSRI will be demonstrated as a result of factor analytic stud ys examined in a later section.

3.3. REPLICATION STUDIES OF THE BSRI

Two studies attempted to replicate Bem's findings, namely Walkup and Abbot (1978) and Edwards and Ashworth (1977).

3.3.1. EDWARDS AND ASHWORTH (1977)

Edwards and Ashworth (1977) "questioned the adequacy of the BSRI M and F scales for measuring sex roles on the premise that items that were rated as more desirable for one sex than for the other in Bem's (1974) study might no longer be so rated since students' conceptions of sex roles and sex role stereotypes are undergoing rapid change on university campuses." (Edwards and Ashworth, 1977, 145) They found that "only one masculinity item (masculinity) and one feminine item (femininity) qualified for the respective scales by Bem's criteria" (Edwards and Ashworth, 1977, 145)

The Edwards and Ashworth (1977) study cannot strictly be regarded as a replication study of the original Bem (1974) work, since significant changes in the instructions given to raters and a completely different rating scale were used to assertain item desirability from the original item pool. (Ramanaiah and Hoffman 1984)

Bem's instructions to her raters aimed at eliciting American stereotypes of masculinity and femininity . The focus is on the judge's evaluations of American masculine and feminine stereotypes and not on the judge's views of the item desirability for American men or women. (Ramanaiah and Hoffman, 1984). Furthermore, Edwards and Ashworth (1977) used a 9 point bipolar rating scale, whereas Bem (1974) used a 7 point truncated scale.

3.3.2. WALKUP AND ABBOT (1978)

Walkup and Abbot (1978) replicated Bem's (1974) study using the original instructions and an identical rating scale. They determined that practically all the Femininity and Masculinity items were correctly identified for their scales according to Bem's (1974) criteria. Hence, it is apparent that the methodology employed by Bem (1974) was replicated, and a comparable inventory was obtained by the researchers.

3.3.3. REPLICATION STUDIES - SUMMARY

On the basis of Walkup et al (1978) we may conclude that the BSRI has been adequately replicated. Of the characteristics that fulfilled Bem's selection for the above criteria, 20 were used for the Masculine scale and 20 for the Feminine scale. Items qualified for the Social Desirability scale "(a) if they were independently judged by both males and females to be no more desirable for one sex than for the other and (b) if male and female judges did not differ significantly in their overall desirability judgements of that trait." (Bem, 1974, 157).

In summary, it may be said that the BSRI item selection procedure employed by Bem (1974) has been adequately replicated (Walkup and Abbot, 1978; Ramanaiah and Hoffman 1984). The test has two empirically independent masculine and feminine subscales and demonstrates statistically significant test-retest behaviour and internal consistency.

3.4. SCORING OF THE BEM SEX ROLE INVENTORY

3.4.1. INTRODUCTION

The method used to classify respondents scores into sex role categories (Masculine, Feminine, Androgynous or Undifferentiated) has been the source of much debate surrounding the BSRI. This subsection of scoring procedures outlines a variety of the arguments supporting or opposing each of the five scoring procedures. Since Bem's original scoring procedure in 1974 (the difference method), there are approximately five others that have come into use (difference, t ratio, median split, geometric mean and the intersect method), thus further confusing the research into androgyny. It is important to recognise the prevalence of these differing methods, and their impact on androgyny research. .

The primary aim of this subsection is simply to detail the common issues involved. Although much has been written on the various scoring procedures, the vast majority of researchers still prefer to use the median split technique.

The scoring method used determines what categories each individual fills. Thus, the categorization of the person into one of the four groups viz. masculine, feminine, androgynous, or undifferentiated, is determined by the individual who performs the test, but more subtly, by the procedure employed to score the BSRI protocol. The varying techniques have different degrees of 'stringency' or robustness, with the result that researchers may 'slide' a larger proportion of one's subjects into a particular category.

Each scoring method will be briefly examined in the following subsections.

3.4.2. THE DIFFERENCE/T SCORE METHOD

Bem (1974) originally conceptualised androgyny as distinctly different to the traditional notions of sex typing. The androgyne is, in her opinion, an individual endorsing both masculine and feminine orientations. The operational definition of the androgynous category on the BSRI was thus the small difference between the sum of the self reported masculine and the feminine items, represented as a t score. The difference approach was later adapted to the t score method. (Briere, Ward and Hartsough, 1983)

> "In the t ratio approach, androgynous individuals are those who endorse relatively equal numbers of masculine and feminine traits (Bem 1974)". (Roe and Prange, 1982, 300)

Two conceptual advantages are offered in the use of the t ratio method. Firstly, a researcher is able to determine whether a respondent's endorsement of his/her feminine attributes differs significantly from their endorsement of masculine attributes. Secondly, comparison of different samples may be conducted based on the percentage of sex-typed members in each sample.

The larger the absolute androgyny score value, the greater the degree of sex-typing. High positive scores represent femininity and high negative scores masculinity. A feminine sex role is thus not only the endorsement of feminine personality attributes, but implies a simultaneous rejection of masculine attributes. The closer the androgyny score is to zero, the greater the degree of androgyny the person ascribes to. (Bem, 1974).

3.4.3. THE MEDIAN SPLIT METHOD

Subsequently, Bem adopted Spence et al's (1975) median split method in which subjects' scores above the sample's median for both masculinity and femininity were described as androgynous. Those below the sample medians on both masculinity and femininity were defined as undifferentiated. (Briere, Ward and Hartsough, 1983). [4]

For an above median Masculinity score and below median Femininity score, the subject is categorised as Masculine. Similarly, for a below median Masculinity score and an above Femininity median score, the subject categorised as Feminine. (Blackman, 1982). This may be represented by the following table:

	F>F median	F<F median
M>M median	ANDROGYNOUS	MASCULINE
M<M median	FEMININE	UNDIFFERENTIATED

table showing median split technique

Where F = Feminine Raw Score
M = Masculine Raw Score
F Median = Feminine median
M Median = Masculine median

4.This method was refined by Orlofsky and Windle (1978) "by proposing an intersect method requiring that subjects satisfy both the median split and the t-score criteria in order to be characterised as androgynous." (Briere et al 1983, 300). This method has however, not been well received in the area of sex role research. It is complex and unwieldly to use.

The median split method is preferred to the t ratio approach by sex role measure researchers as it clearly differentiates the androgynous and the undifferentiated subjects.

One problem in the median split method is loss of information resulting from the categorisation of continuous data. The distance separating values on the masculinity and femininity dimensions is not regarded as important. (Bem 1977; Jones, Chernovetz and Hansson,1978; Kelly, Furman and Young, 1978; Roe and Prange,1982).

It is quite possible to obtain identical androgyny scores for individuals endorsing distinctly different items. [5] This would mean therefore, that individuals categorised as androgynous, may have marked differences in their level of ascription of masculinity and femininity.

> "Corresponding with the implicit assumption of researchers such as Bem, the median split manipulation assumes that the raw data represent a continuous interval scale. This manipulation does not alter arguments on the general appropriateness of the median split approach; it provides

---

5"An answer to the information loss criticism is provided by a technique which combines the masculine and feminine scales in an additive rather than subtractive manner, upholds the continuous nature of the variables, and utilises the median split for categorization." (Roe and Prange, 1982, 301).

This is done by first combining the raw data and median within each dimension to standard scores. The distance from each transformed value to the appropriate transformed median is then calculated in standard score units. Finally, a single value representing both dimension is derived by summing the two distances defining the sex role category.". (Roe and Prange, 1982, 301)

> information on magnitude, and thus permits the utilisation of techniques such as multiple regression on sex role categories." (see Bem 1977, Spence & Helmreich 1979, Worrell 1978) (Roe and Prange, 1982. 302)

3.4.4. COMPARISON OF THE T SCORE, MEDIAN SPLIT AND INTERSECT METHODS

Briere, Ward and Hartsough (1983) comparison of the three scoring methods (t score, median split, and intersect method) demonstrates how the scoring method can influence the sex role categorization of subjects.

Briere, Ward and Hartsough (1983) categorised a sample of subjects as androgynous or non androgynous using each of the three scoring procedures (t score, median split and intersect method). The protocols of the androgynous categorised subjects were then scrutinized to determine any sex differences in masculine or feminine item endorsements. The t score method produced cross-typed categorisations,(ie. a male being categorised as feminine) while the median split technique produced same sex typed categorizations. The intersect method produced the least number of sex differences.

Briere, Ward and Hartsough (1983) further found that the t score method failed to distinguish between those subjects scoring a high degree of both masculine and feminine items, and those endorsing a low, but equal amount of both. Thus, androgynous individuals could have very different levels of masculinity and femininity.

Furthermore, results indicate that the construct 'androgyny' varies in meaning according to the method used to ascertain its presence. The two most common scoring procedures for the BSRI each produced a variety of sex differences, while failing to agree on the classification of most androgynous subjects. (Briere, Ward and Hartsough, 1983)

> "The t score approach to androgyny appears actually to reflect cross-sex typing, in compensation with large and same-sex endorsements of the Masculine or Feminine item. The median split approach, in contrast, tends to measure same sex typing in the context of a general endorsement of all items. Finally, the intersect version of androgyny appears to come closest to the notion of equal masculine and feminine trait endorsement, although even here major sex differences were found." (Briere, Ward and Hartsough, 1983, 300)

3.5. FACTOR ANALYSIS OF THE BEM SEX ROLE INVENTORY

An important area of psychometric investigation of the BSRI is factor analytic studies of the 40 masculine and feminine items. Bledsoe's (1983) investigation determined that the BSRI demonstrated sound construct validity.

> "A factor analysis of responses from 44 white female teachers to the 40 item Bem Sex Role Inventory yielded two factors, Masculinity and Femininity accounting for 20.7 and 16.2% respectively, of the common variance. Of the 40 items 28 performed as

> hypothesised, suggesting sound construct validity for the total scales." (Bledsoe 1983, 55). His results are reported in Appendix 10.

An interesting issue resulting from Bledsoe's (1983) work is that of stereotypic notions of masculinity and femininity. The stereotypes of 'aggressive' males and 'passive' females is increasingly regarded as unrealistic. This is in part supported by the finding that particular stereotypic factors failed to load significantly on either the factor 1 (masculine) or factor 2 (feminine). [9].

> ". .compassionate men and assertive and independent women will come to be regarded as somewhat more 'normal' as has previously been the case" (Bledsoe 1983, 53)

Gaudreau's (1977) factor analysis of the BSRI supports the argument that masculinity and femininity may be considered independent traits as opposed to a single dimension. This is an important issue in sex role research which, as mentioned previously, has been characterised as a single bipolar dimension.

Whetton and Swindell's (1977) factor analysis of the BSRI did not produce similar results to either Bledsoe's (1983) or Gaudreau's (1977) works.

They found that "the BSRI does not appear to suffer from the same weakness as traditional masculine-feminine scales: that is (a) the scale successfully differentiated between

---

9. This supports Edwards and Ashworth's (1977) contention that students' conceptualisations of sex roles are in a constant process of flux. (see earlier)

masculine males and feminine females, and (b) when items were factor analysed, they loaded on two common factors." (Gaudreau, 1977, 302).

A degree of support for the independence of the two masculinity and femininity dimensions was found by Whetton and Swindells (1977). As the two dimensions could only account for 17% of the variance, Whetton and Swindells (1977) reported that the inventory may be factorially more complex than simply containing two dimensions. However, Whetton and Swindells (1977) do hold that factorial independence was demonstrated for the BSRI.

> "...it seems that Bem's notion of separate Masculinity and Femininity dimensions receives some support from a factor analysis of her inventory because two main sex-typed factors emerge." (Whetton and Swindells, 1977, 153).

An interesting psychometric issue is that of the BSRI measuring only socially desirable, positive personality attributes. This criticism has been levelled at other sex role inventories. Following this criticism, Kelly, Caudill, Hathorn and O'Brien, (1977) developed a set of sex typed, socially undesirable characteristics and examined them in relation to the BSRI.

Results revealed that "androgynous males endorsed the fewest and undifferentiated males endorsed the most undesirable feminine and masculine attributes. Undifferentiated males were also more likely to describe themselves in undesirable masculine terms and undesirable feminine terms than their feminine typed and masculine typed counterparts." (Kelly, Caudill, Hathorn and O'Brien, 1977, 1185)

It is their opinion that androgynous males, who endorse positive feminine and masculine personality attributes may simultaneously reject the socially undesirable sex role stereotype.

In short, the findings of factor analytic investigation of the BSRI indicate that two large factors and a number of smaller factors may be extracted. These independent factors have been identified as

> " 'Power' or 'Dominance' or 'Masculinity' and the "Assertiveness factor' in the case of the one factor, and 'Empathy' or 'Tender Concern for others', 'Expressive orientation', 'Interpersonal sensitivity' or 'Femininity' in the case of the other factor." (Miznah and Choo, 1986, 32)

Other, smaller factors have been identified

> "Waters et al (1977) and Collins et al (1979) found a small cluster consisting of mainly such Masculine items as 'independence', 'individualistic', 'makes decisions easily', 'self reliant', and 'self sufficient'. These writers defined this small factor as another Masculine factor in their studies. Feather (1978) called this factor 'Independence' while Whetton and Swindells (1977) called it 'Autonomy' and Mills (1981) called it a 'Maturity factor'. Another small factor consisted or items reflecting the sex of the subject, namely the items masculine and

> subject, namely the items masculine and feminine. Feather (1978) noted that this factor had no status as a personality variable." (Miznah and Choo, 1986, 32)

Although two large factors are reported in factor analytic studies of the BSRI, the presence of a group of smaller factors has led researchers to suggest that the BSRI's factor structure may be more complex than proposed by Bem (1974).

The intercorrelations between the masculine and feminine items of the BSRI in factor analytic studies are high and negative indicating that the individuals endorse the two items with clearly opposite strengths ie. high masculinity and low femininity, and vice versa. Miznah and Choo (1986) report r = 0.39 while Bem (1981b) reports r ranging between 0.03 and 0.11.

3.5.1. CONCLUSIONS

The BSRI has been factor analysed into two clearly independent factors that have been called 'Masculine', 'Power', 'Dominance', or 'Assertiveness' and 'Femininity', 'Empathy', 'Tender Concern for others', 'Expressive orientation' or 'Interpersonal Sensitivity' repectively. (Whetton & Swindells, 1977; Bledsoe, 1983; Gaudreau, 1977). A set of smaller factors have also been extracted (Miznah and Choo, 1986). The scale is able to differentiate between masculine males and feminine females.

This subsection the BSRI in terms of its development and construction, and its factor structure. Following this, alternate sex role inventories will be examined to enable comparison with the BSRI.

4. OTHER SEX ROLE INVENTORIES

In the following section, a brief summary of six other sex role inventories is made. Following this there will be a short comparison of certain of these with the BSRI. The inventories are:

the Personal Attributes Questionnaire (PAQ)
(Spence, Helmreich and Stapp, 1974, 1975);
the PRF ANDRO scale
(Berzins, Welling and Wetter, 1978);
the ACL scales
(Gough and Heilbrun, 1965);
the MMPI scale 5
(Hathaway, 1956);
the Traditional-Liberal Social Stereotypes Scale
(Fiebert, 1983) and
the Bias in Attitudes Scale
(Phifer and Blake, 1983).

4.1. THE PERSONAL ATTRIBUTES SCALE (PAQ)

Unlike the BSRI which examines social desirability of sex roles for each sex, the PAQ (Spence, Helmreich and Stapp, 1975) contains scales of personality characteristics viewed as socially desirable for both sexes but referring more to one sex rather than the other.

According to Spence et al (1975) the androgyne endorses qualities of both masculinity and femininity. This definition is similar to Bem's notion.

The PAQ was based on a sex role stereotype questionnaire originally developed by Rosenkrantz, Vogel, Bee, Broverman and Broverman, 1968). "...Spence et al (1975) had some subjects rate each of the 122 items of the Sex Role Stereotype Questionnaire (SRSQ; Rosenkrantz et al 1968) in terms of how characteristic (typical) they were of males and females. Other subjects rated the ideal male and female." (Antill & Cunningham, 1982, 164).

> "The PAQ was formed from the 54 items which showed significant differences between the ratings of typical males and females. The 23 items in which both the ideal male and female were rated on the masculine side of the bipolar-scale midpoint were termed male-valued. The 18 items in which both the ideal male and female were rated on the feminine side of the scale midpoint were called female-valued. Finally, the 13 items in which the ideal male was rated towards the masculine pole and the ideal female towards the feminine pole were labelled sex-specific." (Antill and Cunningham, 1982, 164).

The PAQ contains items representing "characteristics that are not only commonly believed to differentiate the sexes, but on which men and women tend to report themselves as differing." (Spence and Helmreich, 1978, 32). Items used in the scale were judged by students to be representative of ideal for men and women, but more typical of males (for the Masculinity scale) or more typical of females (for the Femininity scale).

A third scale was included in the inventory which, in the opinion of the researchers, provided useful information for empirical analyses of the protocols. It consists of a series of attributes considered suitable for either of the sexes and is called the Masculinity-Femininity scale.

The Masculinity scale appears to contain instrumental or agentic personality attributes whereas the Femininity scale contains expressive and communal personality attributes.

The original instructions to subjects completing the inventory were to fill it out for themselves and then from the perspective of a typical male and female college student. Later use concentrated only on self rating.

The median split technique is used in scoring the PAQ, with scores on the masculinity and femininity scales exceeding the combined sex median, considered indicative of androgyny. Unlike Bem, Spence and Helmreich (1978) regard the term androgyny as a convenient operational definition of someone endorsing an above combined-sex median on the masculinity and femininity scales as opposed to a construct in itself.

4.2. THE PERSONALITY RESEARCH FORM ANDRO SCALE

The PRF ANDRO Scale, based on 63 of the 400 items from Jackson's Personality Research Form (PRF) (1967) and the BSRI and is designed to measure masculinity, femininity, and androgyny. It is composed of a 29 item masculinity scale and a 27 item femininity scale. (Antill and Cunningham, 1982)

Similar to the PAQ, the PRF ANDRO scale is a 'second-generation' sex role measure. It was based on a previous sex role inventory, in this case the BSRI. Items chosen for

inclusion in the inventory were socially desirable (as with the BSRI) but sex-typed in tone as for inclusion into either the masculinity or femininity scale.

Logical keying was employed by the raters who were asked to determine whether the new items for inclusion into the scale were consistent with the "rationally derived abstract definitions of the main content themes of Bem's Masculinity and Femininity scales" (Berzins, Welling and Wetter 1978, 128).

The Masculinity scale of the PRF was regarded as "a dominant-instrumental dimension comprised of themes of social-intellectual ascendancy, autonomy and orientation towards risk" and the femininity scale as "a nurturant-expressive dimension, containing themes of nurturance, affiliative-expressive concerns, and self-subordination." (Berzins et al, 1978, 128)

Unlike the BSRI and PAQ which rely on adjectives (and a few phrases) to represent the personality attributes, the PRF ANDRO uses sentences describing behaviours which the respondent marks true or false. This is very different to other sex role measures. The scoring procedure is categorised using a median split technique, as with the BSRI. The main difference between the two inventories is that the BSRI Undifferentiated category in the PRF ANDRO is called Indeterminate.

In their investigation of the PRF ANDRO, Berzins, Welling and Wetter (1978) found that "masculinity and femininity subscales of the PRF ANDRO scale are independent, reliable, minimally related to socially desirable responding, substantially related to their respective counterparts in the BSRI, convergent with major personality dimensions,

and capable of meaningfully differentiating samples varying in age, socioeconomic status, and psychopathology." (136)

4.3. THE ADJECTIVE CHECKLIST SCALES

The two scales keyed from the Adjective Checklist (ACL) (Gough and Heilbrun, 1965), the Masculinity and Femininity scales, were developed by rescoring an older Masculinity-Femininity scale developed by Heilbrun (1978).

The M-F scale was based on a bipolar dimension assumption of sex roles. The original M-F scale contained items that discriminated between men and women and "between college males identified with masculine fathers and college females identified with feminine mothers." (Heilbrun, 1978, 184). In the revised version, Heilbrun simply relabelled the old M-F items which represented the polar extremes as either feminine or masculine

He then developed new norms for the scales. The final inventory contained, unlike other sex role inventories, both socially desirable and undesirable items.

Respondents rate the items as descriptive of their own behaviour. The new scales are a simple modification of the old M-F scale. (Heilbrun, 1981). The problems inherent in the bipolar, unidimensional notion of masculinity and femininity may be seen to exist in this scale. For a discussion of these issues, see chapter one.

4.4. THE MMPI SCALE 5

The MMPI scale 5 is referred to as Masculine-Feminine (ie. Mf) scale. It was originally aimed to be able to identify "homosexual invert males" (Hathaway, 1956 in Wong, 1984, 279), when homosexuality was regarded as a mental disease.

"Review of the literature reveals considerable discrepancy between commonly accepted beliefs about scale 5 and what can be documented empirically." (Wong, 1984, 279)

The MMPI scale 5 appears to be one of Psychology's unfortunate pieces of research, in that it is based on skimpy evidence and has been poorly investigated. As such, the body of sex role research in the past 15 years has made little use of this scale.

Due to problems with the original sample on which the scale was based, "the final criterion sample on which the scale was based was 13 pure type homosexual invert males." (Wong, 1984, 279) "the Mf-Fm project was never finished"..."the original 60 item Mf scale was nevertheless inserted as Scale Five into the total MMPI." (Wong, 1984, 279). Two major problems exist with the scale: - firstly, it is unsuccessful in identifying homosexual males (since scale items are transparent) whilst secondly, it fails to discriminate between males and females. [10]

10."high Scale Five males...described as psychologically complex, inner-directed, intellectualy able...valuing cognitive pursuits...apt to take stands on moral issues, self aware, self concerned...socially perceptive and responsible to interpersonal nuances...". (Wong 1984, 281). "Low scoring males...judged...practical, balanced, cheerful, self-confident, and independent,...lacking originality...lacking self insight...having a narrow range of interests."(Wong, 1984, 281)
"...statements made about men and women derived from the scale five scores are based on little objectively obtained evidence." (Wong, 1984, 282) "Rigid, synthetic, dichotomies such as those suggested in interpretations of the meaning of MMPI Scale Five serve to perpetuate status quo myths that apparently were never more than 13 moving shadows on a laboratory cave wall." (Wong 1984, 283)

4.5. THE TRADITIONAL-LIBERAL CONTENT SCALE

The phrase "Traditional-Liberal Scale" has been used in the development of three separate inventories. The first was developed using a factor analytically derived set of 29 item scales "designed for the use with men and measuring the extent to which they adhere to a traditional versus liberated male role in their attitudes and self-reported behaviours." (Fiebert, 1983, 83).

Two other scales with a similar name were also developed, in this instance "derived from ACL to measure traits associated with a traditional-liberal dimension for women. A traditional women is one whose major investment is as part of a marital dyad, and a liberated women is one who is also in work and outside of home roles. Both the Traditional-Liberal Social Stereotype Scale (TLSS) and the Traditional-Liberal Self- Concept Scale (TLSS) were devised. The TLSS correlates significantly with other sex role measures, but the TLSC does not." (Cartwright, Hoyd, Nelson and Bass, 1983, 581). The scales have not been well received in the area of sex role research, and minimal empirical investigation of these scales has been conducted using them.

Research indicates that the internal consistency of the TLSS is .80 with a test-retest reliability of .82. A correlation of 0.81 was found with the Heilbrun Masculinity scale and 0,7 with the BSRI (Cartwright, Hoyd, Nelson and Bass, 1983)

4.6. THE BIAS IN ATTITUDES SCALE

"The BIAS consists of 35 declarative statements concerning facts about men and women's personalities."(Phifer and Blake, 1983, 888). Respondents use a five point Likert scale to rate how the items are descriptive of themselves. High

scores imply increasing liberal sex-role attitudes. Factor analysis of the responses of participants conducted by Phifer and Blake (1983) indicate that "the BIAS was measuring two orthogonal factors of attitudes towards sex roles" (890) The authors contend that "BIAS appears to measure more complete and complex perceptions than do other instruments which purport to assess attitudes about women or feminism" (1983, 890)

"The BIAS has consistently high estimates of internal-consistency reliability with all reported coefficient alpha estimates of .90 or higher"(Phifer and Blake, 1983, 890) This is consistent with Jean and Reynolds' estimate (1980) of 0.91.

5. COMPARISONS BETWEEN SEX ROLE INVENTORIES

5.1. COMPARISONS BETWEEN THE BSRI, PAQ, PRF, CL

Kelly, Furman and Young (1978) compared the BSRI, PAQ [4], PRF ANDRO [5] and ACL [6]. They found that a significant proportion of the subjects used in the study were classified into different sex role categories. The inventories used influenced the classification of each subject.

> "This suggests limited comparability of sex role research finding based on different inventories, such that when sex role styles are dichotomised into broad typological quadrants, as is the current practice in sex role research,

4. Personal Attributes Questionnaire (Spence, Helmreich and Stapp, 1974, 1975)
5. Personality Research Form ANDRO (Berzins, Welling and Wetter, 1978)
6. Adjective Checklist (Gough and Heilbrun, 1965)

> substantial predictive utility is lost." (Kelly, Furman and Young 1978, 1574)

They further note that the BSRI, PAQ, PRF ANDRO and ACL have been used almost interchangeably in recent sex role research, due mainly to three reasons:

1. theoretical assumptions on which the inventories are based are highly similar,
2. all are capable of designating androgyny, and
3. all use similar scoring procedures (eg median split.)

> "However, Kelly and Worell (1977) have noted that while purporting to measure the same sex role constructs, each of these scales samples somewhat different content domains, were developed using different psychometric and item selection procedures, and were subjected to different criteria of validity and reliability." (Kelly, Furman and Young, 1978, 1574)

It is clear that these scales cannot be used interchangeably.

A summary of the correlations found between inventories is listed below. (Kelly and Worell, 1977).

Pearson's Product Moment Correlation Coefficients: of sexes combined, interscale masculinity score correlations were:

SCALE	R
BSRI/PAQ=	.85;
BSRI/ANDRO=	.70
BSRI/ACL=	.75;
PAQ/ANDRO=	.66;
PAQ/ACL=	.70;
ANDRO/ACL=	.61;

Table 5.5.1. Pearson's Product Moment Correlations

Interscale femininity score correlations were

SCALE	R
BSRI/PAQ=	.73;
BSRI/ANDRO=	.62;
BSRI/ACL=	.68;
PAQ/ANDRO=	.59;
PAQ/ACL=	.51;
ANDR/ACL=	.57.

Table 5.5.2. Pearsons product Moment Correlations

The mean correlation between the raw Masculinity scales of the four inventories was found to be 0,71 and that between the Femininity scales 0,62. (Kelly, Furman and Young, 1978)

Only 30% of the subjects classified in the Kelly et al (1978) study were categorised with the same sex role on all four inventories. Forty six percent of all the subjects were classified into discrepant sex roles classifications.

The above tables (5.5.1. & 5.5.2.) indicate that the BSRI and the PAQ have significant interscale masculinity and femininity scores. This indicates that the BSRI and the PAQ are the two closest instruments amongst the four. The poor categorisation differences between the scales is however, sufficient to indicate that researchers cannot use the sex role inventories interchangeably. (Kelly, Furman and Young 1978)

Similarly, Herron, Goodman and Herron, (1983), found a significant correlation between the BSRI, PRF ANDRO and PAQ on masculinity (0,72-0,75) and femininity (0,52-0,63) subscales. This indicates that the three scales appear to be measuring a similar construct. Unlike Kelly, Furman and Young, (1978) the inventory with the highest scale correlation with the BSRI was the PRF ANDRO, followed by the PAQ. The highest three-way agreement is between the BSRI, PRF ANDRO and PAQ, although this only represents 38% agreement. Three-way agreement for the males was 44%. The BSRI and ACL had no significant differences in sex role categorisation. (Herron, Goodman and Herron, 1983). This finding does not support earlier research.

5.2. COMPARISON OF THE PRF AND BSRI

Gayton, Havu, Ozman and Tavormina (1977) compared the BSRI and PRF ANDRO and found that only 42% of subjects examined received the same sex role category in both scales. This compares badly with other comparative research between sex role measures.

5.3. COMPARISON OF THE DSI, BSRI, AND PAQ

The De Cecco-Shively Social Sex Role Inventory (DSI) [7], the BSRI and the PAQ were compared by Smith (1983) using the median split scoring technique. "The BSRI and PAQ were

---

7."The DSI identifies conformity to and departure from feminine and masculine stereotypes." (Smith, 1983, 99) "Social sex role stereotypes are cultural expectations of appropriate physical and psychological characteristics for each sex. These characteristics are perceived by individuals as feminine or masculine. The following aspects of social sex roles have been identified in current research (Shively, Rudolph and De Cecco 1978): physical appearance, personality, mannerisms, speech, interests and habits.".(Smith 1983, 99-100)

found to be in somewhat closer agreement with each other than with the DSI. The DSI provides for measurement of a greater spectrum of types of variables, and also allows more flexibility regarding personal and situational factors associated with assessment of social sex-role." (Smith, 1983, 99). This agreement between the BSRI and PAQ is supportive of the Kelly, Furman and Young's (1978) research.

These comparisons are represented in the tables below.

TABLE OF OVERALL COMPARISON OF THREE MEASURES

	AGREEMENT	DISAGREEMENT
BSRI vs. DSI	33%	67%
PAQ vs. DSI	34%	66%
BSRI vs. PAQ	59%	41%

(Smith, 1983, Table 2, 103)

COMPARISON OF THREE MEASURES OF FEMININITY AND MASCULINITY

	FEMININITY	
	AGREEMENT	DISAGREEMENT
BSRI vs. DSI	62%	38%
PAQ vs. DSI	62%	38%
BSRI vs. PAQ	72%	28%

MASCULINITY		
	AGREEMENT	DISAGREEMENT
BSRI vs. DSI	61%	39%
PAQ vs. DSI	57%	43%
BSRI vs. PAQ	81%	19%

Table 5.5.2. Comparison of three measures of Femininity and Masculinity

(Smith, 1983,104)

6. SUMMARY

This chapter has examined the psychometric issues involved in sex role measurement instruments, and the Bem Sex Role Inventory in particular. Bem's (1974) approach to the constructs of masculinity and femininity deviated from the traditional view of the constructs being the bipolar ends of a single continuum. To measure this Bem developed the Bem Sex Role Inventory.

The BSRI was described with particular emphasis on the construction of the inventory and the item selection procedure. Replication studies of Bem's inventory construction approach were examined in order to demonstrate that Bem's original design has been adequately replicated.

The intricacies of the scoring procedures were introduced, with a focus on the t ratio and median split procedures. Comparative studies of these scoring procedures were introduced in order to show how the various scoring procedures affect the results of a study using sex role inventories. Factor analytic examinations of the BSRI were detailed to demonstrate the independent dimensionality of masculinity and femininity. A brief summary of other sex

role measures - the PAQ, PRF ANDRO scale, the ACL scales, the MMPI scale 5, the Traditional-Liberal Social Stereotypes scale and the BIAS were provided. Comparisons of sex role measures were introduced.

Following this, the next chapter will outline the methodology of the present study.

CHAPTER 2: PSYCHOMETRICS OF SEX ROLE MEASURES

CHAPTER 3 : METHODOLOGY

CHAPTER 3 : METHODOLOGY

CHAPTER 4 : METHODOLOGY

1. INTRODUCTION

This chapter details the rationale and methodology to be employed in this study. The stages in the research process are outlined. Pilot research conducted for this study is reported, and the procedure for the selection of two stratified random samples is detailed. As this phase is crucial to the outcome of the research, this section of the chapter will be discussed in detail. The procedure employed for the translation of the BSRI into Afrikaans is outlined. The administration and collection of the data is discussed. The analyses of the data - chi squares, t tests, an factor analyses are detailed.

2. PROBLEM FORMULATION

The BSRI was developed in the USA in 1974. It is thus 14 years old, and lacks any major revisions. Furthermore, the norms for the test are American. The BSRI is, however, a widely used sex role or androgyny instrument in South Africa, notably in assessments in industry and in research at an academic level. The test has been used uncritically and with clearly inappropriate norms. Questions which must be posed are what is the test's behaviour in South Africa, and how, if at all, does it differ from its original American standardisation norms ? As a significant proportion of South Africa is Afrikaans-speaking, it is appropriate to examine the behaviour of the BSRI when it is translated into the Afrikaans language.

If the BSRI is translated into Afrikaans, a comparison of the test amongst Afrikaans-speaking students as opposed to English-speaking students is therefore facilitated. It should be noted that no literature exists in the area of sex roles within each language group in this country. However, a large field of work on authoritarianism, conformity and

prejudice is to be found. Brief mention of a few of the core findings will now be offered.

2.1. BRIEF SUMMARY OF PARTICULAR RESEARCH BETWEEN ENGLISH AND AFRIKAANS STUDENTS.

It is argued that there are distinct differences in attitudes between the English and Afrikaans speaking students in South African universities. If so, researchers may argue that sex role attitudes may also differ between the two groups.

The consistent findings of researchers that Afrikaans speaking students manifest a high level of authoritarianism, conformity and prejudice forms the basis for the notion that Afrikaans and English speaking students should differ in terms of their sex roles. A culture within which there is a strong pressure towards conformity may produce a less diverse set of attitudes towards social issues such as sex roles.

Lever's (1975) investigation of the Bogardus Social Distance Scale in South Africa showed there was a difference between English and Afrikaans ethnic preferences. Niewoudt and Nel (1975) found that Afrikaans and English male students have higher mean scores on the Authoritarian scale than did their female peers.

Afrikaans students have higher levels of prejudice (as measured by the prejudice scale) than other language groups. (Niewoudt and Nel, 1975). First year Afrikaner students had significantly higher mean scores on the Conformity and Prejudice scales than did their English counterparts.

Niewoudt and Nel (1975) go as far as to say that "The pure Afrikaans group (involved in the study) was significantly more authoritarian, conforming and prejudiced than all other groups. " (99). This finding supports other research findings that Afrikaans students are more prejudiced. (Pettigrew, 1960; Van Den Berghe, 1962; Mynhardt, 1980).

Mynhardt (1980) argues that the level of authoritarianism in the Afrikaners is exceptionally high. In comparison to the original 26 groups investigated by Adorno et al (1950) it was only the male prisoners at San Quentin prison who scored higher level of authoritarianism than the Afrikaans sample Mynhardt investigated.

Another approach to this cultural aspect of Afrikaans authoritarianism may be found in Loubser"s (1968) work on Afrikaner Calvinism.

Afrikaner Calvinism (Loubser, 1968) may be argued to have produced sociocultural norms of acceptable sex role attitudes. Loubser's work demonstrates that Afrikaner Calvinism emphasised 'white womanhood' - ie. a traditional view of the woman in society. It may be argued that these early norms could have resulted in the notion that sex-typed sex roles are socially acceptable (or encouraged). Whether this attitude still persists amongst young Afrikaners today in tertiary education is a moot point.

Pettigrew (1968) argues that "the acceptance by an individual of prejudicial attitudes is not a function of an underlying personality dimension, but merely the result of socially adaptive mechanisms. He argues that the individual will adopt certain values or attitudes, not because they represent a need on his part to condemn outgroups, or to project hostility etc., but because social living demands a

modicum of acquiescence to culturally approved attitudes, such as prejudice." (in Lambley, 1973, 341).

These attitudes may not even be congruent with their inner needs. (Orpen, 1970). Orpen argues that these prejudicial attitudes in Afrikaner students may have been internalised to the extent that they are components of the students basic personality. This predisposes the Afrikaner students to be receptive to prejudicial concepts within their own culture. (Orpen, 1970).

To summarise, Afrikaans speaking students manifest high levels of authoritarianism, conformity and prejudice. Prejudiced attitudes are regarded as having been internalised by these students to the extent that they become receptive to prejudicial attitudes. One such prejudicial attitude is that of sex roles. The Afrikaans student may be predisposed towards viewing men and women as needing to hold sex typed sex roles. This issue will be investigated in the course of this study.

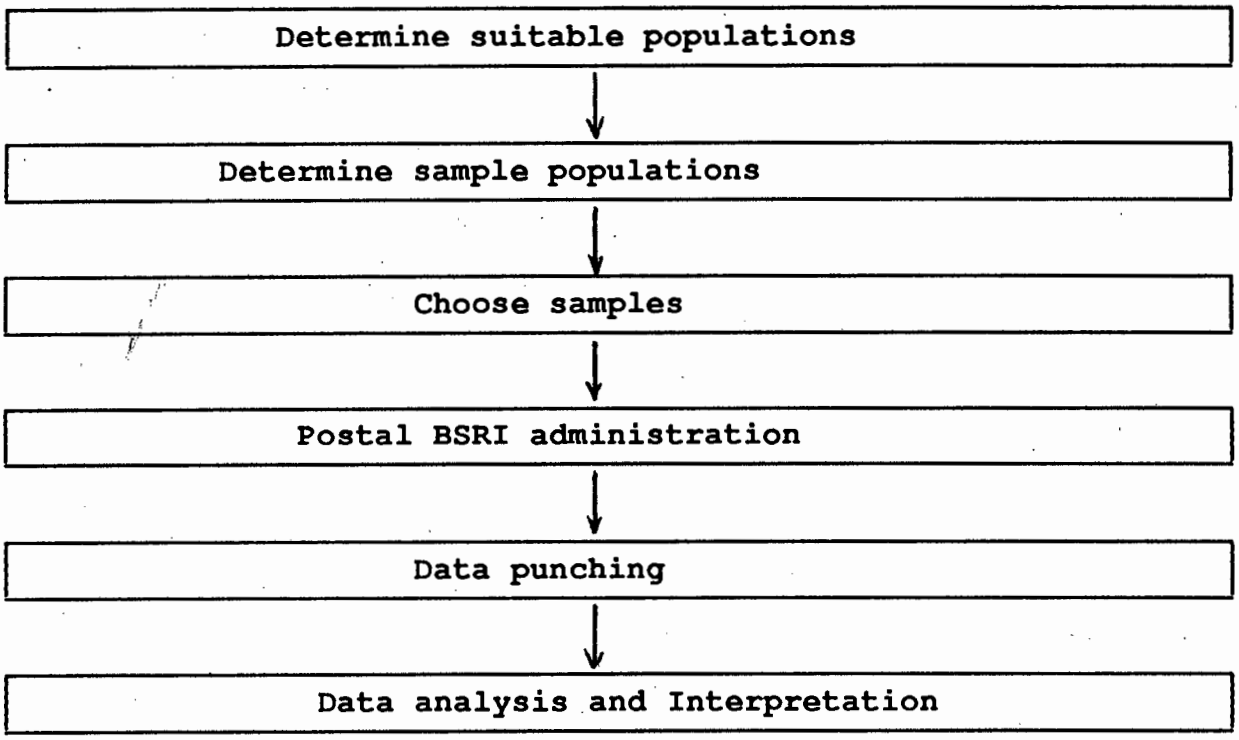
3. UNIT OF ANALYSIS

The unit of analysis used in this research is the Bem Sex Role Inventory (see Appendix 1), both the English and Afrikaans translations (see Appendix 2), administered to the UCT and US samples respectively. [1].

4. SUMMARY FLOWCHART

The following is a summary flowchart of the research process utilised in this study. Each aspect of the flowchart will be explained in detail in later subsections.

1. From here on, the University of Cape Town and the University of Stellenbosch will be abbreviated to UCT and US respectively. At no stage will the acronym "US" represent any other entity other than the University of Stellenbosch.



5. PILOT RESEARCH

A pilot study was conducted using the standard 60-item form of the BSRI to assess whether the BSRI could be used amongst university level students. A nonrandom sample of university students (N=882) was selected from Psychology One classes at the universities of Cape Town, Rhodes, Witwatersrand, Pietermaritzburg and Durban. The reasons for the nonrandom form of the sample was that the pilot was conducted by handing out protocols to students as they entered a lecture hall. There was no control over who received the questionnaire (some students may have not been at the lecture). The BSRI was administered during practical and lecture sessions to these students.

Completed protocols were collected, coded, and analysed. Statistical packages used were SCSS and SPSS resident on the UCT Sperry-Univac 100 mainframe. The protocols were analysed

to determine the scores for the Masculine and Feminine medians on the BSRI. These were 4.6 and 4.711 for the Masculine and the Feminine respectively.

Factor analysis of the BSRI scores revealed that two clearly distinct factors had been isolated. These were labelled the masculine-item and the feminine-item factors respectively, as each was composed of masculine or feminine items from the BSRI. This implies that the BSRI was behaving as intended by Bem (1974) in that it was factor analysing into two large, independent factors.

The Afrikaans BSRI was piloted on a small sample of bilinguals (able to speak both English and Afrikaans fluently) to determine whether it performed as a sex role measure and to determine if the translation was in fact comprehensible. Interviews with six bilinguals who had completed the BSRI in Afrikaans and then in English showed that the translated version was indeed a correct and sound one. This finding was purely on a subjective level of analysis. No thorough analysis of the interviews was conducted.

6. RESEARCH DESIGN

The actual design of the study is composed of a number of stages as mentioned in section four above. These are:

1. the determination of suitable populations
2. the selection of sample population
3. selection of two final stratified random samples and
4. administration of the BSRI protocols

6.1. DETERMINING SUITABLE POPULATIONS

The populations from which the samples were drawn were the Psychology One classes of the University of Cape Town and Stellenbosch. Only full-time bona fide students from these two classes were considered as members of the population under investigation. These populations were chosen for a number of reasons: first, the bulk of sex role research, particularly using the BSRI, focusses on college student responses; second, the populations are familiar with completing questionnaires from other researchers and therefore were considered to be more agreeable to participating in the research process, and finally, the populations were 'captive' in that complete and accurate lists of names and addresses of the members of the populations could readily be obtained.

6.1.1 DESCRIPTION OF THE UNIVERSITY OF CAPE TOWN POPULATION:

The UCT population consisted of 532 registered students, of which 365 were female and 167 male. The mean age of the students was 20.25.

6.1.2 DESCRIPTION OF THE UNIVERSITY OF STELLENBOSCH POPULATION:

The US population consists of 493 registered students, 340 females and 153 males. The mean age of the students was 19.26.

6.2. DETERMINING SAMPLE POPULATIONS

6.2.1. SAMPLING THEORY

In this subsection, a review of the rationale and procedures employed in drawing the sample is discussed.

The primary aim of drawing a sample from a population is to obtain a sample representative of that population. ie. the samples drawn from the university Psychology classes should be representative of the population of Psychology I students in these two universities. There is, however, no known procedure that absolutely guarantees such representativeness. (Eckharddt & Ermann, 1977). In drawing a sample, a number of statistical guidelines have to be observed. These are:

1. the characteristics of the population,
2. precision of results required;
3. level of confidence desired.

Two other factors have to be taken into consideration. These are:

4. the extent of analysis to be performed;
5. the administrative costs of data collection.

The above factors will now be considered in turn.

1. Characteristics of the population

The sample size is determined to a degree by the characteristics of the population from which it is drawn. Should the population be homogeneous, a single unit may be selected. For a heterogeneous population, a larger sample has to be chosen. As the student population was composed of

a highly heterogenous group of individuals, a large sample was drawn.

2. Precision of the results required

Should we wish to estimate the true values of the population from the sample, a large sample is indicated (assuming heterogeneous population). If a large error in sample statistics estimates is allowed, a smaller sample will suffice. Therefore, a large sample was selected from each student body to ensure a high degree of precision of results.

3. Level of confidence desired

If we wish to obtain data with a high level of confidence, a larger sample is necessary, whereas the reverse is true for a low confidence sample. Hence a large sample size was chosen for the present study.

4. Extent of analysis to be performed

If one wishes to analyse micro-aspects (or subgroups) of the original sample, the design of the sampling procedure has to take this into account. It is often possible that the particular subgrouping is underrepresented in the sample. In order to combat this problem, a larger sample size is required. Thus, the present study utilised a large sample size to facilitate an examination of subgroups of the original sample.

5. Administrative costs of the data collection

The resources available to conduct a research project may curtail the sample size, purely on economic grounds. (Eckhardt & Ermann, 1977). This was particularly so in the

present study in that financial restraints and time constraints limited the scope of the research. The bulk of the research costs involved the production and mailing of the questionnaires. This factor affected the eventual sample size.

The following section covers simple and stratified random sampling.

6.2.1.1. Simple Random Sampling

In order to assure that a sample is representative of a population, a researcher must demonstrate that any combination of the members of the population could be represented in the final sample.

> "The term 'simple random sample' of n items means a sample selected from a population in such a way that each possible combination of n units has the same chance or probability of being selected.." (Leabo, 1976, 30).

Simple random sampling entails two conditions :

1. That each unit or member of the population has an equal chance of being drawn for the sample. In order to achieve this, the population has to be precisely defined, so as to clearly include all members and exclude all nonmembers.

2. A complete list of all members of the population is required. This is used to draw the sample. The following procedure is used:

A simple random sample is known as a probability sample:

> "The probability that an item or an individual will be drawn in a simple random sample of any size turns out to be simply n/N, where n is the number drawn in a sample and N is the number of items or individuals in the population. The simple random sample therefore, is a probability design, and the probability of any item being drawn is known." (Leabo, 1976, 34)

For the actual procedure employed to choose the members of the random sample, please see note 1 at the end of this chapter. It is clear that due to the factors mentioned above, a random sample had to be drawn from the two university populations.

6.2.1.2. Stratified Random Sampling

For this study, a stratified random sample design was employed.

A population may consist of distinct clusters of members. There is a probability that a simple random sample may draw the majority of members from one of these clusters, which in so doing, biases the sample. Also, a researcher may wish to conduct particular analyses using subgroups within the population. For both the above examples, a stratified random sample has to be drawn. "The division of the population into similar groups and the taking of a random sample from each group is called stratified random sampling." (Leabo, 1976, 35)

The main aim of stratification is to decrease research costs and increase sampling efficiency. To these ends, one utilises the information about the heterogeneity of the population before drawing the sample. If a researcher is able to stratify the population into relatively homogeneous groups, a small sample may be drawn from each group or stratum. [2].

A number of conditions have to be met in order to achieve a stratified random sample.

1. As in simple random sampling, a complete list of all members of the population is required.
2. Detailed information of the population is needed in order to stratify it.
3. Each member of the population has to be assigned to only one stratum.

The objective of stratification "is to produce strata which are internally homogeneous (the dependent variable has little variation), while retaining heterogeneity between strata (the dependent variable has a large variation from stratum to stratum)." (Eckhardt & Ermann, 1977, 192)

As the student bodies consisted of distinct categories (eg. white, black, male, female) it was necessary to select subjects from each strata where indicated or exclude certain strata from the eventual sample.

The following section examines issues implicated in obtaining an adequate sample size.

---

2. Recall that the more homogenous a population is, the more representative a sample of that population will be, hence sample size may be decreased.

6.2.2. UCT SAMPLE DESIGN

A complete list of all Psychology One students was obtained from the Department of Psychology of UCT. The list was developed from the Departmental Registration cards (see appendix 7) used by the Department for their own records. These registration cards include data on the surname and names of the student, their date of birth, term and local addresses, student number, faculty and other courses attended this year of registration. (see appendix 7 for copy of such card).

A stratified random sample was drawn from the UCT Psychology One class. The sample had to be stratified for two reasons:

1. The male to female gender ratio in the class is not one to one. This would affect the results of the BSRI in that a disproportionate number of females would be drawn in a simple random sample. The actual ratio of females to males in the class was 1:0.46. (n females=365; n males= 167).

2. The relationship of ethnicity to sex roles is an unknown in the Western Cape (and the country as a whole). In order to exclude this extraneous variable , all 'black' [3] students were excluded from the sample. This would have introduced variables of significance which were beyond the scope of the present study.

In effect, three strata were separated in the class, two of which were then used in drawing a random sample. The known population of the UCT sample from which the stratified

3. By 'black' is meant all 'Indian', 'Coloured' and (Bantu) 'African' student as defined by the Population Registration Act. 1956

random sample was drawn therefore comprised both male and female 'white' Psychology One students at UCT.

It is acknowledged that the relationship of ethnicity to sex roles is a difficult area in which to operate. It is clear that 'ethnicity' could bias the results (although it is unknown in exactly which manner this would occur.). It is also clear that a small percentage of 'black' students may still have been included in the final sample. As the Department of Psychology at UCT (nor the Department of Psychology at US) does not hold to racist categorisations of its students (ie. as is evident by the absence of racial categorisation on the registration cards) there was no positive way in which this stratum of students could be identified. A simple procedure to achieve this was employed.

Firstly, all students living in geographical areas classified by the state as for the residential use of 'blacks' only were included in this stratum (eg. Nyanga, Mitchell's Plain, Athlone etc.). Secondly, all first names and surnames apparently of Xhosa origin (eg. Ntombizodumo, Vuledzani, Moatlhodi) were included in this stratum.

The final breakdown of the strata in the UCT class is represented in the table below.

GENDER	'WHITE'	'BLACK'	TOTAL
female	331	34	365
male	124	43	167

Table 6.2.2.1. Breakdown of UCT sample

Thus the final sample population strata considered for the sample were:

Females 331
Males 124

Table 6.2.2.2. Final UCT sample strata

Each member of each stratum was then assigned a number (from 001 to 331 in the case of females, and 001 to 124 in the case of males). Using random number tables, a sample of 41 males and 109 females was drawn. (For procedure as to how this sample was drawn using random numbers tables, see note 1 at the end of this chapter).

A letter of motivation, a BSRI protocol and a stamped addressed envelope was then mailed to all members of the final sample. (Refer to appendix 3 for letter of motivation, and appendix 1 BSRI protocol). Thereafter the Psychology One classes were addressed by the researcher in an attempt to boost response rates. (See appendix 5 for text of address used).

6.2.3. US SAMPLE DESIGN

A similar procedure was followed for the US Psychology One class. The only exceptions to this sample were that all communications, including motivational talks to the class and mailed questionnaires, were in the Afrikaans language. (See appendix 2 for Afrikaans BSRI, appendix 4 for motivational letter, and appendix 6 for copy of registration card).

The female to male gender ratio was not one to one, hence a stratified random sample was drawn. The actual ratio of females to males in the class was 1:0.45. (n females = 340, n males = 153).

The final US class population was composed of three strata represented in the table below.

GENDER	'WHITE'	'BLACK'	TOTAL
FEMALE	327	13	340
MALE	136	17	153

Table 6.2.3.1. Breakdown of US class

After exclusion of the 'black' strata the final two strata from which the sample was drawn were as follows.

FEMALES	327
MALES	136

Table 6.2.3.2. Final sample strata

A similar procedure as used in the UCT sample was then carried out on the US sample, in that a stratified random sample was drawn from the US class. For the procedure used to draw a stratified random sample, see note 1 at the end of this chapter).

7. TRANSLATION OF THE BSRI

In this section, the rationale and procedure followed in translating the BSRI are detailed.

7.1. THEORY

Researchers often make use of 'existing instruments', ie. instruments that have been developed and standardised within a particular culture. The use of such tests have particular advantages, For example, published data are at hand to compare to the data collected in the study in question. Time

and critical comments on the use of such instruments lends some credence to their continued use.

There are however, some disadvantages to the continued use of such instruments, especially in the cross-cultural context. One may for example fail to assess the construct under question as it is viewed differently by other cultures.

> "An important point to keep in mind is that items on existing scales were tried out with people from one culture, most often in a highly industrialised nation such as the United States. Items which 'did not work' as shown by low item-to-total correlations, would be discarded. Consequently, items were purified so that they measured a phenomenon as seen by people in the culture-of-standardisation." (Brislin, 1986, 139)

A recommended procedure is that of back-translation (and a similar approach known as decentering. (Werner & Campbell, 1970; Brislin, 1970; Brislin, Lonner & Thorndike, 1973).

The basis of decentering is the moving back and forth between the two languages, so as to ensure that no one language is the 'centre' of attention. The final back-translated version is compared with the original one.

> "If a concept 'survives' the decentering procedure, it is assumed to be etic since there must be readily available words and phrases in the two languages which the translators could use. If a concept is not in the final back-

translated version, the reason could be that it is emic." (Brislin, 1986, 160) [4]

7.2. PROCEDURE

The services of a professional translating consultancy were employed in the present study. Care was taken to use a consultant who was not only fluent in both languages (English and Afrikaans) but who also understood the basis for the translation and the great degree of exactitude required. A final year Psychology student who runs a small translation consultancy was consulted.

Copies of the BSRI protocol items were handed via the consultant to four bilinguals with the purpose of translating them into Afrikaans. The bilinguals did not receive any of the BSRI instructions or any indication that the BSRI was a sex role inventory.

The four Afrikaans translations were then given to another four bilinguals, under the same conditions, to translate back into English. A comparison of the back-translated BSRI protocols was then made with the original English version.

The bilinguals were then allowed to discuss the implications of their translation with the consultant (blind to the purpose of the translation) in order to achieve the optimal translation of the BSRI items into Afrikaans.

---

4. EMIC-ETIC: "The etic refers to a phenomenon, or aspects of a phenomenon, which have a common meaning across the cultures under investigation. This can be called the core meaning. Emic aspects are different in the two cultures, but each emic is related to the shared etic core." (Brislin, 1986, 140)

The consultant then translated all instructions of the BSRI.

A pilot Afrikaans BSRI composed of the full list of items and the instructions was then administered to five bilinguals to complete as usual. They were then administered the English format protocol.

A comparison of the responses of the completed Afrikaans and English BSRI protocols demonstrated that the translation was accurate. This was achieved by comparing each item's score (ie. item 10 English BSRI versus Afrikaans BSRI). A similar score needed to be obtained for both protocols in order for the item to be regarded as accurately translated.

The Afrikaans protocol was then accepted as a correct translation of the original English version.

7.3. FINAL AFRIKAANS BSRI

For a copy of the final Afrikaans version of the BSRI, please see appendix 2.

8. PROCEDURE EMPLOYED FOR DATA ANALYSIS

8.1. CODING

Returned protocols were entered into a micro PC file using a word processing language. This file was uploaded into the mainframe computer.

8.2. COMPUTER HARDWARE

The Micro PC used was a Bondwell 34. The UCT mainframe used was the Sperry Univac 1100.

8.3. COMPUTER SOFTWARE

The word processing language used was MS.Word version 4. Statistical Conversation for the Social Sciences (SCSS) and BMDP Statistical Software were used to analyse the data.

9. TEST RELIABILITY

In this section, mention is made of test reliability issues of importance for the present study.

> "Test reliability may be defined as the degree to which errors of measurement influence test scores. Errors of measurement are those influences on test scores that are not related to the attribute being measured." (Womer, 1968, 30).

There are three main approaches to computing a test reliability. These are:

- Test-Retest Reliability
- Single-Administration Reliability:
  - Split-Half method
  - Kuder-Richardson method
- Comparable Form Reliability

We already have test-retest reliability scores for the BSRI from the original Bem (1974) study. (Refer to Chapter 2 section 3.2).

The reliability test-form under investigation in the present study is the single-administration reliability, in particular the Kuder-Richardson method. This is a vastly improved approach to the usual split-half method as a more

comprehensive comparison is made between items of the test under investigation than the simple split-half approach.

10. FREQUENCIES OF SEX ROLES

Chi squared analyses of association will be used to compare the distribution of sex roles in each sample. The use (and abuse) of this statistic has been the source of much debate in Psychology, particularly since the appearance of the Lewis and Burke (1949) article on the subject. It would appear that a definitive answer as to the correct and incorrect use of this statistic is dependent on the school of thought one follows in the debate. Chi squares have been utilised in the present study in such a way as to minimise the 'abuse' of the test. One approach to minimise this abuse is by is setting alpha at a very stringent level in order to reduce the chance of Type I errors. For a detailed discussion of the debate from 1949 to 1983, see Delucchi (1983).

The method used to compare the distribution of sex roles in each sample will follow the procedure outlined below.

10.1. COMPARISONS OF SEX ROLES BETWEEN THE BEM, THE UCT AND US SAMPLES

Each male and female subsample of each sample will be grouped together, and compared to the distribution of sex roles between the Bem (1974) normative sample and the two local samples. A significant chi square will indicate that further analysis between the samples is indicated. Should a nonsignificant result be found, the Bem sample will be dropped from analysis, and the local samples will be focussed on. Below is a table representing the initial chi square analysis.

SEX ROLE BEM UCT US
M
F
A
U

Table 10.1.1. Design of Comparisons of sex roles between the Bem, the UCT and US samples

10.2. COMPARISONS OF SEX ROLES BETWEEN THE UCT AND US SAMPLES

Group each male and female subsample of each sample together, and compare the distribution of sex roles between the two. A significant chi square will indicate analysis within the samples is indicated. A non-significant result will indicate that this approach is without gain, and the subsamples (male and female) will be focussed on. Below is a table representing the chi square analysis.

SEX ROLE UCT US
M
F
A
U

Table 10.2.1. Design of Comparison of sex roles between the UCT and US samples

10.3 COMPARISON OF SEX ROLES BETWEEN THE BEM, UCT AND THE

US SAMPLES BY GENDER

The distribution of sex roles between the Bem, UCT and US samples on the basis of gender will be compared. A significant result will indicate further analysis within each sample should be taken. A non-significant result indicates that the distribution of sex roles between the samples (Bem, UCT, US) are non-significant. Therefore, one may confidently say that the normative sample, and the two local samples have similar distributions of sex roles. Below are the tables representing the two chi square analyses.

SEX ROLE	BEM	UCT	US
M			
F			
A			
U			

(for females only)

Table 10.3.1. Design of Comparison of sex roles between the Bem, UCT and US samples for females.

SEX ROLE	BEM	UCT	US
M			
F			
A			
U			

(for males only)

Table 10.3.2. Design of Comparison of sex roles between the Bem, UCT and US samples for males

10.4. COMPARISON OF BEM, UCT AND US SAMPLES FOR EACH SEX ROLE

Further analyses for particular sex roles will be conducted should significant results be obtained from either of the above chi square analysis. Below is a table representing the analyses.

SEX ROLE	BEM	UCT	US

(for the four sex roles in turn).

Table 10.4.1. Design of Comparison of Bem, UCT and US samples for each sex role

Significant results will imply that chi squares analysis between two samples of the three samples should be conducted (ie. Bem versus UCT). On the basis of these chi squares, one will be able to rank the three samples for a particular gender and sex role.

11. MASCULINITY AND FEMININITY MEANS

The crucial factor involved when using the median split technique of scoring the BSRI is the analysis of the median value obtained by the sample for Masculinity and Femininity. It is important to determine whether any difference exists between the two local samples themselves, and between the normative sample of Bem and the local samples.

11.1. COMPARISONS BETWEEN THE UCT AND US SAMPLES

From the discussion concerning the differences between Afrikaans and English speaking students in section 2.1. above, it can be expected that some difference will exist between the two samples in terms of the mean levels of masculinity and femininity. The present study will test whether the masculinity mean differs between the UCT and US sample, and whether the femininity mean differs between the UCT and US sample.

11.2. COMPARISONS WITHIN THE UCT AND US SAMPLES

It is also useful to test the masculinity and femininity means within each sample. Previous research (Bem, 1974) indicates that these values are not equal. The two samples will be tested to determine whether their masculinity and femininity means are similar within each sample.

11.3. COMPARISONS BETWEEN THE UCT, US AND BEM SAMPLES

The two local samples have to be tested against the normative sample of Bem (1974). This is necessary to determine whether any significant differences exist between

the local and international sample. This had implications for the scoring of the BSRI in South Africa.

The masculinity mean for the two local samples will be tested against the masculinity mean of Bem's (1974) sample. Similarly, the femininity mean of the local samples will be tested against the femininity mean of Bem's (1974) sample.

12. SPLIT-HALF RELIABILITY

As the BSRI has demonstrated adequate reliability in previous studies (Bem, 1974), it is important to determine the split-half reliability of the two local samples. Two methods to test this reliability will be used. First, the Kuder-Richardson Split-half reliability coefficient for the two samples will be determined, for the BSRI inventory overall, then for the subscales (masculinity and femininity). Second, the Cronbach's Alpha for the two samples overall will be calculated.

It is assumed that the UCT and US split half reliabilities will differ.

The split-half reliability within the subscales should be very high, as Bem (1974) claims the subscales to be comprised of homogeneous items.

13. FACTOR ANALYSES

It is important to determine whether the local BSRI protocols can be factor analysed to demonstrate the inventory's independent dimensions of masculinity and femininity. Further, a factor analysis of the local protocols should result in a similar factor structure to other factor analytic studies of the BSRI in America. This would imply that the BSRI behaves in a similar manner in

South Africa and the United States of America. We expect that the factor structure should be similar, and that a similar proportion of the total variance within the BSRI should be accounted for by four or five factors at most. Antill and Cunningham's (1982) report that 43,8% of the total variance of their BSRI protocols was accounted for by the first five significant factors.

The following hypotheses will be tested. Firstly, whether the English BSRI protocols of UCT factor analyse into similar structures as Bem's (1974) normative sample. Secondly, that the Afrikaans speaking US sample protocols will factor analyse into a similar structure as the Bem (1974) sample. Finally, that the factor structures of the UCT and US samples will be similar.

14. SUMMARY

The BSRI is an inventory developed in America, in 1974, for American college students. It is therefore 14 years old, and not designed for use by South African students. We need to determine the test's performance in South Africa. An Afrikaans version of the test was produced using the back-translation and decentering procedures, (Brislin, 1986) for use by Afrikaans students.

Pilot research with the BSRI for South African English-speaking students revealed that the test was applicable to a South African situation. Means of the masculinity and femininity subscales differed from those of the normative sample developed by Bem (1974). This implied that an investigation into these scores for South African students was required.

Two university Psychology One populations were chosen for the selection of stratified random samples. After exclusion

of 'black' students, two stratified random samples of students were drawn from the universities of Cape Town and Stellenbosch. (n=150 each). A BSRI protocol in the appropriate language (English for UCT and Afrikaans for US) was mailed with a letter of motivation. Motivation messages were given in the respective university's's Psychology One lectures. Completed protocols were returned to the researcher using stamped, pre-addressed envelopes. The completed protocols were coded and entered into the Sperry-Univac 1100 mainframe for analysis using SCSS and BMDP statistical software.

NOTES

1."each member of the population is assigned a number. If the numbers then are drawn randomly, each member of the population has an equal chance of being included. To facilitate the selection of numbers, statisticians have generated a list of numbers randomly arranged. Beginning anywhere in the list, record those numbers which correspond to numbers preassigned members of the population. Whenever there is a match between numbers, the member with that number is included. Numbers which do not match are ignored. If a number matches a previously selected one, two options are available. (1) Numbers which are duplicated can be ignored. This is called simple random sampling without replacement. (2) Numbers which are duplicated can also mean that a member of the population should be counted more than once. ie. information obtained about that member is treated as if there were more than one member with those characteristics in the sample. This is called simple random sampling with replacement. This list of numbers which are referred to is commonly called a table of random numbers. " (Eckhardt & Ermann, 1977, 158+159)

CHAPTER 4 : RESULTS

CHAPTER 4 : RESULTS

CHAPTER 4 : RESULTS

1. INTRODUCTION

In this chapter, the results of the research are reported. Five major sections are involved. These are 1) a report of the response rate to the mailed questionnaire from the two samples. 2) The sex role structure of the UCT and US samples are examined at length. Comparisons are made both within and between the two local samples, which are in turn compared to Bems' (1974) normative sample. Chi-squared analyses are reported. 3) The masculinity and femininity means are compared both within and between samples, including the Bem sample, using t tests. 4) The internal reliability of the English (original) BSRI and the Afrikaans BSRI are examined. The internal reliability of the masculinity and femininity subscales is discussed. Here Kuder-Richardson Split-Half reliability coefficients and Cronbach's Alpha are used. 5) Factor analytic examinations using Maximum Likelihood Factor Analytic methods with an orthogonal (Quartimax) rotation of the two samples is conducted. Results are compared to similar studies.

2. RESPONSE RATES

In any mailed survey, the response rate to the questionnaire is important. A very poor response rate influences the validity of the data. This is due to the fact that a poor response rate will include particular forms of respondents. Individuals who have very strong positive or negative reactions towards a questionnaire may be more eager to return a completed protocol. This biases the responses to a questionnaire. A high response rate will include these respondents, but will also include a large majority of individuals whose responses 'balance' out the bias that could result from eager respondents. In this subsection, the response rates for the UCT and US sample is reported.

2.1. UCT SAMPLE RESPONSE RATE

Taking response rate to be

$$R = \frac{\text{Questionnaires returned}}{\text{Questionnaires mailed}}$$

the response rate for UCT is 61.16%. Of the 455 questionnaires mailed, 274 were returned, 16 of which were not considered as they had incomplete data. Of the 258 usable questionnaires, every third questionnaire was selected until a sample of size 150 was achieved. To have simply taken the first 150 envelopes received as the sample would have been methodologically unsound, as the respondents returning a questionnaire almost immediately may have included individuals who were 'too eager to please the researcher'. This problem remains at a theoretical level as no analysis of the form of response over the rate at which the questionnaires were received, was conducted. The response rate of 61,16% exceeded the usual 25-40% response rate reported in mailed-form surveys.

A number of factors could have contributed to this success. First, the Psychology One class is above average academically than the normal UCT student owing to the Department's exceptionally high entrance requirements (A and B aggregates only). Secondly, the motivation message given to the students during a lecture may have increased the response rate. Finally, the emphasis on a South African based survey may have motivated students to return the questionnaire. These assumptions remain at a theoretical level as no post-hoc interviewing of the respondents was conducted.

2.2 US SAMPLE RESPONSE RATE

Using the above formula to determine response rates, a response rate of 59.52% from the University of Stellenbosch

was recorded. Of the 294 questionnaires sent, 175 were returned, 7 of which were incomplete. As with the UCT questionnaires, every third questionnaire was selected until a sample of 150 was reached. No envelopes were returned by the post office as a result of incorrect addresses or the addressee having moved. This may be attributable to the fact that the Department of Psychology at Stellenbosch maintains an up-to-date record of their class list throughout the year. Although the response rate for the US sample is similar to that of the UCT sample, it is worth mention that whereas the UCT sample size had been achieved by 14 days (from date of sending out to receipt of completed protocol), the US sample took 21 days to achieve. This poor turnaround time is attributable to first: the students had returned from a vacation; and second: they had entered their test cycle.

A further reason for the slow return may have been the difference in the post system between Stellenbosch University and the respondents. All mail to the university, including that from students in Stellenbosch is taken to Cape Town for sorting, then returned to Stellenbosch for delivery. This delay may have resulted in a slower return rate.

3. FREQUENCIES OF SEX ROLES

Using the median split method (refer to Chapter 2, section 3.4.3.), each individual in the UCT and US samples was categorised into one of four sex roles : masculine, feminine, androgynous, or undifferentiated. These frequencies are represented in the table below.

SEX ROLE	UCT	US
MASCULINE	37	39
FEMININE	41	35
ANDROGYNOUS	29	33
UNDIFFERENTIATED	30	28
TOTAL	137	135

TABLE 3.1.1.OF FREQUENCIES OF EACH SEX ROLE FOR THE UCT AND US SAMPLES.

As can be noted, some data are lost (sample totals are 137 and 135 for UCT and US respectively, and not both 150 as was the original designed sample size). The reason for this is to be found in the statistical programme used to classify individuals into one of four sex roles. A FORTRAN "IF-THEN" decision statement was written to facilitate this classification. As the decision operator GT (greater than) or LT (less than) was used (ie. if a masculinity raw score was GT (greater than) the masculinity median etc some data were lost. These were cases in which the individual's masculinity and/or femininity raw score was EQUAL to the median of the sample. In such cases, these individuals were not classified into a sex role. A total of 13 and 15 cases were lost from the UCT and US samples respectively.

We may represent the frequencies of sex roles per sample in percentages as below.

SEX ROLE	UCT%	US%
MASCULINE	27.1	28.9
FEMININE	29.9	25.9
ANDROGYNOUS	21.1	24.5
UNDIFFERENTIATED	21.9	20.7
TOTAL	100	100

TABLE 3.1.2. SHOWING PERCENTAGE OF SEX ROLE IN EACH SAMPLE, UCT AND US.

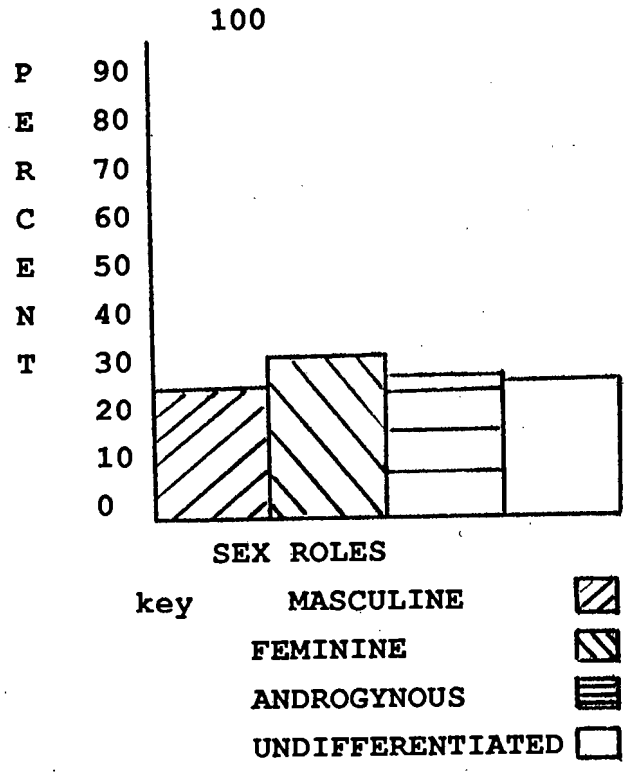
We may represent these frequencies or percentages within each sample by gender. It is useful at this stage to also include Bem's (1974) normative sample in a comparison of the two samples in this study.

	BEM (1974)		UCT		US	
	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE
M	56	134	19	18	13	21
F	199	41	37	4	41	1
A	93	103	20	9	20	1
U	128	62	24	6	38	8
T	476	340	100	37	112	31

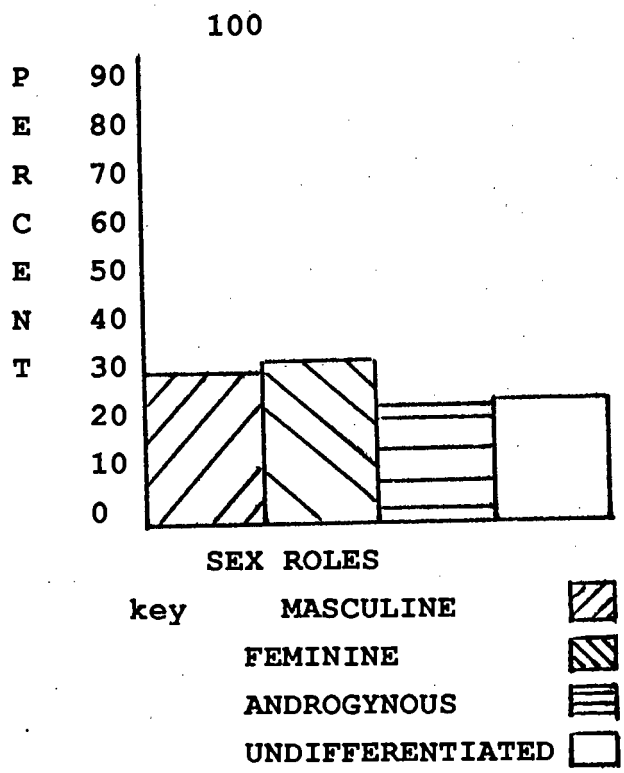
where M = masculine
F = feminine
A = androgynous
U = undifferentiated
T = total

TABLE 3.1.3. SHOWING FREQUENCIES OF SEX ROLES FOR THE BEM, UCT AND US SAMPLES.

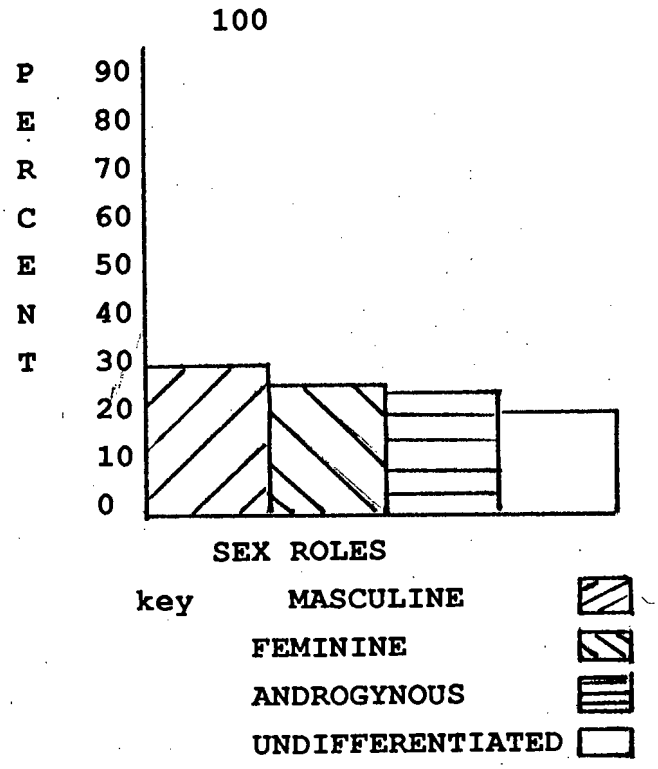
A histogram of the percentages of sex role within each sample is below. This gives an indication of the relative percentages of each sex role in each sample.



HISTOGRAM SHOWING RELATIVE PERCENTAGES OF MASCULINE, FEMININE, ANDROGYNOUS AND UNDIFFERENTIATED SEX ROLES IN THE BEM SAMPLE.



HISTOGRAM SHOWING RELATIVE PERCENTAGES OF MASCULINE, FEMININE, ANDROGYNOUS AND UNDIFFERENTIATED SEX ROLES IN THE UCT SAMPLE.



HISTOGRAM SHOWING RELATIVE PERCENTAGES OF MASCULINE, FEMININE, ANDROGYNOUS AND UNDIFFERENTIATED SEX ROLES IN THE US SAMPLE.

3.1. COMPARISONS BETWEEN SAMPLES

As mentioned earlier in the Chapter 3, section 10.1, an initial step in the determination of the distribution of the sex roles in the samples is to group male and female frequencies together for all three samples and execute a chi square analysis.

A chi square value of 9,86 was calculated for this analysis, which was not significant at the p,0.05 level. This implies that the distribution of sex roles is not independent of the samples under investigation. No further analysis using the three samples with males and females collapsed into one frequency was conducted. The two local samples were then analysed.

3.2. COMPARISON BETWEEN THE UCT AND US SAMPLES

Again, the males and females were collapsed into one frequency. A nonsignificant (at $p>0.05$) chi square value of 4,65 was found for this analysis. The UCT and US samples are therefore not independent with respect to the distribution of sex roles. This indicates that this line of analysis is without gain, and the subsamples of each sample will be focussed on (ie. male and female frequencies are used).

3.3. COMPARISON OF SEX ROLES BETWEEN THE BEM, THE UCT AND THE US SAMPLES BY GENDER

First, the female frequencies of sex roles between the three samples were examined. A chi squared value of 6,788 was calculated which was nonsignificant (at $p>0.05$). This indicates that the Bem, UCT and US female subsamples are not independent with respect to the distribution if sex roles.

The male frequencies of sex roles was compared between the Bem, UCT and US samples. A significant chi square value 16,454 was calculated (at $p<0.05$). This indicates that the distribution of sex roles is is not similar between the three samples for males. This warrants further analysis as this indicates that the BSRI is not behaving in a similar manner as it did with the Bem (1974) normative sample.

3.4. COMPARISON OF THE BEM, UCT AND US SAMPLE FOR THE MALE GENDER BY EACH SEX ROLE

The significant result above leads us to examine the distribution of each sex role within the three samples. On the basis of these analyses, the three samples will be able to be ranked according to the level of frequencies of sex roles.

Chi squares were calculated between the three samples for each sex role. As to be expected, significant results were determined for each sex role. Below is a table of these results.

SEX ROLE	CHI SQUARE
MASCULINE	151.62 *
FEMININE	64.88 *
ANDROGYNOUS	170.68 *
UNDIFFERENTIATED	79.7 *

TABLE 3.4.1. SHOWING THE CHI SQUARE VALUES OBTAINED BETWEEN THE BEM, UCT AND US SAMPLES ACCORDING TO SEX ROLE FOR MALES

3.5. COMPARISON WITHIN SEX ROLE BETWEEN SAMPLES FOR MALES

The three samples have to be compared by sex role in order to obtain some form of rank order of the frequency of sex roles in each. This indicates to us the degree to which each sample is sex typed, thereby indicating the level of sex role stereotypic attitudes that are held by each sample. We are also able to compare the two local samples with that of the normative sample in this manner.

For each sex role, the following comparisons between the three samples will be made using chi square.

SAMPLES	CHI SQUARE
BEM vs. UCT	88.5 *
BEM vs. US	82.4 *
UCT vs. US	0.23

* = SIGNIFICANT AT P<0.005

TABLE 3.5.1. SHOWING COMPARISON BETWEEN THE THREE SAMPLES FOR THE MASCULINE SEX ROLE FOR MALES

SAMPLES	CHI SQUARE
BEM vs. UCT	30.4 *
BEM vs. US	38.09 *
UCT vs. US	1.8

* = SIGNIFICANT AT P<0.005

TABLE 3.5.2 SHOWING COMPARISONS BETWEEN THE THREE SAMPLES FOR THE FEMININE SEX ROLE FOR MALES

SAMPLES	CHI SQUARE
BEM vs. UCT	78.8 *
BEM vs. US	100. *
UCT vs. US	6.4

* = SIGNIFICANT AT P<0.005

TABLE 3.5.3 SHOWING THE COMPARISON BETWEEN THE THREE SAMPLES FOR THE ANDROGYNOUS SEX ROLE FOR MALES

SAMPLES	CHI SQUARE
BEM vs. UCT	46.1 *
BEM vs. US	41.66
UCT vs. US	0.28

* = SIGNIFICANT AT P<0.005

TABLE 3.5.4SHOWING THE COMPARISON BETWEEN THE THREE SAMPLES FOR THE UNDIFFERENTIATED SEX ROLE FOR MALES

These tables show significant differences between the three samples in terms of each sex role.

4. MASCULINITY AND FEMININITY SCORES

Now that the frequencies of sex roles have been compared both within and between samples, it is necessary to determine whether the masculinity and femininity scores differ significantly. Below is a table of the means of the masculinity and femininity values of each sample.

M/F	UCT	US
MASCULINITY	4.69	4.6
FEMININITY	4.86	4.86

TABLE 4.1. SHOWING MASCULINITY AND FEMININITY MEANS FOR THE UCT AND US SAMPLE

T tests were performed to determine if there were any significant differences between masculinity or femininity means for the samples.

4.1. T TESTS BETWEEN SAMPLES

4.1.1.MASCULINITY

No significant differences were found between the masculinity means of the two samples. (t=1.234, p>0.01).

4.1.2.FEMININITY

No significant differences were found between the femininity means of the two samples. (t=0.96, p>0.01).

4.2. T TESTS WITHIN SAMPLES

4.2.1. UCT

No significant differences were found between the masculinity and femininity means of the UCT sample. (t=-0.26, p>0.01).

4.2.2. US

No significant differences were found between the masculinity and femininity means of the US sample.

4.3. T TESTS BETWEEN BEM'S (1974) NORMS AND THE UCT AND US SAMPLES

It is necessary to compare the means produced for masculinity and femininity for the two local samples with those of Bem's (1974) original norms. Below is a summary table of the ttests performed.

	UCT		US	
	MASC	FEM	MASC	FEM
BEM MASC	4.29*		5.95*	
FEM	0.6		0.81	

* = SIGNIFICANT AT P<0.02

TABLE 4.3.1. SHOWING T STATISTICS BETWEEN THE UCT, US AND BEM SAMPLES

From the above table it is clear that:

4.3.1. There is a significant difference between the masculinity means of the Bem and UCT, and the Bem and US samples.

4.3.2. There is a nonsignificant difference between the femininity means of the Bem and UCT, and Bem and US samples.

Further analysis indicates that the difference between the masculinity means of the three samples is significant at $p<0.001$. Bem's means are therefore significantly higher than the UCT and US samples.

5. SPLIT HALF RELIABILITY

5.1. KUDER-RICHARDSON SPLIT-HALF RELIABILITY COEFFICIENT

Using the Kuder-Richardson split-half reliability method (Womer, 1968), a coefficient of $r=0.76$ and $r=0.83$ was calculated for the UCT and US samples. These figures are a measure of the homogeneity of the test items, and indicate that the BSRI items (overall) measure the same attribute (sex role). However, as the BSRI is composed of three

subscales (we are interested in the masculinity and femininity subscales), it is important to consider these separately. Split-half reliabilities were calculated for these subscales and are represented in the table below.

SAMPLE	MASC.	FEM.	OVERALL
UCT	0.53	0.97	0.76
US	0.93	0.98	0.83

TABLE 5.1.1. SHOWING KUDER-RICHARDSON SPLIT-HALF RELIABILITIES FOR THE UCT AND US SAMPLES

The above results indicate that, overall, the BSRI demonstrates good split-half reliability. The high UCT and US femininity coefficients (0.97 & 0.98 respectively), indicates that the feminine scale items are homogeneous. The UCT masculinity coefficient of 0.53 is worth mention. This poor reliability coefficient may possibly be accounted for by the large variance of the masculinity subscale items exhibit (variance = 1.9). As the variance of the subscale items is entered into the formula to calculate the Kuder-Richardson split-half, it may thus have resulted in such a low score.

5.2. CRONBACH'S ALPHA RELIABILITY COEFFICIENT

As a support for the Kuder-Richardson split-half reliability, it was decided to perform a Cronbach's Alpha on the total BSRI items for each sample to see if the large variation in the Kuder-Richardson may simply have been inherent to the formula, thus reflecting a mathematical peculiarity as opposed to a statistical peculiarity. Cronbach's Alpha is a more stringent method of determining the internal consistency or reliability of a test (Womer, 1968). The coefficient was calculated using the Analysis of

Variance table produced by the BMDP series. The F statistic was used to calculate the Cronbach's Alpha using the following formula:

$$r = (F-1)/F$$ where r = Cronbach's Alpha, F = F statistic

The Cronbach's Alpha of of the UCT and US samples was 0.9854 and 0.9887 respectively. These results indicate that the test has exceptionally high internal consistency.

6. FACTOR ANALYSES OF THE UCT AND US SAMPLES

6.1. INTRODUCTION

Factor analyses of the responses of the two samples on the BSRI were conducted. The BMDP 4M series Maximum Likelihood Method of factor extraction with an orthogonal (Quartimax) rotation was used for both sample.[1]. The results of the factor analyses will be discussed in two sections, each section devoted to each sample.

6.2. THE UCT SAMPLE

6.2.1. FACTORS EXTRACTED

The subject's responses to all 60 BSRI items were analysed using the procedure above. Squared multiple correlations were used as initial communality estimates. The number of factors extracted, and the cumulative percentage of the variance accounted for was as follows. (Only the first five factors are listed).

1. Three methods of factor analysis were initially considered: Principal Axis (PA); Principal Components (PC) and Maximum Likelihood (ML). Preliminary investigations revealed ML to offer the optimum factor interpretation. Further, this method bases its estimation of factor loadings on statistical estimates. This method is not used in PA or PC.

FACTOR	VARIANCE	CUMULATIVE VARIANCE
1	8.7811	8.7811
2	5.886	14.667
3	3.421	18.088
4	3.055	21.143
5	2.303	23.446

TABLE 6.2.1.1.SHOWING VARIANCE AND CUMULATIVE VARIANCE ACCOUNTED FOR BY THE FIRST FIVE FACTORS FOR THE UCT SAMPLE

Nineteen factors with eigenvalues greater than unity accounted for 71.93% of the variance.

6.2.2. SCREE TEST

A Scree test was performed to determine the number of factors to be concentrated on. A total of 60 factors was extracted. (This is usual in the Maximum Likelihood Factor Analysis procedure). From the Scree plot (see below), the first five factors were chosen for analysis.

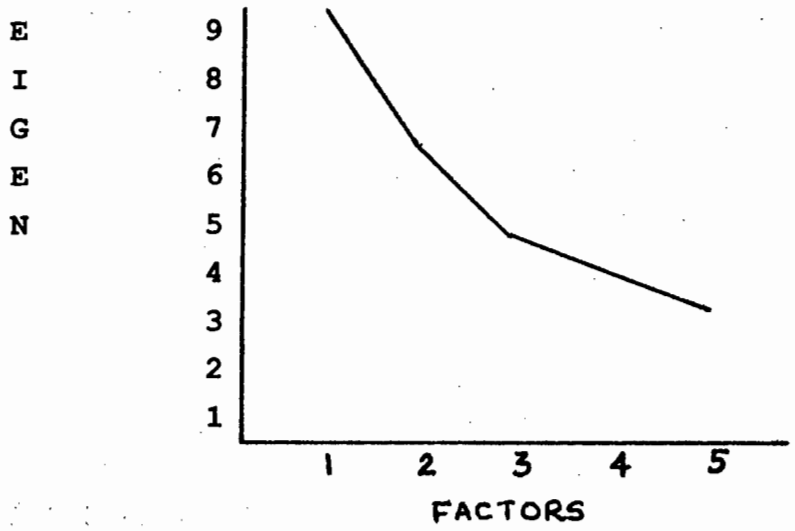


Table 6.2.2.1.
PLOT OF THE EIGENVALUES AGAINST FACTOR NUMBER.

These five factors together can account for 39.08% of the total variance. This is similar to Antill and Cunningham's

(1982) report of the first five factors accounting for 43.8% of the total variance in their study.

6.2.3. UCT SAMPLE FACTOR STRUCTURE

Below are tables of the factor loadings of the factors for the UCT sample.

table 6.2.3.1.

BSRI Feminine Adjective loadings on Factor I: Femininity	
CHEERFUL	.61
AFFECTIONATE	.64
LOYAL	.65
SYMPATHETIC	.60
SENSITIVE	.59
UNDERSTANDING	.68
COMPASSIONATE	.59
EAGER TO SOOTHE HURT FEELINGS	.57
WARM	.64
TENDER	.55
LOVES CHILDREN	.45
GENTLE	.62

table 6.2.3.2.

BSRI non-Feminine Adjective loadings on Factor I:Femininity	
HELPFUL	.52
HAPPY	.46
RELIABLE	.57
TRUTHFUL	.61
SINCERE	.68
CONCEITED	.47
LIKEABLE	.57
FRIENDLY	.53

table 6.2.3.3

BSRI non-Masculine Adjective loadings on Factor II:Masculinity	
DEFENDS OWN BELIEFS	.40
INDEPENDENT	.49
ASSERTIVE	.64
STRONG PERSONALITY	.55
LEADERSHIP QUALITIES	.60
WILLING TO TAKE A STAND	.54
AGGRESSIVE	.42
ACTS AS LEADER	.59
INDIVIDUALISTIC	.47

table 6.2.3.4.

BSRI non-Masculine Adjective loadings on Factor II:Masculinity	
SHY	.49
FEMININE	.59

table 6.2.3.5.

BSRI Adjective loadings on Factor III: Negativity	
TENDER	.48
CHILDLIKE	.55
UNPREDICTABLE	.42
JEALOUS	.41
CONCEITED	.49
SOLEMN	.49
INEFFICIENT	.42

table 6.2.3.6.

BSRI Adjective loadings on Factor IV	
SELF-SUFFICIENT	.45
FEMININE	.41
SOFTSPOKEN	.47
TACTFUL	.43

table 6.2.3.7.

BSRI Adjective loadings on Factor V	
CHEERFUL	.46
COMPASSIONATE	.41

6.2.3.1 COMMENTS ON THE ABOVE FACTOR LOADINGS

Detailed comments and discussion of the factor loadings reported above are to be found in the Discussion chapter.

6.2.4. COMPARISON OF THE FACTOR ANALYSIS WITH SIMILAR STUDIES.

Similar reports of factor analyses of the BSRI have been reported by Bledsoe (1983), Gaudreau (1977) and Antill and Cunningham (1982). (see chapter 2, section 3.5.).

6.2.4.1. FEMININE FACTORS

TABLE 6.2.4.1. SHOWING FEMININE ITEMS LOADING FOR A FEMININITY FACTOR BETWEEN STUDIES.

FACTOR I : FEMININITY		
PRESENT STUDY	GAUDREAU (1977)	A & C (1982
CHEERFUL	YIELDING	CHEERFUL
AFFECTIONATE	CHEERFUL	AFFECTIONATE
LOYAL	AFFECTIONATE	LOYAL
SYMPATHETIC	LOYAL	SYMPATHETIC
SENSITIVE	SYMPATHETIC	SENSITIVE
UNDERSTANDING	SENSITIVE	UNDERSTAND.
COMPASSIONATE	UNDERSTANDING	COMPASSION.
EAGER TO SOOTHE.	COMPASSIONATE	EAGER TO S.
WARM	EAGER TO SOOTHE	WARM
TENDER	WARM	TENDER
LOVES CHILDREN	TENDER	LOVES CHL.
GENTLE	GENTLE	GENTLE
BLEDSOE (1988)	COMMON TO ALL FOUR STUDIES	
AFFECTIONATE	AFFECTIONATE	
FEMININE	SYMPATHETIC	
SYMPATHETIC	SENSITIVE	
SENSITIVE	UNDERSTANDING	
UNDERSTANDING	COMPASSIONATE	
COMPASSIONATE	EAGER TO SOOTHE	
EAGER TO SOOTHE	WARM	
SOFT SPOKEN	TENDER	
MASCULINE	LOVES CHILDREN	
WARM	GENTLE	
TENDER		
LOVES CHILDREN		
GENTLE		

Above is a table comparing the present study with the three studies mentioned.

The BSRI feminine items common to a factor called "Femininity" by all four reports are Affectionate, sympathetic, sensitive, understanding, compassionate, eager to soothe hurt feelings, warm, tender, loves children and gentle.

6.2.4.2. MASCULINITY FACTOR

A similar comparative table may be constructed using the masculinity items that comprise a factor called "Masculinity" in the four reports.

TABLE 6.2.4.2.SHOWING ITEMS LOADING FOR A MASCULINITY FACTOR BETWEEN STUDIES.

PRESENT STUDY	GAUDREAU (1977)	A&C (1982)
DEFENDS OWN BELIEFS	DEFENDS OWN BELIEFS	DEFENDS BEL.
INDEPENDENT	INDEPENDENT	INDEPENDENT
ASSERTIVE	ASSERTIVE	ASSERTIVE
STRONG PERSONALITY	STRONG PERSONALITY	STRONG PERS.
LEADERSHIP QUALITIES	FORCEFUL	FORCEFUL
WILLING TO TAKE RISK	ANALYTICAL	ANALYTICAL
DOMINANT	LEADERSHIP ABILITIES	LEADERSHIP.
WILLING TO TAKE STAND	WILING TO TAKE RISK	WILLING RISK
AGGRESSIVE	DECISIONS EASILY	DECISIONS.
ACTS AS LEADER	SELF SUFFICIENT	DOMINANT
INDIVIDUALISTIC	DOMINANT	WILLING STD.
	WILLING TO TAKE STAND	AGGRESSIVE
	ACTS AS LEADER	ACTS LEADER
	INDIVIDUALISTIC	INDIVID'IC
	COMPETITIVE	COMPETIT.
	AMBITIOUS	AMBITIOUS

BLEDSOE (1982)	COMMON TO ALL FOUR STUDIES
SELF RELIANT	DEFENDS BELIEFS
STRONG PERSONALITY	INDEPENDENT
LEADERSHIP ABILITIES	STRONG PERSONALITY
DOMINANT	LEADERSHIP ABILITIES
ASSERTIVE	DOMINANT
ACTS AS LEADER	WILLING TO TAKE A STAND
FORCEFUL	AGGRESSIVE
WILLING TO TAKE A STAND	ACTS AS LEADER
INDIVIDUALISTIC	INDIVIDUALISTIC
DEFENDS BELIEFS	
AGGRESSIVE	
DECISIONS EASILY	
SELF SUFFICIENT	
INDEPENDENT	
COMPETITIVE	
ANALYTICAL	

The BSRI Masculinity items common to a factor called "Masculinity" by all four reports are defends own beliefs, independent, assertive, strong personality, has leadership abilities, dominant, willing to take a stand, aggressive, acts as leader, individualistic.

6.3. THE US SAMPLE

6.3.1. FACTORS EXTRACTED

The subjects responses to all 60 BSRI items were analysed using the BMDP 4M Maximum Likelihood Factor Analytic series with an orthogonal (Quartimax) rotation. Squared multiple correlations were used as initial communality estimates. The number of factors extracted, and the cumulative percentage of the variance accounted for was as follows. (only the first four factors are listed).

FACTOR	VARIANCE	CUMULATIVE VARIANCE
1	7.281	7.281
2	4.799	12.08
3	3.596	15.676
4	2.939	18.615

TABLE 6.3.1. SHOWING THE VARIANCE AND CUMULATIVE VARIANCE ACCOUNTED FOR BY EACH FACTOR.

Twenty factors with eigenvalues greater than unity were extracted, accounting for 75.05 % of the variance.

6.3.2. SCREE TEST

A Scree test was performed to determine the number of factors to be considered. A total of 60 factors was extracted. (This is to be expected with the Maximum Likelihood Factor Analytic procedure). From the Scree plot (see below), the first four factors were chosen for analysis.

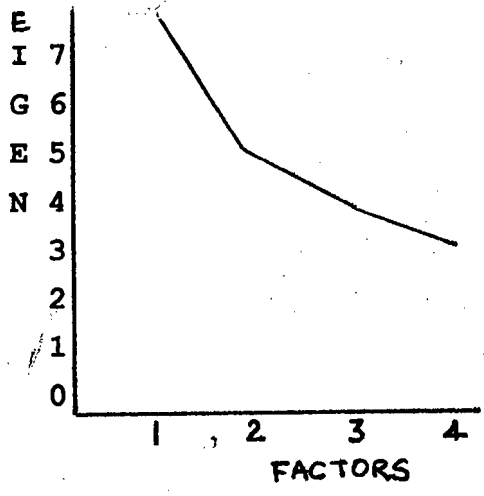


Table 6.3.2. Plot of Eigenvalues against factor number

These four factors together can account for 35.41% of the total variance. This differs from Antill and Cunningham's (1982) report of the first five factors accounting for 43.8% of the total variance in their report.

6.3.3. US SAMPLE FACTOR STRUCTURES

Below are tables of the factor loadings of the factors.

table 6.3.3.1.

BSRI Masculinity Adjective loadings on Factor I : Femininity (independent, emotionally mature nurturer).	
ASSERTIVE	-.42
STRONG PERSONALITY	.49
HAS LEADERSHIP ABILITIES	.48
SELF SUFFICIENT	.47
AGGRESSIVE	-.46

table 6.3.3.2.

BSRI Femininity Adjective loadings on Factor I : Femininity (independent, emotionally mature nurturer).	
YIELDING	.41
CHEERFUL	.63
AFFECTIONATE	.68
SYMPATHETIC	.49
SENSITIVE	.42
UNDERSTANDING	.54
COMPASSIONATE	.57

table 6.3.3.3.

BSRI non-Feminine, non-Masculine Adjective loadings on Factor I : Femininity (independent, emotionally mature nurturer).	
HELPFUL	.59
HAPPY	.56
RELIABLE	.41
SINCERE	.51
LIKEABLE	.44
INEFFICIENT	-.51

table 6.3.3.4

BSRI Masculine Adjective loadings on Factor II: Masculinity	
DEFENDS OWN BELIEFS	.59
STRONG PERSONALITY	.50
FORCEFUL	.46
ANALYTICAL	.44
DOMINANT	.48

table 6.3.3.5.

BSRI Adjective loadings on Factor III: Introvert	
ANALYTICAL	.44
MASCULINE	.42
SOFT-SPOKEN	.55
TENDER	.43
RELIABLE	.47
SECRETIVE	.53
SOLEMN	.55

table 6.3.3.6.

BSRI Adjective loadings on Factor IV : Feminine (warm, truthful)	
MASCULINE	-.49
FEMININE	.58
WARM	.45
TRUTHFUL	.48

6.3.3.1. COMMENTS ON ABOVE TABLES OF FACTOR LOADINGS

Detailed comments and discussion on the above factor loadings is to be found in the Discussion chapter.

6.3.4. COMPARISON OF THE FACTOR ANALYSIS WITH SIMILAR STUDIES.

6.3.4.1. FEMININE FACTORS

Similar reports of factor analytic studies of the BSRI are compared below.

Table 6.3.4.1. Feminine items loading for a femininity factor between studies

PRESENT SAMPLE	UCT SAMPLE	GAUDREAU (1977)
YIELDING	CHEERFUL	YIELDING
CHEERFUL	AFFECTIONATE	CHEERFUL
AFFECTIONATE	LOYAL	AFFECTIONATE
SYMPATHETIC	SYMPATHETIC	LOYAL
SENSITIVE	UNDERSTANDING	SYMPATHETIC
UNDERSTANDING	COMPASSIONATE	SENSITIVE
COMPASSIONATE	EAGER TO SOOTHE	UNDERSTANDING
	WARM	COMPASSIONATE
	TENDER	EAGER TO SOOTHE
	LOVES CHILDREN	WARM
	GENTLE	TENDER
		LOVES CHILDREN

A&C (1982)	BLEDSOE (1983)	COMMON TO ALL
CHEERFUL	AFFECTIONATE	AFFECTIONATE
AFFECTIONATE	FEMININE	SYMPATHETIC
LOYAL	SYMPATHETIC	SENSITIVE
SYMPATHETIC	SENSITIVE	UNDERSTANDING
SENSITIVE	UNDERSTANDING	COMPASSIONATE
UNDERSTANDING	COMPASSIONATE	
COMPASSIONATE	EAGER TO SOOTHE	
EAGER TO SOOTHE	SOFT SPOKEN	
WARM	MASCULINE	
TENDER	WARM	
LOVES CHILDREN	TENDER	
GENTLE	LOVES CHILDREN	
	GENTLE	

The BSRI feminine items common to a factor called Femininity by all reports are Affectionate, sympathetic, sensitive, understanding and compassionate.

6.3.4.2. MASCULINE FACTORS

A similar comparative table may be constructed using the masculine items comprising a Masculinity factor in all five reports.

TABLE 6.3.4.2. SHOWING ITEMS LOADING FOR A MASCULINITY FACTOR BETWEEN STUDIES.

US SAMPLE	UCT SAMPLE	GAUDREAU (1977)
DEFENDS BELIEFS	DEFENDS BELIEFS	DEFENDS BELIEFS
STRONG PERSONALITY	INDEPENDENT	INDEPENDENT
FORCEFUL	ASSERTIVE	ASSERTIVE
ANALYTICAL	STRONG PERSON	STRONG PERSON.
DOMINANT	LEADERSHIP QUAL.	FORCEFUL
	WILLING TO RISK	ANALYTICAL
	DOMINANT	LEADER. ABILI.
	WILLING TO STAND	WILLING TO RISK
	AGGRESSIVE	DECIDES EASILY
	ACTS AS LEADER	SELF SUFFICIENT
	INDIVIDUALISTIC	DOMINANT
		WILLING TO STD.
		AGGRESSIVE
		ACTS AS LEADER
		INDIVIDUALISTIC
		COMPETITIVE
		AMBITIOUS

A&C (1982)	BLEDSOE (1983)	COMMON TO ALL
DEFENDS BELIEFS	SELF RELIANT	DEFENDS BEL.
INDEPENDENT	STRONG PERSON.	STRONG PERSON.
ASSERTIVE	LEADERSHIP ABIL.	DOMINANT
STRONG PERSONALITY	DOMINANT	
FORCEFUL	ASSERTIVE	
ANALYTICAL	ACTS AS LEADER	
LEADERSHIP ABIL.	FORCEFUL	
WILLING TO RISK	WILLING TO STAND	
DECIDES EASILY	INDIVIDUALISTIC	
DOMINANT	DEFENDS BELIEFS	
WILLING TO STAND	AGGRESSIVE	
AGGRESSIVE	DECIDES EASILY	
ACTS AS LEADER	SELF SUFFICIENT	
INDIVIDUALISTIC	INDEPENDENT	
COMPETITIVE	COMPETITIVE	
ANALYTICAL	ANALYTICAL	

The BSRI Masculinity items common to a factor called "Masculinity" by all five reports are defends own beliefs, strong personality and dominant.

7. SUMMARY

The response rates for the UCT and US samples were good, demonstrating a high response rate for both. (61.16% and 59.52% respectively).

No significant chi square differences were found in comparisons between the Bem, UCT and US when male and female sex roles were collapsed into one category. When comparing the samples by gender, the female gender of the three samples did not differ in their distribution of sex roles. This indicates that the sex role distribution was not independent of the sample. Male sex role distribution did differ between these three samples, with the Bem males being significantly different in their sex role distribution to both the UCT and US samples. The local samples showed similar sex role distributions for males.

The masculinity and femininity medians for the English and Afrikaans BSRI were determined for South African English and Afrikaans speaking students. These medians can be used for future BSRI research with the above populations. The local masculinity and femininity medians were not significantly different. Significant differences between the Bem and the UCT, and the Bem and the US samples for masculinity medians was found. Bem's medians were significantly higher than both the local sample's medians.

High split half and Cronbach's alpha reliabilities were found for the BSRI's. Subscale internal reliabilities were high with the exception of the UCT BSRI masculine subscale.

Factor Analysis of the two samples demonstrated that factoral independence between the masculinity and femininity factors could only be demonstrated for the UCT sample. The significant UCT factors could account for 39.08% of the total variance whereas the US factors could only account for 35.41% of the total variance.

The following chapter will examine the results of the present study in the light of the literature on androgyny, sex roles, and the Bem Sex Role Inventory.

CHAPTER 5 : DISCUSSION

CHAPTER 5 : DISCUSSION

CHAPTER 5 : DISCUSSION

CONTENTS

1. INTRODUCTION

This chapter examines the results in the context of literature covered in the second, third and fourth chapters. Five areas will be elucidated. Firstly, the frequency distribution of sex roles across the two local samples will be offered, and the normative sample are examined and compared. This is in order to determine the similarity or differences that exist between these samples. Secondly, the comparisons of the BSRI masculinity and femininity subscales of the three samples are discussed. Thirdly, the internal reliability coefficients are discussed in the light of previous studies. Fourthly, factor analytic investigations of the UCT and US samples are compared with similar studies. The fifth area will be composed of a brief discussion of the new Afrikaans version of the BSRI is conducted. Finally, limitations of the present study are provided, following which suggestions for future research are discussed.

2. FREQUENCIES OF SEX ROLES

It is clear that one is able to categorise individuals using the Bem Sex Role Inventory into one of four sex role categories, viz. masculine, feminine, androgynous or undifferentiated. (Bem, 1974). This is, if we accept that the choice of particular items described as either 'masculine' or 'feminine' in accordance with the male or female norms respectively. (Sayers, 1979). This subsection will discuss each chi squared analysis performed as reported in the results chapter.

2.1. COMPARISONS OF SEX ROLES BETWEEN THE BEM, THE UCT AND THE US SAMPLES.

All male and female sex role frequencies were grouped and a chi squared test performed between the three samples. A non-significant result was found for this analysis. As the genders were grouped, we are still legitimately able to continue chi squared analysis of the same data, as later analyses involved separate gender analysis. This initial nonsignificant result indicates that the sex role distribution is independent of the sample. In effect, this means that there is no difference between the normative and the two local samples in terms of the distribution of sex roles. The three samples could very well have been drawn from the same population. This is an interesting finding in that all males and females clustered together, the American normative sample is not unlike our two local samples. Also, the fact that the BSRI was developed 14 years ago, and that the local samples are similar to the original BSRI indicates that the sex role structure of the South African student is similar to the sex role structure of Bem's (1974) students of 14 years ago. This would imply that the South African students are 14 years 'behind' in their sex role attitudes. This is similar to the findings of the pilot study conducted before the present study was completed.

However, as choice of sex roles are largely influenced by the gender of the respondents, this finding does not have too great an impact on the study as yet. Further analysis between the two local samples, and in particular, analyses within each gender category will prove more informative.

2.2. COMPARISON OF SEX ROLES BETWEEN THE UCT AND US SAMPLES

A nonsignificant result indicates that the distribution of sex roles between the two local samples is independent of the sample. ie. UCT and US sex role distribution is not dissimilar. The two samples, in effect, could have been drawn from the same population. This is an interesting finding in that one might expect some difference between the samples as a result of the very different cultural milieu within which the two samples are situated (eg. one might assume that the Stellenbosch students find themselves in a more conservative sociopolitical environment than do the Cape Town students.) (It must be made clear that not all Afrikaans speaking students at US are conservative.) This finding negates such assumptions. However, the comparison was conducted using a clustering of the two genders, and as mentioned above, the gender of the respondent has an influence on the sex role of the respondent. Further analysis of the sex role distribution by gender produced more valuable results. This finding does not support the argument proposed in chapter 4, section 2.1. that the Afrikaans student has a more conservative sex role attitude as a result of either the personality attributes of authoritarianism, conformity and prejudice (Nieuwoudt and Nel, 1975; Mynhardt, 1980) or of the Afrikaner Calvinistic tradition in which the student may find him/herself.

2.3. COMPARISONS OF SEX ROLES BETWEEN THE BEM, UCT AND US SAMPLES BY GENDER.

The first analysis focussed on the female subject's sex role frequencies in the three samples. A nonsignificant result was found which indicates that the distribution of sex roles is not independent of the sample. Therefore, the female sex role distribution indicates that the three samples could very well have been drawn from the same population. This implies that the two local samples have the same sex role structure as did the females in the normative samples of 14 years ago conducted by Bem (1974). In effect, it appears that the South African females are similar to American college students of 14 years ago. Bledsoe (1983) believes that sex role stereotypes have changed in America since Bem's original study. In fact, they have become less stereotypic. It appears that the South African situation has remained stereotypic. We have no retrospective information as to the situation in South Africa 14 years ago - it may well have been far more stereotypic than the contemporary situation. However, we do find that the South African female appears more stereotypically sex typed than the American college female of today.

The chi square calculated between the three samples for the male gender subjects produced a significant result. This would indicate that the distribution of sex roles is not independent of the sample. This means that the sex role distribution in the three sample differs. At this stage we do not know exactly what this difference is (this is examined in succeeding subsections). The local samples may be either more stereotypic or less stereotypic than the normative sample of Bem.

2.4. COMPARISON OF THE BEM, UCT AND US SAMPLES FOR EACH SEX ROLE FOR MALES

The analyses conducted between the three sample for each sex role for the males produced some interesting results. For all four sex roles (masculine, feminine, androgynous and undifferentiated), the Bem sample was different to the local samples in terms of the distribution of sex roles. In fact, the Bem was significantly different from both of the local samples, whereas the local samples did not differ from each other. The fact that the local samples shared a similar sex role distribution is not surprising as this result was found in earlier chi squared analyses discussed previously. The Bem sample was far less stereotypic in terms of sex roles than either of the two local samples. This means that the two local samples were more stereotypic than the normative sample of 14 years ago for American college males. This is to be expected as one might assume that the South African student is more conservative in their views of sex roles than the American student. (See argument in chapter 4, section 2.1). This is particularly so for South African students who find themselves in a cultural environment that is conservative. (Loubser, 1968; Orpen, (1970). This assumption remains just that, an assumption as there is not corroborative research at present for sex roles in South African students.

3. MASCULINITY AND FEMININITY SCORES

The importance of the masculinity and femininity medians must be seen in terms of the use of these values to categorise masculinity and femininity raw scores and in so to place an individual respondent into one of four sex role categories. This subsection discusses the differences between the normative sample's medians and those of the two local samples. These results will provide the user of the

BSRI in South Africa more appropriate norms. This subsection also examines the results of the Afrikaans BSRI in terms of its new norms for masculinity and femininity.

From the t tests performed between the masculinity and femininity means of the two local samples, it is clear that they are highly similar. (No significant differences were found between the means). The Bem means were compared against the means of the two local samples. Two significant results were produced. The Bem masculinity mean was significantly higher than the mean of both the UCT and US samples. These values may be considered as the norms for English and Afrikaans speaking South African students. Below is a summary table of these values.

M/F	UCT	US
MASCULINITY	4.69	4.6
FEMININITY	4.86	4.86

Table showing masculinity and femininity means for the UCT and US sample.

The UCT sample mean for masculinity and femininity may be taken as the means for the BSRI amongst English speaking South African University students with a mean age of 20.5 years. Similarly, the US sample means for masculinity and femininity may be taken as the means for the Afrikaans BSRI for Afrikaaans speaking university students with a mean age of 19.26.

4. INTERNAL RELIABILITY

The Cronbach's Alpha scores were particularly high which implies that the English BSRI and the Afrikaans BSRI both appeared to have high internal reliability. The internal

reliability of the subscales is high, with the exception of the English BSRI masculine subscale. These findings are supported by Miznah and Choo's (1986) study which reports a reliability statistic for the masculinity and femininity subscales of alpha = 0.91 and 0.89 respectively.

Overall, the BSRI as used in the two local samples, produced a result that indicates they both have highly homogeneous items in their subscales. This supports Bem (1974) research.

5. FACTOR ANALYSIS

The English BSRI has clearly independent masculine and feminine dimensions. This independence of dimensions is not supported by the Afrikaans BSRI. Below are comments on the factor structures of both of the inventories.

5.1. COMMENTS ON THE UCT SAMPLE

Factor I was labelled Femininity as twelve of the 20 BSRI feminine items load (>0.4) on this factor, together with eight of the 20 social desirability items (loading >0.4). This factor has a similar structure to a factor labelled 'Expressive Orientation', 'Tender Concern for others' or 'Interpersonal sensitivity' by other factor analytic studies of the BSRI (Gaudreau, 1977; Whetton and Swindells (1977); Bledsoe (1983); Feather (1978) and Antill and Cunningham (1982).

Absent in this factor were significant loadings for eight 'masculine' items - masculine, self-reliant, athletic, forceful, analytical, makes decisions easily, self-sufficient, competitive, and ambitious. This implies that there is support for the contention that one of the two main factors factored out of the BSRI is a factor composed primarily of feminine BSRI items.

Factor II (see table 3 and 4) is a Masculinity factor as 11 of the 20 BSRI Masculinity items load (>0.4) on this factor together with two BSRI femininity items (loading >0.4). This factor is similar in structure to those reported by similar factor analytic studies (see above) that have been labelled 'Sensitive', 'Power' or 'Assertive'.

Absent from this factor were significant loadings for seven of the "feminine" items - yielding, shy, flatterable, soft-spoken, gullible, childlike, does not use harsh language. Three of these absent items are seen to have strongly negative connotations. (yielding, gullible, childlike). Again, this indicates support for a two factor structure of the BSRI. This finding indicates that the BSRI in South Africa, when used by English speaking students, performs as the original BSRI does in American college student settings.

Factor III may be regarded as a Negativity factor (see table 6.2.3.5. in chapter 4) as five of the 10 social desirability items with negative overtones load on this factor (>0.4). Also, one of the the BSRI femininity items regarded as having negative connotations loads on this factor (childlike). This is similar to a factor found by Bledsoe (1983).

Factor IV, a factor with only four significantly loaded items, and Factor V, with only two items, may be regarded as having little use in a discussion of the factor structure of the BSRI, as no clear associations may be made between their items.

It is important to note that the two items Masculinity and Femininity, the most overt items in the sex role nature of the test, correlated negatively at (r=-0.721) suggesting that subjects consistently rated themselves as high on the

one and low on the other. This is supportive of Miznah and Choo (1986) and Bem (1981b).

Low loadings (<0.01) for certain items on factors, and the intercorrelational matrix may indicate that these items no longer are useful items to include in the BSRI in South Africa. For the femininity factor, these items were theatrical, soft-spoken, and childlike. For the masculinity factor, these items are amongst the more negatively valued. The items recorded for exclusion on the Masculinity factor are those that are expressively or overtly feminine.

The factor structure of the BSRI reported here, does offer some support for Bem's original inventory design. This supports Bem (1974), Gaudreau (1977), Bledsoe (1983), Antill and Cunningham (1982), Block (1973), Carlson (1971), Constantinople (1973), Spence, Helmreich and Stapp (1975), Heilbrun (1978), amongst others.

It is clear that the BSRI is measuring two groups or dimensions which are factorially independent. One such cluster may be regarded as associated with the nurturant/affective aspects of behaviour, the other, individualistic/assertive aspects of behaviour. This is supportive of Bem (1974).

5.2. COMMENTS ON THE US SAMPLE

It is clear from table 6.3.3.1. in the results chapter that we may label Factor I Femininity. This label is qualified by a Femininity factor that is an independent, emotionally mature nurturant form. Seven of the 20 BSRI Feminine items load (>0.4) on this factor, as well as five of the 20 BSRI Masculine items. It is important to note that two of these Masculine items load negatively, those of Assertive and Aggressive. We may regard the opposite qualities to those

of aggression and assertiveness being present in this factor. Six of the 20 social desirability items load for this factor, five of which are positively valued (helpful, happy, reliable, sincere and likeable) and one negatively valued item - inefficient. This negatively valued item loads negatively for this factor. We may thus regard the opposite value of inefficient being present in this factor. Absent in this factor were significant loadings for the following "feminine' items - shy, flatterable, loyal, feminine, eager to soothe hurt feelings, soft-spoken, warm, tender, gullible, childlike, does not use harsh language, loves children and gentle. It is important to note that the 'feminine" items that are regarded as having negative connotations were not included in this factor. These were gullible and childlike. This implies that these items are no longer regarded by students (at least in South Africa) as being appropriate for women.

Factor II is a Masculinity factor, as five of the 20 BSRI masculine items load for this factor (>0.4). Two BSRI items load negatively for this factor (sympathetic and tender). Their opposite values may be construed as being present in this factor. Absent in this factor were significant loadings for the following 'masculine' items - self reliant, independent, athletic, assertive, forceful, analytical, has leadership abilities, wiling to take risks, makes decisions easily, self sufficient, masculine, willing to take a stand, aggressive, acts as leader, individualistic, competitive, and ambitious.

From the factor structure of the BSRI reported here, it is clear that strong support for Bem's inventory design is not found for the US sample. Two clearly independent dimensions are not adequately separated out by the factor analysis.

Although two dimensions that may be labelled as masculinity and femininity are found, the number of BSRI masculine or BSRI feminine items that compose these factors is small. (5/20 and 7/20 respectively). Of interest is the first factor, that of Femininity (independent, emotionally mature nurturer). The balance of the two large clusters of masculine and feminine and socially desirable items appears to be representative of a more androgynous individual. In fact, this factor appears to represent Bem's original notion of Androgyny to quite some degree (albeit not in an operational sense.) [1]

The next two subsections of this section focus on the social desirability items that load for each factor in the two samples.

1. By operational is meant as per the scoring of the BSRI.

5.3. COMMENTS ON THE UCT SOCIAL DESIRABILITY ITEMS

Of the ten negatively valued social desirability items in the BSRI, only one loaded significantly for Factor I. Seven of the ten positively-valued social desirability items in the BSRI loaded significantly for Factor I. This would indicate that Factor I has a significant clustering of feminine and positively valued social desirability items. It would thus appear that femininity and these social desirability items are associated with each other. The stereotypic notions of the feminine role in society being regarded in a negative light is thus not so for this sample. This is supportive of Bledsoe (1983). Had these negatively valued social desirability items been associated with the feminine factor, the positions would be similar to the stereotypic ideology of the American ethos at the time of the development of the BSRI. In fact, it is a separate factor, Factor II (Negativity) that is found to contain these negatively valued social desirability items. In the light of the nonsignificant chi squares analysis between the Bem, UCT and US sample for females, one may say that although the UCT females have the same level of sex role stereotypes as American college students of 14 years ago, the feminine female has strongly positive social desirability items associated with this sex typing. This is different to Bem's normative sample's factor structure in which a poor loading of these social desirability items was found in the femininity factor.

5.4. COMMENTS ON THE US SOCIAL DESIRABILITY ITEMS

Factor I of the US sample is a complex factor, that has been labelled Femininity (independent, emotionally mature nurturer). As the US data did not factor out into two strongly masculine or feminine factors, it may be argued that the Afrikaans Bem Sex Role Inventory is not comprised of two clearly independent dimensions. The clustering of masculine, feminine and socially desirable items on this factor is worth mention. This factor represents a femininity that has aspects of the masculinity factors developed in the UCT, Bledsoe (1983), Gaudreau (1977) and Antill and Cunningham (1982) studies. This factor also included five of the ten positively valued social desirability items, and a negative loading of one of the negatively valued social desirability items. We may say that this negative loading could indicate a positive value of this item. We may therefore conclude that six positively valued items load on this factor. This factor represents a strong move away from the stereotypic notions of femininity. The sample includes individuals who associated the positive values of masculinity and femininity with positively valued social desirability items. Bledsoe's (1983) contention that the unrealistic view that aggression and assertiveness are only masculine values is thus supported in that these factors do load for this factor. They do not load positively though. We may thus argue that the opposite positive values of aggression and assertiveness are to be found in this factor. Stereotypes of masculine men and feminine women do not apply for this sample.

6. THE AFRIKAANS BEM SEX ROLE INVENTORY

The original BSRI translated, according to the translation agency, the original BSRI was easily translated into the Afrikaans language. The items have equivalent translations in Afrikaans that were readily understood by the University of Stellenbosch students. No complaints were received from any of the students who completed the inventory. The back-translation and decentering techniques suggested by Brislin (1986) resulted in a trouble-free translation procedure. The translated inventory will be made available to the University of Stellenbosch, and to other research institutions in the country.

The translation has a high internal reliability (Kuder-Richardson split-half reliability coefficient of 0.83). The split-half reliability was actually higher than that of the original BSRI's performance in the University of Cape Town sample. The reliability coefficients for the masculinity and femininity subscales for the Afrikaans BSRI were exceptionally high, in fact, they exceeded the UCT samples subscale reliabilities. This indicates that the Afrikaans BSRI is a strongly internally reliable instrument.

One disturbing area of investigation of the Afrikaans BSRI is that of the factor analyses. The original BSRI can be factor analysed into two main factors, masculinity and femininity. The masculinity and femininity factors have been shown to be factorially independent. (Gaudreau, 1977; Bledsoe, 1983; Antill and Cunningham, 1982). This was not the case for the Afrikaans BSRI.

Factor IV of the Afrikaans BSRI was called Feminine (warm, truthful). It was similar to the 'sex of subject' factor found by Miznah and Choo (1986) and Feather (1978). It contains the items 'masculine' and 'feminine'.

7. SUMMARY

To summarise - chi squared analyses between the three samples in which male and female frequencies had been grouped proved nonsignificant. Analysis within each gender demonstrated that males did not share similar sex role distribution in each sample. The local female samples are similar to the 14 year old normative female sample. In effect, their stereotypic notion of sex roles are equivalent to those of American students of 14 years ago. Similarly, the local male sample proved more stereotypic in their sex role attitudes than the male normative sample.

Norms for the masculinity and femininity for South African students for the English and Afrikaans BSRI's were established. These should be used for research with the BSRI amongst these populations.

Both versions of the BSRI proved internally reliable. The internal reliability of the subscales is high, with the exception of the English BSRI masculine subscale.

The English BSRI factor analysed into clearly independent masculinity and femininity factors, whereas the Afrikaans version did not.

Certain femininity items may be considered for removal from the original BSRI. These are items that either failed to load or loaded with exceptionally poor values on the two factors - Masculinity and Femininity. The femininity items are theatrical, soft-spoken and childlike. Similarly,

certain items may be dropped from the femininity scale of the Afrikaans BSRI. These items are gullible and childlike.

The Afrikaans BSRI was adequately translated. Its factor structure warrants research. The test will be made available to research institutions.

8. LIMITATIONS OF THE STUDY AND SUGGESTIONS FOR FUTURE RESEARCH

The primary limitations of this study are that firstly, due to the computer programmes used in analysis, some data were lost. Secondly, qualitative data gathering could have been useful. Thirdly, factor analysis of male protocols separate from female protocols would have contributed interesting data. Fourthly, owing to predicted poor response times, it was not possible to control for the inclusion of English speaking students in the US sample, or the inclusion of Afrikaans speaking students in the UCT sample.

The loss of data mentioned above, can be alleviated by changing the statistical software used to analyse the data. This has been mentioned earlier. (chapter 4, section 2.2). SPSS-x software was to be used to analyse the data. Owing to a site license lapse for the UCT mainframe (as a result of sanctions), a second software system was used, SCSS. Unfortunately, this software is not able to tolerate a large data matrix, as was used in the present study. This matrix exceeded the SCSS system parameters for the factor analytic procedures. Finally, a third statistical software package was used, BMDP. This software is highly complex and user-unfriendly. With greater detailed planning, this problem could be resolved. No changes to the statistical programmes were made during the analysis of the data in this study.

Qualitative data gathering in the form of in-depth interviews would have provided useful information about the sex role ascription of the students. This is especially so in the case of the Afrikaans BSRI. As this new version did not factor analyse into two independent masculinity and femininity dimensions, questions needed to be posed as to the reasons for the inventory's behaviour. Interviews of a small sample of US students might have provided this study greater information about the cultural influences involved in the development of sex role stereotypes. Interviews of UCT students might have added to this area of research as well. The major reasons for avoiding interviewing the Afrikaans students were the difficulties involved in language and time constraints.

More detailed separate analysis of male and female protocols would have been useful. This would have introduced more information to explain the gender differences in sex role ascriptions, especially with reference to the male protocols. These analyses were hindered by the small sample size in that each sex role was too small for entering into a factor analytic procedure (eg. one male US androgyne). Inclusion of English speaking students in the US and Afrikaans speaking students in the UCT sample could not be controlled for. Time constraints and response rates did not allow for the further breakdown of the samples in such a manner. This may have contributed to similarities in particular results between the two samples. However, it was not considered to be a major variable in the study.

Further investigation into this area could include first, qualitative designs to investigate the issues in sex role ascription. This has been alluded to above. Second, comparable form measurement of sex roles. Third, multi-cultural research.

Comparable forms of sex role measurement (eg. PAQ) is necessary to investigate the construct validity and reliability of the BSRI. However, research will first have to be conducted into establishing South African norms for these comparable forms.

Cross-cultural investigations (three or more sample) are necessary. This would provide useful information on the similarities and differences between cultures in the area of sex role research.

In conclusion, the present study has examined the behaviour of the BSRI in South African student samples. New norms have been established for the instrument's use in this country. An Afrikaans translation of the BSRI has been developed with appropriate norms for use with Afrikaans speaking students.

REFERENCES

Adams, C. H., & Sherer, M. (1982). Sex role orientation and psychological adjustment: Comparison of MMPI profiles among college women and housewives. Journal of Personality Assessment, 46, 607-613.

Antill, J. K., & Cunningham, J. D. (1979). Self esteem as a function of masculinity in both sexes. Journal of Consulting and Clinical Psychology, 47, 783-785.

Antill, J. K., & Cunningham, J. D. (1982). Comparative factor analyses of the Personal Attributes Questionnaire and the Bem Sex Role Inventory. Social Behaviour and Personality, 10, 163-172.

Bakan, D. (1966). The duality of human existence. Chicago: Rand McNally.

Baucom, D. H. (1980). Independent CPI masculinity and femininity scales: Psychological correlates and a sex role typology. Journal of Personality Assessment, 44, 262-271.

Bell, N. J., & Williams, C. (1981). A reevaluation of gender label effects. Child Development, 51, 925-927.

Bem, S. L. (1974). The measurement of psychological androgyny. Journal of Consulting and Clinical Psychology, 42, 155-162.

Bem, S. L. (1975). Sex role adaptability: One consequence of psychological androgyny. Journal of Personality and Social Psychology, 31, 634-643.

Bem, S. L. (1976). Probing the promise of androgyny. In A. G. Kaplan, & J. P. Bean (Eds.), Beyond sex role stereotypes: Readings towards a psychology of androgyny. Boston: Little, Brown and Company.

Bem, S. L. (1977). On the utility of alternative procedures for assessing psychological androgyny. Journal of Consulting and Clinical Psychology, 45, 196-205.

Bem, S. L. (1979). Theory and measurement of androgyny: A reply to Pedhazur-Tetenbaum and Locksley-Colten critiques. Journal of Personality and Social Psychology, 37, 1047-1054.

Bem, S. L. (1981a). Gender schema theory: A cognitive account of sex typing. Psychological Review, 88, 354-364.

Bem, S. L. (1981b). The BSRI and gender schema theory: A reply to Spence and Helmreich. Psychological Review, 88, 369-371.

Bem, S. L., & Lenney, E. (1976). Sex typing and the avoidance of cross sex behaviour. Journal of Personality and Social Psychology, 33, 48-54.

Berg, J. H., & Peplau, L. A. (1982). Loneliness: The relation of self disclosure and androgyny. Personality and Social Psychology Bulletin, 8, 624-630.

Bernard, L. C. (1981). The multidimensional aspects of masculinity-femininity. Journal of Personality and Social Psychology, 41, 797-802.

Berzins, J. I. (1979). Discussion: Androgyny, personality theory, and psychotherapy. Psychology of Women Quarterly, 3, 248-254.

Berzins, J. I., Welling, M. A., & Wetter, R. E. (1976). Androgynous versus traditional sex roles and the interpersonal behaviour circle. Paper presented at the annual meeting of the American Psychological Association, Washington, D.C.

Berzins, J. I., Welling, M. A., & Wetter, R. E. (1978). A new measure of psychological androgyny based on the Personality Research Form. Journal of Consulting and Clinical Psychology, 46, 126-138.

Blackman, S. (1982). Comments on three methods of scoring androgyny as a continuous variable. Psychological Reports, 51, 1100-1102.

Bledsoe, J. C. (1983). Factorial validity of the Bem Sex Role Inventory. Perceptual and Motor Skills, 55, 55-58.

Block, J. H. (1973). Conceptions of sex role: Some cross-cultural and longitudinal perspectives. American Psychologist, 28, 515- 526.

Bridges, J. S. (1981). Sex typed may be beautiful but androgynous is good. Psychological Reports, 48, 267-272.

Briere, J., Ward, R., & Hartsough, W. R. (1983). Sex typing and cross sex typing in "androgynous subjects." Journal of Personality Assessment, 47, 300-302.

Brislin, R. W. (1970). Back translation for cross-cultural research. Journal of Cross-Cultural Psychology, 1, 185-216.

Brislin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner & J. W. Berry (Eds.), Field methods in cross-cultural research. London: Sage Publications.

Brislin, R. W., Lonner, J. W., & Thorndike, R. M. (1973). Cross-cultural research methods. New York: John Wiley.

Broverman, I. K., Broverman, D. M., Clarkson, F. E., Rosenkrantz, P. S., & Vogel, S. R. (1970). Sex role stereotypes and clinical judgements of mental health. Journal of Consulting and Clinical Psychology, 34, 1-7.

Campbell, M., Steffen, J. J., & Langmeyer, D. (1981). Psychological androgyny and social competence. Psychological Reports, 48, 611-614.

Carlson, R. (1971). Sex differences in ego functioning. Journal of Consulting and Clinical Psychology, 37, 267-277.

Cartwright, R. D., Hoyd, S., Nelson, J. B., & Bass, S. (1983). The traditional-liberated women dimension: Social stereotype and self concept. Journal of Personality and Social Psychology, 44, 581-588.

Circle, S. A. (1980). The relationship between sex role typing, ego development and adjustment. Dissertation Abstracts International, 42, 366B.

Constantinople, A. (1973). Masculinity-femininity: An exception to a famous dictum? Psychological Bulletin, 87, 389-407.

Cook, A. P. (1985). Psychological androgyny. London: Pergamon Press.

Delucchi, K. L. (1983). The use and misuse of chi-square: Lewis and Burke revisited. Psychological Bulletin, 94, 166-177.

Eckhardt, K. W., & Ermann, M. D. (1977). Social research methods. New York: Random House.

Edwards, A. L., & Ashworth, C. D. (1977). A replication study of item selection for the Bem Sex Role Inventory. Applied Psychological Measurement, 1, 501-508.

Erdwins, C., Small, A., & Gross, R. (1980). The relationship of sex role to self concept. Journal of Clinical Psychology, 36, 111-115.

Feather, N. T. (1978). Factor structure of the Bem Sex Role Inventory: Implications for the study of masculinity, femininity, and androgyny. Australian Journal of Psychology, 30, 241-254.

Fiebert, M. S. (1983). Measuring traditional and liberated males' attitudes. Perceptual and Motor Skills, 56, 83-86.

Flaherty, J. F., & Dusek, J. B. (1980). An investigation of the relationship between psychological androgyny and components of self concept. Journal of Personality and Social Psychology, 38, 984-992.

Flake-Hodson, C., & Robinson, B. E. (1981). Sex stereotyped attitudes of male and female child care workers: Support for androgynous child care. Child Care Quarterly, 9, 233-242.

Garnets, L., & Pleck, J. H. (1979). Sex role identity, androgyny, and sex role transcendence: A sex role strain analysis. Psychology of Women Quarterly, 3, 270-283.

Gaudreau, P. (1977). Factor analysis of the Bem Sex Role Inventory. Journal of Consulting and Clinical Psychology, 45, 299-302.

Gayton, W. F., Havu, G. F., Ozman, K. L., & Tavormina, J. (1977). A comparison of the Bem Sex Role Inventory and the PRF ANDRO scale. Journal of Personality Assessment, 41, 619-621.

Golding, J. M., & Singer, J. L. (1983). Patterns of inner experience: Daydreaming styles, depressive moods, and sex roles. Journal of Personality and Social Psychology, 45, 663-675.

Gough, H. G., & Heilbrun, A. B. (1965). Manual for the adjective checklist and the other need scales for the ACL. Palo Alto, CA: Consulting Psychologists Press.

Hathaway, S. R. (1956). Scale 5 (masculinity-femininity), 6 (paranoia) and 8 (schizophrenia). In G. S. Welsh & W. G. Dahlstrom (Eds.), Basic readings in the MMPI in psychology and medicine. Minneapolis: Minnesota University Press.

Hefner, R., Rebecca, M., & Oleshansky, B. (1975). Development of sex role transcendence. Human Development, 18, 143-158.

Heilbrun, A. B. (1978). An exploration of antecedents and attributes of androgynous and undifferentiated sex roles. Journal of Genetic Psychology, 132, 97-107.

Heilbrun, A. B. (1981). Gender differences in the functional linkage between androgyny, social cognition, and competence. Journal of Personality and Social Psychology, 41, 1106-1118.

Heilbrun, A. B. (1981). Human sex role behaviour. New York: Pergamon.

Herron, W. G., Goodman, C. K., & Herron, M. J. (1983). Comparability of sex role measures. Psychological Reports, 53, 1087-1094.

Hinrichsen, J. J., Follansbee, D. J., & Ganellen, R. (1981). Sex role related differences in self-concept and mental health. Journal of Personality Assessment, 45, 684-599.

Jean, P. J., & Reynolds, C. R. (1980). Development of the Bias In Attitudes survey: A sex role questionnaire. The Journal of Psychology, 104, 269-277.

Jones, W. H., Chernovetz, M. E., & Hansson, R. O. (1978). The enigma of androgyny: Differential implications for males and females? Journal of Consulting and Clinical Psychology, 46, 298-313.

Jung, C. G. (1973). Archetypes of the unconscious. Collected Works Vol. 9. London: Routledge and Kegan Paul.

Kagan, J. (1964). Acquisition and significance of sex typing and sex role identity. In M. L. Hoffman & L. W. Hoffman (Eds.), Review of child development research (Vol.1). New York: Russell Sage Foundation.

Kaplan, A. G. (1976). Androgyny as a model of mental health for women: From theory to therapy. In A. G. Kaplan & J. P. Bean (Eds.), Beyond sex role stereotypes: Readings towards a psychology of women. Boston: Little, Brown and Company.

Kaplan, A. G. (1979). Clarifying the concept of androgyny: Implications for therapy. Psychology of Women Quarterly, 3, 223-230.

Kelly, J. A., Caudill, M. S., Hathorn, S., & O'Brien, C. G. (1977). Socially undesirable sex-correlated characteristics: Implications for androgyny and adjustment. Journal of Consulting and Clinical Psychology, 45, 1185-1186.

Kelly, J. A., Furman, W., & Young, V. (1978). Problems associated with the typological measurement of sex roles and androgyny. Journal of Consulting and Clinical Psychology, 46, 1574-1576.

Kelly, J. A., O'Brien, G. G., & Hosford, R. (1981). Sex roles and social skill considerations for interpersonal adjustment. Psychology of Women Quarterly, 5, 758-765.

Kelly, J. A., & Worrell, J. (1977). New formulations of sex roles and androgyny: A critical review. Journal of Consulting and Clinical Psychology, 45, 1101-1115.

Kenderdine, S. K. (1983). The relationships between masculine instrumentality, feminine expressiveness and several demographic variables to marital satisfaction. Dissertation Abstracts International, 44, 955B.

Kessler, S., & McKenna, J. (1978). Divorce adjustment groups. Personnel and Guidance Journal, 54, 250-255.

Kulik, J. A., & Harackiewicz, J. (1979). Opposite-sex interpersonal attraction as a function of the sex roles of the perceiver and the perceived. Sex Roles, 5, 443-452.

Lambley, P. (1973). Authoritarianism and prejudice in South African student samples. Journal of Social Psychology, 91, 341-342.

LaTorre, R. A., Endman, M., & Gossman, I. (1976). Androgyny and need achievement in male and female psychiatric inpatients. Journal of Clinical Psychology, 32, 233-235.

Leabo, D. A. (1976). Basic statistics. Illinois: R.D. Irwin, Inc.

Lever, H. (1975). Ethnic preference of white residents in Johannesburg. In S. J. Morse & C. Orpen (Eds.), Contemporary South Africa. Cape Town: Juta.

Lombardo, J. P., & Lavine, L. O. (1981). Sex role stereotyping and patterns of self disclosure. Sex Roles, 7, 403-411.

Loubser, J. J. (1968). Calvinism, equality, and inclusion: The case of Afrikaner capitalism. In S. N. Eisenstadt (Ed.), The Protestant ethic and modernisation: A comparative view. New York: Basic Books.

Lubinski, D., Tellegen, A., & Butcher, J. N. (1983). Masculinity, femininity, and androgyny viewed and assessed as distinct concepts. Journal of Personality and Social Psychology, 44, 428-439.

Maccoby, E. E., & Jacklin, C. N. (1975). The psychology of sex differences. Stanford, CA: Stanford University Press.

Major, B., Carnevale, P. J. D., & Deaux, K. (1981). A different perspective on androgyny: Evaluations of masculine and feminine personality characteristics. Journal of Personality and Social Psychology, 41, 988-1001.

Markus, H. (1977). Self schemata and processing information about the self. Journal of Personality and Social Psychology, 35, 63-78.

Markus, H., Crane, M., Bernstein, S., & Siladi, M. (1982). Self schemas and gender. Journal of Personality and Social Psychology, 42, 38-50.

Miznah, I., & Choo, P. F. (1986). The factor structure of the Bem Sex Role Inventory. International Journal of Psychology, 21, 31-41.

Mynhardt, J. C. (1980). Prejudice among Afrikaans and English speaking South African students. Journal of Social Psychology, 110, 9-17.

Nieuwoudt, J. M., & Nel, E. M. (1975). The relationship between ethnic prejudice, authoritarianism and conformity among South African students. In S. J. Morse & C. Orpen (Eds.), Contemporary South Africa. Cape Town: Juta.

Orlofsky, J. L., & Windle, M. T. (1978). Sex role orientation, behavioural adaptability and personal adjustment. Sex Roles, 4, 801-811.

Orpen, C. (1970). Authoritarianism in an "authoritarian" culture: The case of Afrikaans speaking South African students. Journal of Social Psychology, 81, 119-120.

Pepper, S. C. (1942). World hypotheses: A study in evidence. Berkley: UCLA Press.

Pettigrew, T. F. (1960). Social distance attitudes of South African students. Social Forces, 38, 246-253.

Phifer, S. J., & Blake, B. S. (1983). The factorial validity of the Bias in Attitudes survey scale. Educational and Psychological Measurement, 43, 887-891.

Pursell, S., Banikiotes, P. G., & Sebastian, R. J. (1981). Androgyny and the perception of marital roles. Sex Roles, 7, 201-215.

Pyke, S. W. (1982). Confessions of a reluctant ideologist. Canadian Psychology, 23, 125-134.

Ramanaiah, N. V., & Hoffman, S. C. (1984). Effects of instructions and rating scales on item selection for the BSRI scales. Journal of Personality Assessment, 48, 145-152.

Rebecca, M., Hefner, R., & Oleshansky, B. (1976). A model of sex role transcendence. Journal of Social Issues, 32, 197-206.

Roe, M. D., & Prange, M. E. (1982). On quantifying the magnitude of sex-role endorsement. Journal of Personality Assessment, 46, 300-303.

Rosenkrantz, P. S., Vogel, S. R., Bee, H., Broverman, I. K., & Broverman, D. M. (1968). Sex role stereotypes and self concepts in college students. Journal of Consulting and Clinical Psychology, 32, 287-295.

Sappenfield, B. R., & Harris, C. L. (1975). Self reported masculinity-femininity as related to self esteem. Psychological Reports, 37, 669-670.

Sayers, J. (1979). Biological politics : Feminist and anti-feminist perspectives. London: Tavistock.

Senneker, P., & Hendrick, C. (1983). Androgyny and helping behaviour. Journal of Personality and Social Psychology, 45, 916-925.

Shaw, J. S. (1982). Psychological androgyny and stressful life events. Journal of Personality and Social Psychology, 43, 145-153.

Smith, S. G. (1983). A comparison among three measures of social sex role. Journal of Homosexuality, 9, 99-107.

Spence, J. T. (1983). Comment on Lubinski, Tellegen, and Butcher's "Masculinity, femininity, and androgyny viewed and assessed as distinct concepts." Journal of Personality and Social Psychology, 44, 440-446.

Spence, J. T. (1984). Gender identity and its implications for the concepts of masculinity and femininity. Nebraska Symposium on Motivation, 32, 59-95.

Spence, J. T., & Helmreich, R. L. (1978). Masculinity and femininity: Their psychological dimensions, correlates and antecedents. Austin: University of Texas Press.

Spence, J. T., & Helmreich, R. L. (1979). Comparison of masculine and feminine personality attributes and sex-role attitudes across age groups. Developmental Psychology, 15, 583-584.

Spence, J. T., Helmreich, R. L., & Stapp, J. (1974). The Personal Attributes Questionnaire: A measure of sex role stereotypes and masculinity-femininity. JSAS Catalog of Selected Documents in Psychology, 4, 43.

Spence, J. T., Helmreich, R. L., & Stapp, J. (1975). Ratings of self and peers on sex role attributes and their relation to self esteem and conceptions of masculinity and femininity. Journal of Personality and Social Psychology, 32, 29-39.

Stokes, J., Childs, L., & Fuehrer, A. (1981). Gender and sex roles as predictors of self disclosure. Journal of Counselling Psychology, 28, 510-514.

Terman, L., & Miles, L. (1936). Sex and personality. New York: McGraw-Hill.

Van Den Berghe, P. L. (1962). Race attitudes in Durban, South Africa. Journal of Social Psychology, 57, 55-72.

Walker, L. E. (1981). Battered women: Sex roles and clinical issues. Professional Psychology, 12, 81-91.

Walkup, H., & Abbott, R. D. (1978). Cross-validation of item selection on the Bem Sex Role Inventory. Applied Psychological Measurement, 2, 63-71.

Werner, D., & Campbell, D. (1970). Translating, working through interpreters, and the problem of decentering. In R. Narroll & R. Cohen (Eds.), A handbook of method in cultural anthropology. New York: Natural History Press.

Whetton, C. & Swindells, T. (1977). A factor analysis of the Bem Sex Role Inventory. Journal of Clinical Psychology, 33, 150-153.

Wiggins, J. S., & Holzmuller, A. (1981). Further evidence on androgyny and interpersonal flexibility. Journal of Research in Personality, 15, 67-80.

Williams, J. E., & Best, D. L. (1982). Measuring sex stereotypes: A 30 nation study. London. Sage Publications.

Womer, F. B. (1968). Basic concepts in testing. Boston: Houghton Millin Company.

Wong, M. R. (1984). MMPI scale 5: Its meaning, or lack thereof. Journal of Personality Assessment, 48, 279-284.

Worell, J. (1978). Sex roles and psychological well being: Perspectives and methodology. Journal of Consulting and Clinical Psychology, 46, 777-791.

05

SEX

M	F

06 07

AGE

INSTRUCTIONS

On the back of this page are a number of personality characteristics: We would like you to use these characteristics in order to describe yourself. That is, we would like you to indicate (on a scale of 1 to 7) how true of you these various characteristics are. Do not leave any of the characteristics unmarked.

Example: SLY
Write a
1 if it is NEVER or ALMOST NEVER true that you are sly
2 if it is USUALLY NOT TRUE that you are sly
3 if it is SOMETIMES BUT INFREQUENTLY TRUE that you are sly
4 if it is OCCASSIONALLY TRUE that you are sly
5 if it is OFTEN TRUE that you are sly
6 if it is USUALLY TRUE that you are sly
7 if it is ALAWAYS OR ALMOST ALWAYS TRUE that you are sly

Thus, if you feel that it is sometimes but infrequently true that you are 'sly' never or almost never true that you are 'malicious', always or almost always true that you are 'irresponsible', and often true that you are 'carefree', then you would rate these characteristics as follows:

SLY	3	IRRESPONSIBLE	7
MALICIOUS	1	CAREFREE	5

APPENDIX 1 : BEM SEX ROLE INVENTORY

reliant	08	Reliable	28	Warm	48
ding	09	Analytical	29	Solemn	49
ful	10	Sympathetic	30	Willing to take a stand	50
nds own efs	11	Jealous	31	Tender	51
rful	12	Has leadership abilities	32	Friendly	52
y	13	Sensitive to the needs of others	33	Aggressive	53
pendent	14	Truthful	34	Gullible	54
	15	Willing to take risks	35	Inefficient	55
cientious	16	Understanding	36	Acts as a leader	56
etic	17	Secretive	37	Childlike	57
ctionate	18	Makes decisions easily	38	Adaptable	58
trical	19	Compassionate	39	Individualistic	59
rtive	20	Sincere	40	Does not use harsh language	60
terable	21	Self-sufficient	41	Unsystematic	61
y	22	Eager to soothe hurt feelings	42	Competitive	62
ng onality	23	Conceited	43	Loves children	63
l	24	Dominant	44	Tactful	64
edictable	25	Soft-spoken	45	Ambitious	65
eful	26	Likeable	46	Gentle	66
nine	27	Masculine	47	Conventional	67

APPENDIX 2 : BEM SEX ROLE INVENTORY (AFRIKAANS)

01	02	03	04

GESLAG

M	F

05

08	07

OUDERDOM

OPDRAG

Op die keersy verskyn daar 'n aantal persoonlikheideienskappe. Ons wil graag he u moet hierdie eienskappe gebruik om u eie geaardheid te beskryf, d.w.s. u moet asseblief aandui teen 'n skaal van 1 tot 7, tot watter mate elkeen op u toepaslik is. Laat asseblief geen eienskap ongemerk nie.

By voorbeeld: slu

1 as u NOOIT of BYNA NOOIT slu is nie
2 as u GEWOONLIK NIE slu is nie
3 as u SOMTYDS MAAR SELDE slu is
4 as u AF EN TOE slu is
5 as u DIKWELS slu is
6 as u GEWOONLIK slu is
7 as u ALTYD OF BYNA ALTYD slu is

Dus, as u voel u is somtyds maar selde slu, nooit of byna nooit kwaadwillig nie, altyd of byna altyd onverantwoordelik en dikwels sorgloos, dan lyk u merkings so:

SLU	3	ONVERANTWOORDELIK	7
KWAADWILLIG	1	SORGLOOS	5

APPENDIX 2 : BEM SEX ROLE INVENTORY (AFRIKAANS)

elfonderhoudend	06	betroubaar	29	gul	49
negeeflik	07	ontledend	29	ernstig	49
hulpsaam	10	simpatiek	30	nie 'n draadsitter nie	50
rdedig eie andpunte	11	jaloers	31	sagmoedig	51
geruimd	12	het leiereien-skappe	32	vriendelik	52
ierig	13	gevoelig teenoor behoeftes van andere	33	opvlieend	53
afhanklik	14	openhartig	34	liggelowig	54
u	15	gewillig om waagstukke te onderneem	35	ondoeltreffend	55
ugeset	16	begrypend	36	tree as leier op	56
leties	17	geheimsinnig	37	kinderlik	57
efdevol	18	neem maklik besluite	38	het aanpass-ingsvermoe	58
eatraal	19	medelydend	39	individualisties	59
elfversekerd ie	20	opreg	40	gebruik nie kras taal nie	60
bel maklik evlei	21	selfversorgened	41	deurmekaar	61
ogewek	22	gretig om seer gemaakte gevoel-ens te vertroos	42	mededingend	62
terk persoon-ikheid	23	verwaand	43	lief vir kinders	63
oegewyd	24	oorheersend	44	diplomaties	64
nvoorspelbaar	25	ingetoe	45	ambisieus	65
ree beslis op	26	goedgeaard	46	saggeaard	66
roulik	27	manlik	47	konvensioneel	67

APPENDIX 3 : LETTER OF MOTIVATION TO UCT STUDENTS

Department of Psychology

University of Cape Town · Rondebosch 7700 · South Africa
Telephone: (021) 650-9111
Fax No: (021) 650-3726

18th July, 1988

Dear Psychology One Student,

You have been selected by a computer based random survey to participate in an exciting area of attitude research.

A well established attitude inventory from the USA has been used extensively in this country. The problem with the inventory is that it is designed for American students and not South Africans.

Your participation in this survey will establish a South African based version of this inventory.

Please assist us in this project by completing the enclosed inventory and placing it in the envelope provided and sending this envelope back to us.

All results are totally anonymous.

Regards

J.D. Betts

APPENDIX 4 : LETTER OF MOTIVATION TO US STUDENTS

UNIVERSITEIT VAN STELLENBOSCH
UNIVERSITY OF STELLENBOSCH

Departement Sielkunde
Department of Psychology

TEL. 773466

VERW./REF.:

STELLENBOSCH
7600
SUID-AFRIKA/SOUTH AFRICA

25 Julie 1988

Geagte Eerstejaarstudent Psigologie

U is deur 'n rekenaar-gebaseerde ewekansige opname geselekteer om deel te neem aan 'n opwindende aspek van navorsing na geesteshoudings.

'n Beproefde houdings-inventaris uit die VSA word wydverbreid in hierdie land gebruik. Die probleem met die inventaris is dat dit vir Amerikaners ontwerp is en nie vir Suid-Afrikaners nie.

U deelname aan hierdie opname sal 'n Suid-Afrikaans gebaseerde weergawe van hierdie inventaris tot stand bring.

Help ons asseblief met hierdie projek deur die ingeslote inventaris te voltooi, dit in die koevert te plaas wat voorsien word en dit aan ons terug te stuur.

Alle uitslae sal geheel-en-al anoniem wees.

Beste wense

Die Navorser

APPENDIX 5 : TEXT OF ADDRESS TO UCT STUDENTS

My name is John Betts. I am a Masters student with this department and am conducting research into South African students' attitudes.

A well established attitude inventory from the USA has been used extensively in this country. The problem with the inventory is that it was designed for Amercan students anmd not South Africans.

Some of you have been selecetd by a computer to participate in this study. All results are totally anonymous, and there is no way I know who returned their inventory or not.

You will receive a short inventory and a reply paid envelope. All you have to do is fill in the inventory and post it to me. It won't cost you a cent and will take only 10 minutes of your time.

Thanks.

APPENDIX 6 : US REGISTRATION CARD

✓ T.

DEPARTEMENT SIELKUNDE
UNIVERSITEIT VAN STELLENBOSCH

B

Van: ..... Geb. dat.: .....

Doopname: ... Univ.reg.no.: .....

Huisadres: ... Tel. no. .....

Adres op Stellenbosch: ..... Tel. no. .....

Kursus vanjaar: ..... Herhaal u Sielkunde?: JA / NEE (Onderstreep)

Vakke wat u vanjaar volg: .....

.....

.....

Die Departement Sielkunde behou hom die reg voor om aan enige student wat sonder grondige rede in gebreke bly om teoretiese en/of praktiese klasse by te woon of wat versuim om werkstukke op gesette tye in te lewer 'n onvoltooide klassyfer toe te ken, ongeag toetspunte wat reeds gedurende die jaar behaal is.

'n Student wat sy kursus staak moet die Departement onmiddellik daarvan in kennis stel.

.....
HANDTEKENING VAN STUDENT

10-02-88
DATUM

APPENDIX 7 : UCT REGISTRATION CARD

REGISTRATION CARD 1988
PSYCHOLOGY 101W

TO BE COMPLETED BY STUDENT:
PLEASE PRINT CLEARLY

ADDRESS (Term)

PHONE NO:

DATE OF BIRTH:

HOME ADDRESS

PHONE NO:

SURNAME:
(Print)

FIRST NAME

STUDENT NUMBER

SELECT YOUR LECTURE TIME: 9.10 [ ] 11.55 [✓]

YEAR OF UNIVERSITY STUDY
(1st/2nd/3rd/4th/Other)

1st	2nd	3rd	4th	Other
✓				

ARE YOU REPEATING PSYCHOLOGY 1? ~~YES~~/NO ☐

FACULTY:

Tick **EVERY** period for which you are free

		Mon	Tues	Wed	Thurs	Fri
1	8.15	✓ 1	✓ 1	✓ 1	✓ 1	✓ 1
2	9.10	2	2	2	2	2
3	10.05	3	3	3	3	3
4	11.00	4	4	4	4	4
5	11.55	5	5	5	5	5
6	1.35	✓ 6	✓ 6	✓ 6	✓ 6	✓ 6
7	2.30	✓ 7	✓ 7	✓ 7	✓ 7	✓ 7
8		✓ 8	✓ 8	✓ 8	8	✓ 8

List all other courses you are taking this year:

PD UCT

VARIANCE IS DEFINED AS THE SUM OF THE POSITIVE EIGEN VALUES OF THE
ELATION MATRIX.
9 BMDP4M AFRIKAANS DATA

APPENDIX 9 : US RAW DATA

TATED FACTOR LOADINGS (PATTERN)

PRINCIPAL COMPONENTS

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FACTOR 10
4	0.196	0.312	0.113	0.320	-0.005	0.108	0.343	-0.093	0.258	-0.196
5	0.412	-0.232	0.042	-0.000	0.395	0.166	0.038	0.050	0.070	0.263
6	0.074	-0.078	-0.093	0.111	-0.093	-0.014	-0.322	0.211	-0.065	-0.028
7	0.335	0.596	-0.049	0.100	-0.135	-0.120	-0.008	0.112	0.049	0.127
8	0.098	0.152	-0.170	0.027	0.100	0.116	-0.079	0.239	-0.005	0.014
9	-0.267	-0.141	0.021	0.445	-0.019	0.388	0.442	-0.121	0.011	-0.110
10	0.366	0.275	0.208	0.223	0.164	-0.038	0.323	-0.204	0.253	-0.067
11	-0.251	-0.196	0.370	0.112	0.052	0.347	0.075	0.126	-0.258	0.284
12	-0.011	-0.399	0.135	0.088	0.156	-0.029	0.129	0.284	0.097	0.428
13	0.312	0.245	-0.215	-0.219	0.119	-0.002	0.236	0.186	-0.101	-0.037
14	0.676	-0.162	-0.037	0.069	0.141	0.128	-0.099	0.347	-0.007	-0.217
15	-0.021	0.190	0.029	0.071	-0.070	-0.003	-0.374	-0.075	0.348	0.126
16	-0.416	-0.049	0.328	0.182	-0.131	-0.055	0.009	-0.124	-0.355	0.393
17	0.044	-0.345	0.141	0.062	-0.113	0.030	-0.129	0.317	-0.361	0.007
18	0.589	-0.224	-0.186	-0.017	0.026	0.134	-0.235	0.216	-0.213	-0.041
19	0.488	0.000	0.116	0.022	-0.047	-0.167	-0.034	-0.021	0.049	0.083
20	0.261	0.241	0.206	-0.052	-0.411	-0.042	0.057	0.109	-0.268	0.362
21	0.048	0.290	0.245	0.328	0.365	0.292	0.152	0.102	0.081	-0.024
22	0.383	0.462	0.144	0.152	-0.359	-0.090	0.047	0.266	-0.061	0.072
23	0.240	-0.328	-0.281	0.080	-0.103	-0.006	-0.173	-0.054	-0.107	0.034
24	0.406	-0.089	0.474	-0.050	-0.373	-0.095	-0.195	0.107	-0.042	-0.137
25	-0.004	0.437	0.482	0.197	-0.177	-0.140	-0.133	-0.210	-0.127	0.083
26	0.492	0.488	-0.009	0.206	0.018	-0.186	0.108	-0.006	0.042	0.119
27	-0.360	0.176	0.103	0.190	0.052	0.193	-0.125	0.210	-0.130	-0.064
28	0.479	0.304	-0.262	0.004	0.033	-0.166	0.224	0.041	-0.012	0.254
29	0.418	-0.155	0.097	0.392	-0.098	-0.187	-0.185	-0.439	0.202	0.167
30	0.336	-0.018	-0.143	0.476	-0.190	-0.097	-0.064	0.041	-0.152	-0.273
31	0.096	0.300	0.182	0.175	0.527	-0.155	-0.005	-0.143	0.247	0.091
32	0.543	-0.376	-0.067	-0.037	-0.107	-0.074	0.153	-0.068	0.031	0.113
33	-0.110	0.132	0.531	0.114	0.288	0.291	-0.043	-0.074	-0.020	-0.080
34	0.202	0.282	-0.056	-0.076	-0.068	0.191	-0.126	-0.339	-0.037	-0.284
35	0.578	-0.348	0.195	-0.000	0.022	-0.184	0.017	0.021	0.312	-0.092
36	0.508	-0.038	0.320	0.057	-0.238	-0.058	-0.185	-0.173	-0.034	-0.316
37	0.465	0.032	0.098	0.153	-0.245	0.259	0.030	-0.138	0.064	0.209
38	0.323	-0.352	-0.216	-0.055	-0.071	0.511	0.052	-0.056	-0.068	0.182
39	-0.268	0.350	0.055	0.315	0.300	-0.053	-0.511	0.155	-0.001	-0.130
40	-0.109	0.488	-0.138	0.290	0.057	-0.202	0.044	-0.017	-0.310	0.065
41	-0.159	-0.287	0.552	0.000	-0.144	-0.126	0.286	0.119	-0.164	-0.127
42	0.444	-0.127	-0.092	-0.180	0.025	-0.345	-0.183	-0.141	-0.152	-0.199
43	-0.143	0.352	0.419	-0.485	0.124	-0.030	0.029	0.269	0.232	0.009
44	0.141	-0.234	-0.072	0.446	-0.073	-0.196	0.044	0.121	0.048	0.139
45	0.070	-0.141	0.554	0.237	-0.122	-0.010	0.243	-0.233	-0.032	-0.112
46	-0.139	0.111	0.246	-0.190	-0.159	0.078	0.001	0.346	0.502	0.194
47	0.230	-0.460	-0.428	-0.167	0.373	-0.081	-0.060	0.137	0.135	0.096
48	0.303	-0.056	0.119	-0.103	0.045	0.524	-0.284	-0.456	-0.053	0.003
49	-0.456	0.157	0.076	0.344	-0.194	0.471	-0.058	0.252	0.036	-0.150
50	-0.171	-0.018	-0.223	0.378	0.082	-0.238	0.234	0.103	-0.103	0.083
51	-0.307	-0.214	0.058	0.335	0.000	-0.240	-0.022	0.157	-0.020	-0.098

DATE 081888 PAGE 10

52	0.529	-0.362	-0.281	-0.053	0.028	0.290	0.208	-0.111	0.023	0.209
53	0.052	-0.112	0.040	0.351	0.429	-0.168	-0.214	0.418	-0.119	-0.006

10 BMDP4M AFRIKAANS DATA

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FACTOR 10
54	0.319	0.129	-0.093	-0.134	0.347	-0.037	0.115	-0.188	-0.370	0.017
55	0.223	0.355	0.244	0.010	0.350	-0.166	-0.181	-0.122	-0.305	0.065
56	-0.132	0.295	-0.138	0.198	0.020	0.264	-0.055	0.121	0.254	0.166
57	-0.059	-0.173	-0.176	0.140	0.372	-0.356	0.304	0.023	-0.043	-0.042
58	0.247	0.140	0.263	-0.076	-0.177	-0.221	0.481	0.104	-0.219	-0.302
59	0.546	-0.167	-0.277	0.091	0.014	0.127	0.126	0.259	-0.043	-0.219
60	0.278	0.192	-0.185	-0.031	0.187	-0.060	0.064	-0.028	-0.252	0.178
61	0.229	0.212	0.386	-0.123	0.139	0.156	0.224	0.016	-0.044	-0.053
62	0.333	-0.545	0.386	-0.098	0.227	0.034	-0.041	0.025	-0.055	-0.081
63	-0.063	-0.158	0.113	-0.009	-0.288	0.022	0.118	0.298	0.196	0.327

11 BMDP4M AFRIKAANS DATA

	FACTOR 11	FACTOR 12	FACTOR 13	FACTOR 14	FACTOR 15	FACTOR 16	FACTOR 17	FACTOR 18	FACTOR 19	FACTOR 20
4	-0.066	0.133	-0.185	-0.037	0.134	0.026	0.261	-0.335	-0.102	-0.136
5	-0.008	0.105	-0.059	0.346	0.273	-0.006	0.073	0.040	0.103	0.047
6	-0.126	-0.091	-0.109	0.090	-0.003	0.078	0.155	-0.275	-0.056	0.050
7	-0.093	0.193	-0.088	-0.327	-0.054	0.119	-0.060	0.021	0.073	0.113
8	-0.123	-0.092	-0.192	-0.024	0.058	-0.288	0.015	-0.226	-0.200	-0.157
9	0.167	0.083	-0.010	-0.033	-0.006	-0.101	0.040	0.015	0.251	-0.100
10	-0.138	0.195	0.063	-0.050	0.023	-0.032	0.085	0.236	-0.031	-0.090
11	0.016	0.355	-0.178	0.156	0.002	0.024	-0.039	-0.046	-0.167	0.150
12	-0.072	-0.194	-0.048	0.047	-0.095	-0.086	0.016	0.354	-0.152	-0.112
13	0.271	-0.030	-0.204	-0.273	-0.176	-0.296	-0.105	0.080	-0.091	0.103
14	-0.073	0.026	-0.057	0.002	-0.146	-0.109	-0.016	0.012	-0.023	0.030
15	0.340	0.362	-0.209	0.142	0.047	0.029	0.007	0.093	-0.206	0.113
16	0.013	-0.097	-0.087	-0.075	0.004	0.014	-0.164	-0.209	0.047	0.205
17	0.263	0.022	-0.014	0.096	-0.060	-0.001	0.034	-0.059	0.419	-0.267
18	-0.169	0.143	0.304	0.032	-0.123	-0.076	-0.035	-0.187	0.046	0.017
19	-0.147	-0.062	-0.066	-0.128	-0.128	0.010	0.116	0.229	0.149	0.036
20	-0.074	-0.084	-0.077	0.087	-0.207	0.004	0.018	0.113	0.004	-0.203
21	-0.016	0.093	0.207	-0.073	-0.017	0.074	-0.265	0.142	0.092	0.228
22	0.072	-0.166	-0.043	0.024	0.261	0.117	-0.118	0.025	-0.029	-0.043
23	-0.147	-0.057	0.283	-0.055	0.207	0.005	-0.072	0.260	-0.081	-0.110
24	-0.134	0.094	-0.019	0.034	-0.204	-0.114	0.052	0.292	0.035	0.029
25	0.006	-0.190	-0.111	0.140	0.064	0.045	-0.010	-0.034	-0.048	-0.011
26	-0.005	-0.126	-0.177	-0.026	0.053	-0.002	-0.226	-0.159	0.055	0.048
27	0.266	0.138	-0.252	-0.041	0.045	0.173	0.218	0.181	-0.366	-0.152
28	-0.306	-0.115	-0.112	0.266	-0.155	-0.219	-0.039	-0.011	0.037	-0.134
29	0.030	-0.157	0.024	-0.105	-0.016	-0.200	-0.102	-0.110	-0.021	-0.103
30	0.194	-0.153	-0.345	-0.056	0.100	0.062	0.175	-0.028	0.230	0.012
31	0.151	-0.043	-0.116	0.106	-0.089	0.064	-0.276	0.039	-0.102	-0.104
32	0.274	0.339	-0.156	-0.035	0.060	0.136	0.117	-0.064	-0.070	-0.142
33	-0.046	0.037	0.127	-0.212	-0.222	-0.028	-0.138	-0.074	-0.023	-0.297
34	0.023	0.059	0.053	0.391	0.327	0.053	-0.332	0.053	0.111	-0.094
35	-0.074	0.126	0.004	-0.010	-0.031	0.031	-0.145	-0.174	-0.066	0.112
36	-0.315	-0.181	-0.190	-0.139	0.077	0.035	0.069	0.072	-0.031	-0.013
37	-0.148	0.125	-0.096	0.058	-0.080	-0.369	0.254	0.056	-0.038	0.016

TOTAL VARIANCE IS DEFINED AS THE SUM OF THE POSITIVE EIGEN VALUES OF THE CORRELATION MATRIX.
PAGE 9 BMDP4M ENGLISH DATA

APPENDIX 10 VCT **RAW DATA**

UNROTATED FACTOR LOADINGS (PATTERN)

FOR PRINCIPAL COMPONENTS

F M

		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FA
B1	4	0.329	0.377	-0.034	0.249	0.105	0.296	-0.299	0.153	-0.022	
B2	5	0.209	-0.228	0.052	0.216	0.223	-0.248	-0.264	0.074	0.065	
B3	6	0.511	-0.022	0.240	0.128	0.353	-0.081	0.223	-0.027	0.130	
B4	7	0.333	0.402	0.173	-0.220	-0.039	0.144	0.064	0.081	-0.154	
B5	8	0.604	0.091	-0.168	-0.092	0.457	-0.056	0.029	0.038	0.012	
B6	9	-0.232	0.035	0.322	-0.276	-0.303	0.204	-0.131	-0.113	0.085	
B7	10	0.209	0.487	-0.037	0.318	-0.144	-0.079	-0.400	-0.044	0.069	
B8	11	-0.027	-0.499	0.121	0.289	-0.218	0.227	-0.070	-0.086	0.210	
B9	12	0.339	-0.100	-0.031	0.219	0.029	0.358	0.311	-0.070	-0.001	
B10	13	-0.106	0.262	-0.070	0.376	0.140	-0.207	0.403	0.268	0.112	
B11	14	0.640	0.020	0.215	-0.255	0.084	0.057	-0.001	-0.045	-0.046	
B12 Treatment	15	0.018	0.387	0.215	-0.293	0.014	-0.244	-0.014	0.038	0.020	
B13	16	0.693	0.636	0.109	-0.194	-0.281	0.159	-0.070	0.056	-0.240	
B14	17	-0.061	-0.161	0.252	-0.174	-0.238	0.035	0.167	0.349	0.100	
B15	18	0.483	0.075	-0.049	-0.020	0.196	-0.186	0.099	0.375	-0.114	
B16	19	0.307	0.553	0.164	-0.028	-0.225	-0.153	0.001	-0.012	-0.059	
B17	20	0.647	-0.030	-0.059	0.197	0.072	0.100	0.038	-0.213	-0.237	
B18	21	-0.181	0.206	0.419	-0.130	0.107	-0.132	-0.239	-0.285	0.235	
B19	22	-0.232	0.587	0.154	-0.119	0.092	-0.287	-0.155	-0.112	0.021	
B20	23	0.299	-0.341	0.112	-0.409	-0.363	0.168	-0.124	0.310	0.027	
B21	24	0.573	-0.021	-0.038	0.125	-0.168	0.171	0.320	-0.072	-0.248	
B22	25	0.084	0.372	0.274	0.259	-0.048	0.047	0.196	0.028	-0.033	
B23	26	0.601	-0.202	0.217	-0.299	0.005	0.184	-0.127	-0.091	0.174	
B24	27	-0.218	0.099	0.414	-0.326	0.003	0.102	0.360	0.072	0.067	
B25	28	0.174	0.600	-0.121	-0.067	-0.043	0.190	0.159	0.124	-0.016	
B26 Sensitive	29	0.587	-0.006	0.303	0.137	-0.283	-0.140	-0.037	-0.042	0.063	
B27	30	0.509	-0.093	0.056	0.033	-0.150	0.101	-0.044	-0.199	-0.334	
B28 Risky	31	0.018	0.527	0.338	0.271	-0.098	-0.129	-0.124	0.175	0.094	
B29	32	0.680	-0.046	0.117	0.123	-0.037	0.076	-0.105	-0.067	0.228	
B30	33	-0.227	0.070	0.399	0.290	-0.012	-0.024	-0.051	-0.271	0.295	
B31	34	-0.064	-0.392	-0.047	0.292	-0.134	0.200	-0.079	0.431	0.090	
B32	35	0.587	-0.106	0.231	-0.020	-0.411	-0.129	-0.048	0.095	0.143	
B33	36	0.681	-0.012	0.067	0.177	0.143	0.080	0.004	-0.119	-0.324	
B34	37	0.213	0.349	0.092	0.446	0.121	0.092	-0.199	0.259	-0.079	
B35 Socific	38	0.368	0.018	0.223	-0.066	-0.293	0.160	0.008	-0.034	0.022	
B36	39	X 0.468	0.165	0.494	0.040	0.298	0.199	-0.029	-0.100	-0.008	
B37	40	-0.245	0.629	-0.098	-0.183	0.055	0.326	-0.187	-0.093	0.071	
B38 Soft Scale	41	0.008	-0.368	0.270	0.466	-0.040	0.126	-0.036	-0.115	0.024	
B39	42	0.568	-0.039	-0.287	-0.209	0.103	-0.002	-0.063	-0.204	0.176	
B40	43	-0.349	0.375	0.123	0.392	0.240	-0.317	0.197	-0.169	-0.083	
B41	44	0.637	-0.106	-0.099	-0.324	0.112	-0.127	-0.047	-0.166	0.206	
B42	45	-0.264	-0.021	0.497	0.335	-0.230	0.094	0.186	-0.233	-0.073	
B43	46	0.280	0.343	-0.081	-0.209	-0.035	-0.095	0.004	0.023	-0.121	
B44	47	0.545	-0.167	0.475	-0.091	-0.124	-0.139	0.110	0.138	0.045	
B45	48	0.529	0.117	0.011	-0.102	0.325	0.036	-0.009	-0.060	0.155	
B46	49	-0.301	0.422	0.357	-0.094	0.143	0.273	0.070	-0.075	0.097	
B47	50	-0.032	-0.260	0.116	-0.132	0.363	0.079	0.060	0.163	0.066	
B48	51	-0.309	-0.167	0.417	-0.093	0.286	-0.014	-0.179	0.155	0.087	

DATE 081888 PAGE

B49	52	0.291	0.098	-0.223	-0.268	0.006	0.026	0.028	-0.046	0.153
B50 Grad/Mkt	53	-0.009	-0.122	0.547	-0.096	0.226	-0.255	0.077	0.299	-0.210

PAGE 10 BMDP4M ENGLISH DATA

		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	F
B51	54	0.380	0.177	-0.214	0.183	-0.012	-0.244	-0.257	0.140	0.289	
B52	55	0.098	0.462	0.260	0.000	-0.261	-0.284	-0.119	-0.039	-0.307	
B53	56	0.211	-0.286	0.165	0.043	0.181	0.225	-0.109	-0.192	-0.144	
B54	57	-0.335	-0.197	0.204	-0.190	0.268	0.037	-0.276	0.203	0.064	
B55 Competi	58	-0.001	0.354	-0.097	-0.104	0.067	-0.109	0.473	-0.084	0.457	
B56	59	0.447	-0.102	0.026	0.026	-0.032	0.096	-0.033	0.198	0.181	
B57	60	0.330	-0.011	-0.101	0.427	-0.112	0.061	-0.262	0.089	0.179	
B58	61	0.136	0.383	-0.215	0.169	-0.157	0.142	0.320	-0.149	0.310	
B59	62	0.617	-0.244	0.346	0.103	-0.202	-0.066	0.203	0.036	0.103	
B60	63	-0.074	-0.156	-0.090	0.165	0.156	0.588	0.120	0.381	0.069	

PAGE 11 BMDP4M ENGLISH DATA

		FACTOR 11	FACTOR 12	FACTOR 13	FACTOR 14	FACTOR 15	FACTOR 16	FACTOR 17	FACTOR 18	FACTOR 19
B1	4	0.044	-0.155	-0.305	0.253	-0.052	-0.020	0.095	0.071	-0.042
B2	5	0.428	-0.129	-0.034	-0.311	0.039	-0.068	0.000	0.126	0.064
B3	6	0.269	0.096	-0.035	-0.143	0.094	-0.119	-0.139	-0.139	0.008
B4	7	-0.235	0.118	0.074	-0.069	-0.099	-0.299	-0.126	-0.208	-0.031
B5	8	-0.095	0.010	0.169	-0.110	-0.089	0.071	-0.055	0.030	-0.060
B6	9	-0.222	-0.237	0.035	-0.081	0.259	-0.185	-0.226	0.203	-0.055
B7	10	-0.017	-0.051	-0.255	0.135	0.041	-0.023	0.144	-0.128	-0.038
B8	11	-0.202	0.041	0.161	-0.092	0.054	-0.003	0.088	0.081	-0.068
B9	12	-0.179	-0.048	-0.113	0.086	-0.086	0.132	-0.038	0.333	-0.083
B10	13	-0.031	-0.081	0.075	0.039	0.344	-0.082	0.015	-0.008	0.031
B11	14	0.045	-0.083	-0.012	0.059	-0.083	-0.227	-0.042	-0.004	0.217
B12	15	-0.074	-0.064	0.179	0.023	0.296	0.055	-0.114	0.377	0.177
B13	16	0.117	0.142	0.026	0.106	-0.252	-0.048	-0.015	-0.100	-0.141
B14	17	-0.062	-0.267	-0.129	-0.020	-0.018	0.373	-0.244	-0.280	-0.060
B15	18	-0.290	0.022	-0.078	0.023	-0.139	0.267	-0.149	0.200	-0.087
B16	19	0.130	-0.029	-0.008	-0.101	-0.175	0.326	0.067	0.175	0.098
B17	20	-0.146	-0.093	-0.057	-0.127	0.114	0.129	-0.244	-0.139	0.054
B18	21	-0.221	-0.100	-0.187	0.028	0.060	0.154	-0.080	-0.047	0.109
B19	22	0.173	0.083	0.158	-0.038	-0.216	0.167	-0.141	0.190	-0.040
B20	23	-0.018	0.174	0.109	-0.134	0.012	0.072	0.103	0.006	0.149
B21	24	0.013	-0.077	-0.002	-0.289	0.076	-0.142	-0.022	-0.160	-0.208
B22	25	-0.228	0.081	-0.028	-0.128	-0.022	-0.063	-0.215	0.049	0.379
B23	26	-0.002	-0.056	-0.086	-0.013	-0.013	-0.148	0.106	-0.097	-0.079
B24	27	-0.175	-0.159	-0.341	-0.116	0.028	-0.131	0.188	0.045	-0.096
B25	28	0.224	-0.273	0.156	-0.186	0.211	0.094	0.236	0.099	0.030
B26	29	0.207	0.040	0.161	-0.110	0.060	0.001	-0.175	-0.046	-0.195
B27	30	0.051	-0.226	0.192	-0.147	0.011	0.044	-0.012	0.089	0.087
B28	31	0.017	-0.005	0.052	-0.166	0.094	0.104	0.105	-0.264	0.156
B29	32	0.042	-0.211	0.031	-0.256	-0.182	-0.023	-0.114	-0.035	0.072
B30	33	-0.068	0.135	0.223	-0.164	0.116	-0.008	0.124	0.035	-0.313
B31	34	-0.108	-0.103	0.071	-0.062	0.086	-0.221	0.101	0.107	0.019
B32	35	0.106	-0.095	0.088	0.226	0.014	-0.045	-0.040	0.072	-0.168
B33	36	-0.161	-0.090	0.008	-0.076	0.020	-0.058	0.114	0.011	0.047
B34	37	-0.125	0.008	-0.213	-0.125	0.004	-0.007	-0.043	-0.021	-0.162