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A Direct, Two-Dimensional Scaling of the Items from Selected Measures of Psychological Masculinity-Femininity

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A DIRECT, TWO-DIMENSIONAL SCALING OF THE ITEMS FROM SELECTED MEASURES OF PSYCHOLOGICAL MASCULINITY-FEMININITY

by

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VITA

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CHAPTER I

INTRODUCTION

Publication of psychological research related to sex and gender has accelerated dramatically during the past decade. Interest in the topic has spawned two new journals (Sex Roles and Psychology of Women Quarterly) as well as an enormous increase in gender-related listings in Psychological Abstracts and the Social Science Index. Stimulated in large part by Sandra Bem's theory of androgyny, many of these studies employed new instrumentation designed to assess masculinity and femininity as separate, complimentary dimensions of personality. While most of the initial results obtained with these new instruments were viewed as confirmation of Bem's theoretical framework, as support for androgyny grew, it appeared that some of the more ambitious claims for the concept were significantly overstated. As Deaux (1984) stated:

> Not only was androgyny to be a particular conceptual focus, it was also proclaimed as a value. Thus it was good and wise and liberal to be androgynous, and mental health was proposed to be synonymous with androgynous scores. Androgyny soon became a code word for an egalitarian, gender-free society and disciples have advocated androgynous therapy, androgynous curricula for school children, and androgynous criteria for professional positions. The value of such attempts can be debated: it is certainly clear that they go beyond what the scientific data base would allow. (p. 109)

Not surprisingly, the nature of these propositions has sparked a vigorous debate, which at times seems to be fueled more by political persuasion than scientific reason. Some authors continue to praise androgyny as the salvation of masculinity-femininity (M-F) research, but others have seized upon the excesses of the more zealous androgyny proponents as reason enough to drop the concept entirely. While recognizing that many of the claims for androgyny are beyond empirical support, investigators engaged in less empassioned analysis of the existent evidence have concluded that some of that discrepancy is caused by poor measurement as well as overstated theory. Focusing considerable attention on the psychometric shortcomings of the new androgyny-based instruments, they have suggested that an adequate measure of M-F has yet to be developed. Downing (1979) does not expect that to occur until researchers resolve the logical inconsistency between the complexity of their theory and the simplicity of their measurement methodology.

The resolution of discrepancies between theory and observation is what van der Ven (1973) has called the cyclical process of research. When theory is not fully supported by systematic data collection, researchers are faced with the necessity of altering their theory or improving their measurement. Loevinger (1966) has observed that in the field of personality research this process has almost always led to a narrowing of theory. As a result, investigators have frequently been forced to choose between limiting their study to measurable — but frequently trivial — concepts or proposing more significant — but untestable — theory. Blaming this dilemma on the fact that researchers have become too uncritical of their assessment techniques, she concluded

that personality research would not improve substantially until more adequate measurement methodologies were adopted.

Agreeing with Loevinger, Constantinople (1973) suggested that weaknesses in tests designed to measure psychological masculinity and femininity had made M-F one of the muddiest concepts in the psychologist's vocabulary. In her review of M-F tests developed over a forty-year period, she determined that all of them exhibited three major flaws: 1) Although available data clearly pointed to the fact that M-F was multidimensional, tests designed to measure the construct were based on a unidimensional scaling model; 2) While all the tests were developed on the assumption of bipolarity in one M-F dimension, there was sufficient evidence to support the construction of separate, orthogonal M and F scales instead of, or possibly in addition to, a bipolar M-F scale; and 3) The use of gender difference in response to test items as the sole criterion for an M-F indicator was open to serious question. She concluded that more satisfactory M-F research was dependent upon the construction of new instrumentation designed to reflect the theoretical conceptualization of masculinity and femininity as separate, complimentary personality dimensions.

Soon after the publication of Constantinople's recommendations, Sandra Bem and Janet Spence converged on the view of masculinity and femininity as two, independent interpersonal dimensions occurring together in both males and females. Working independently, each attempted to operationalize that conceptualization in instruments containing statistically independent M and F scales. The scoring of those two orthogonal scales provided an empirical description of the occurrence of

relatively high levels of both masculine and feminine characteristics in the same individual. The term "androgyny" — from the Greek "andro" for man and "gyn" for woman (Heilbrun, 1973) — was chosen to describe that personality category. Soon thereafter, "androgyny" was adopted as the label for the new research approach in order to differentiate it from the traditional, bipolar M-F model.

The appearance of the Bem Sex-Role Inventory (BSRI, Bem, 1974) and the Personal Attributes Questionnaire (PAQ, Spence, et al, 1975) ignited a tremendous burst of M-F research. Despite the general appeal of the androgyny concept and the new instruments designed to measure it, however, dissatisfaction with M-F assessment did not disappear. The new inventories were, in fact, criticized for the very same weaknesses that Constantinople had identified in traditional, unidimensional, bipolar M-F tests. Psychometric deficiencies caused by poor test item selection and scale construction had not been eliminated, and, as a result, M-F continued to escape adequate empirical definition.

McCormick (1977) has proposed a new approach to personality test construction, based on a circular model, that appears to be particularly well-suited for M-F measurement. Integrating Leary's (1957) interpersonal beharioral theory, Scholsberg's (1952) sorting/scaling procedures, and Ross' (1938) statistical work, he has outlined a simple two-dimensional technique that may be employed to scale personality trait items to a circular order. Subjects are instructed to scale test items twice, once on a nine-point Love-Hate Likert scale and again on a Domminance-Submission scale. The two resulting scale means are then used to determine the angular placement of an item in Euclidian space defined by the

two scaling dimensions as illustrated in Figure 1.1. McCormick and Kavanagh (1981) applied this procedure to the items from the Interpersonal Checklist (ICL, LaForge & Suczek, 1955). They determined a circular ordering for the ICL items and confirmed the order of the categories of the theoretical circular model from which the ICL had been developed (Freedman, et al, 1951).

Circular models for psychological variables have been reported in a variety of assessment areas. With the exception of McCormick's item-scaling approach, however, all have been empirically supported by results calculated from the intercorrelations among, or the factor loadings of, scales of personality test items. McCormick and Kavanagh argue that item-scaling provides a superior approach to test construction. In particular, they suggest that their procedures promote improved test item selection, homogeneity within scales of items, and discriminability among scales. Based upon the results of their study, they recommended further investigation of the application of two-dimensional scaling to items from existing, well-documented personality instruments.

A number of authors have suggested further M-F study that closely parallels McCormick and Kavanagh's recommendation. Berzins, et al, (1978), for example, have encouraged investigation of the apparent conceptual and empirical similarities of the M-F construct and the categories of Leary's theoretical interpersonal circle. Wiggins and Holzmuller (1979) have recommended a more detailed analysis of their observation that the scales from the BSRI reflected the dominance and nurturance scales of their interpersonal circle. As their study focused on the relationship among the BSRI scales, they encouraged further investigation of the influence of

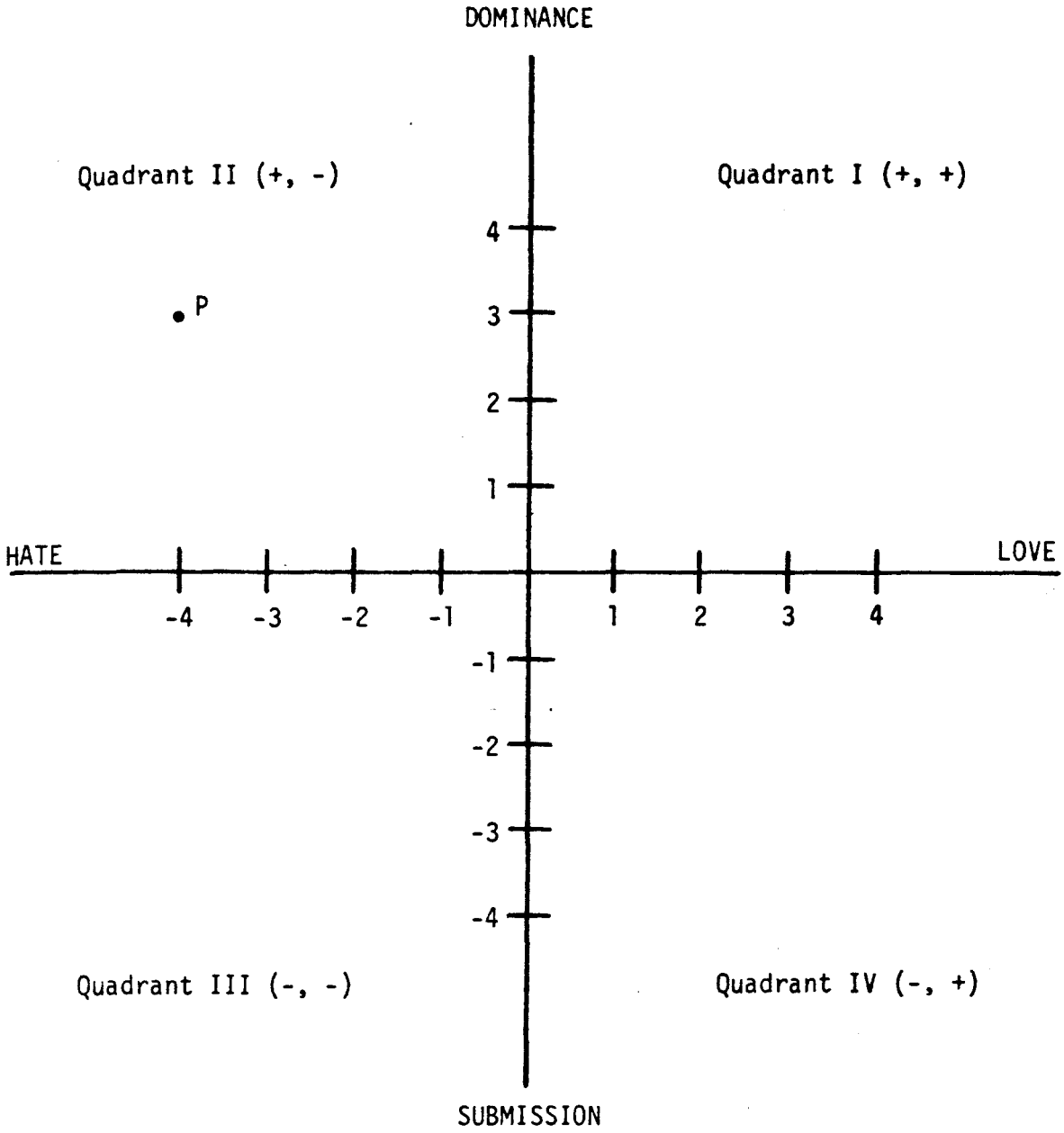


Figure 1.1 Diagram illustrating how points would be plotted in the cartesian coordinate system of the circumplex.

The dimensions would be the Dominance-Submission dimension and the Hate-Love dimension. An item whose mean designation was +3 on the Dominance-Submission dimension and -4 on the Hate-Love dimension would fall in Quadrant II. All other items are plotted in a similar fashion.

individual items on the properties of the scales to which they were assigned.

Given the convergence of these proposals, this study was designed to investigate the application of two-dimensional item-scaling to the measurement of psychological masculinity-femininity. McCromick's techniques were used to scale the items from: 1) The ACL-Fem Scale (Parker, 1969), a traditional, bipolar M-F test; 2) The Bem Sex-Role Inventory (Bem, 1974), an instrument designed to reflect the orthogonal M-F relationship proposed in androgyny theory; and 3) Heilbrun's (1976) masculinity and femininity scales which were empirically derived from the Adjective Check List (Gough & Heilbrun, 1965). Initial evaluation was focused on the scaling procedures themselves. The resulting angular item placements were then used to examine test scale homogeneity and discriminability, the theoretical expectation of M and F scale orthgonality, and the convergent validity of the scales from the three selected instruments.

CHAPTER II

REVIEW OF THE LITERATURE

Imposing some structure on the recent proliferation of literature generated by psychological masculinity-femininity research is a necessary task. The review presented here is focused upon the instrumentation that has been designed to measure the M-F construct. While theoretical issues are not completely ignored, assessment methodology is emphasized in five major sections. The first analyzes the traditional, unidimensional, bipolar M-F scaling model. The second critiques the orthogonal M-F approach which has grown out of androgyny theory. The third provides a brief overview of personality test construction. The fourth examines the circumplex models which have been proposed for a variety of psychological variables, including masculinity-femininity. The fifth details McCormick's (1977) two-dimensional scaling procedures in light of their proposed application to M-F test construction.

Traditional M-F Measurement

Efforts to develop systematic measures of psychological masculinity-femininity, dating back to Ellis (1904), produced their first real success in 1936 with the introduction of the Terman-Miles Masculinity-Femininity Test, the Strong Masculinity-Femininity Scale, and the Guilford Masculinity Scale. Although differing to some degree in both form and content, each of these instruments was developed to investigate "those aspects of personality in which the sexes tended to differ...

by comparing the responses made by groups of subjects" to the various items on the tests (Terman & Miles, 1936, p. 6). That fundamental principle has since been employed to construct a plethora of M-F measures, including the Minnesota Multiphasic Mf scale, the Fe scale of the California Psychological Inventory, the Guilford-Zimmerman Temperamant Survey M scale, and Parker's Adjective Check List Fem scale.

Parker's ACL-Fem Scale

Parker (1969) analyzed the responses of 5017 college freshmen (2212 females and 2805 males) to the Adjective Check List (ACL, Gough & Heilbrun, 1965) "to develop empirically an ACL femininity scale through identification of ACL adjectives for which reliable sex differences in frequency of endorsement exist" (Parker, 1969, p. 99). Differences between male and female item endorsement were compared for each of the 300 ACL items by *z* tests. When that analysis resulted in an extremely large proportion of differences at traditional levels of statistical significance, Parker selected a level of .00005 as the criterion for identifying significant differences between male and female response. This method resulted in the selection of 133 adjectives (94 feminine and 39 masculine items) for inclusion on the ACL-Fem scale. Those items are listed in Table 2.1 with their item number from the instrument employed in this study and the masculinity (M) or femininity (F) scale assignment made by Parker.

Validation information for the ACL-Fem scale is summarized in Table 2.2. Parker interpreted these results as sufficient support for scale validity. All correlations were in the expected direction and were statistically significant. The magnitude of the coefficients was

Table 2.1

Parker Items, Item Numbers, and Scale Assignments

Item	#	M or F Scale	Item	#	M or F Scale
affectionate	688	F	conventional	740	F
aggressive	690	M	cool	741	M
appreciative	694	F	cooperative	742	F
argumentative	695	M	cowardly	743	F
arrogant	701	M	deliberate	753	M
artistic	697	F	dependent	765	F
attractive	700	F	disorderly	760	F
autocratic	701	M	dissatisfied	759	M
bossy	708	F	dreamy	764	F
changeable	715	F	effeminate	767	F
charming	716	F	egotistical	93	M
cheerful	718	F	emotional	768	F
clear-thinking	722	M	enterprising	769	M
clever	723	M	enthusiastic	770	F
coarse	725	M	excitable	774	F
complicated	730	F	fearful	777	F
confident	733	M	feminine	778	F
confused	735	F	fickle	779	F
conscientious	736	F	flirtatious	784	F
considerate	737	F	foolish	785	F
contented	739	F	forceful	786	M

Table 2.1 (Continued)

Item #	#	M or F Scale	Item	#	M or F Scale
foresighted	787	M	masculine	864	M
forgiving	788	F	meek	857	F
friendly	792	F	mischievious	860	F
frivilous	793	F	modest	861	F
generous	796	F	moody	862	F
gentle	797	F	nagging	865	F
handsome	803	M	natural	866	F
hard-headed	806	F	nervous	867	F
headstrong	811	F	noisy	868	F
helpful	814	F	opportunistic	871	M
high-strung	815	F	optimistic	872	F
hurried	819	F	outgoing	874	F
idealistic	821	F	patient	878	F
immature	823	F	planful	880	F
impulsive	825	F	pleasant	881	F
indifferent	827	M	pleasure-seeking	892	M
informal	833	F	poised	884	F
ingenious	834	M	praising	886	F
inhibited	835	F	progressive	887	M
inventive	839	M	prudish	889	F
kind	843	F	rattlebrained	896	F
loyal	850	F	responsible	902	F
mannerly	855	F	resourceful	901	M

Table 2.1 (Continued)

Item	#	M or F Scale	Item	#	M or F Scale
rigid	906	M	tempermental	971	F
robust	907	M	tense	973	F
self-confident	915	M	thoughtful	366	F
selfish	916	F	timid	976	F
sensitive	919	F	tolerant	977	F
sentimental	920	F	touchy	978	F
sharp-witted	925	M	tough	979	M
show-off	927	M	trusting	980	F
shrewd	928	M	unaffected	984	F
simple	931	F	unassuming	986	F
sincere	932	F	understanding	989	F
sly	936	M	unemotional	990	M
snobbish	939	F	unexcitable	1000	M
soft-hearted	965	F	unrealistic	996	F
spontaneous	946	F	vindictive	1003	M
spunky	947	F	warm	1006	F
stern	949	M	whiney	1010	F
stolid	951	M	wholesome	1009	F
strong	954	M	wise	1014	M
stubborn	955	F	worrying	1017	F
submissive	958	F	zany	1019	F
superstitious	959	F	Total Items = 133		
sympathetic	962	F	Femininity Scale = 94		
talkative	969	F	Masculinity Scale = 39		

Table 2.2

Intercorrelations of the ACL-Fem Scale and Other Measures of Masculinity and Femininity

(Parker, 1969, p. 109)

		ACL-Fem[a]	MMPI-Mf	GZTS-M
MMPI-Mf[b]	M:	.30**		
	F:	-.34**		
GZTS-M[c]	M:	-.32**	-.49**	
	F:	.21**	-.19*	
CPI-Fe[d]	M:	.44**	.41**	-.49**
	F:	.21**	-.34**	.37**

*Significant at alpha = .05 **Significant at alpha = .01

[a]Adjective Check List (Parker, 1969)

[b]Minnesota Multiphasic Personality Inventory (Dahlstrom & Welsh, 1960)

[c]The Guilford-Zimmerman Temperment Survey (Guilford & Zimmerman, 1949)

[d]California Psychological Inventory (Gough, 1957)

similar to the intercorrelations among other M-F instruments, which Parker viewed as confirmation that the ACL-Fem offered as much information about masculinity-femininity as existing scales. He did, however, recognize that the modest values of the coefficients indicated that the various tests were not tapping exactly the same underlying variable. As a result, he suggested that M-F research might benefit from utilization of combinations of these scales in future study.

Criticisms of the Traditional M-F Model

Despite the forty-year history of designing M-F inventories to discriminate between the genders on the basis of difference in response to test items, there has been apparent dissatisfaction with the resulting measurement. Evaluation of the correlations between M-F measures such as those reported by Parker have long raised doubt about the convergent validity of the instruments. Heston (1959), Barrow and Zuckerman (1960), deCillis and Orbison (1950), Stanek (1959), Shepler (1951), Klopfer (1966), and Himelstein and Stoup (1967) report, at best, moderate correlations among the M-F scales they examined. These results suggest that while the tests do measure something in common, the fact that a significant portion of the variance associated with the scales is not shared indicates that they are not measuring identical M-F constructs.

This difficulty was not completely unexpected. Even the seminal work of Terman and Miles indicated that M-F might not be adequately represented by instruments designed to measure a unidimensional M-F construct. The fact that the tests yielded one summary M-F score, however, implied a single, bipolar M-F dimension (Constantinople, 1973). Most

test developers appeared to ignore this issue. Those who did not reported their assumption of a single M-F dimension along which individauls could be ordered (Aaronson, 1959).

The advent of factor analysis provided a new approach to the investigation of M-F dimensionality. Ford and Tyler (1952), Reece (1964), Engle (1966), and Lunnenborg (1972) all concluded that M-F should not be conceptualized as a unitary trait based upon the results of their factor analytic studies. The validity of the tests constructed on the assumption of M-F unidimensionality was thus subject to further question.

Evidence challenging the single, bipolar structure of M-F was also found in the study of the correlations between the M and F scores calculated from the instruments. If masculinity and femininity were opposite ends of a bipolar dimension, M and F score correlation would be approximately -1.00. Jenkin and Vroegh (1969), however, reported moderate score correlations and concluded that masculinity and femininity should be thought of as separate dimensions. Gonen and Lanskey (1968) suggested that M-F would be best represented as three factors: independent M and F dimensions and a bipolar M-F dimension.

Nichols (1962) identified one final criticism of M-F measures based upon empirical analyses. Many of the tests (e.g., Guilford, Grough, Terman & Miles) instructed respondents to describe themselves by checking items on the instruments. Nichols suggested that subjects' responses would be influenced to some degree by what they thought they should check based upon their internal concept of what was socially desirable for the stereotypic person of their gender. Diamond (1955), Bieliauskas, et al (1968), and Ellis and Bentler (1973) provided further

support for this view and suggested that social desirablity influences were at least partly responsible for gender differences in test item response.

Questions about M-F test dimensionality have also been raised from more purely theoretical perspectives. Carlson (1971), noting the number of well-regarded theorists who postulated that personality was an integration of two underlying factors (Freud, 1969; Jung, 1956; Leary, 1956; Parsons & Bales, 1955; Bakan, 1966), urged that masculinity and femininity be understood as separate, interactive components within a personality. Through integration of these two complimentary qualities, males usually become more masculine and females more feminine, but both components continue to be present in every individual. Carlson argued that thinking of M-F as mutually exclusive, bipolar attributes put M-F research out of step with the prevalent dualistic theory of personality.

In her review of masculinity-femininity tests, Constantinople (1973) determined that the tests developed to that time were largely inadequate for three reasons. One, available data clearly indicated that M-F was multidimensional not one-dimensional. Tests designed to reflect that would include homogeneous M and F scales that could be scored separately. No existing test was constructed in that manner. Two, all of the tests were built on the assumption of bipolarity in one M-F dimension, but there was adequate evidence to support construction of separate M and F scales instead of, or possibly in addition to, one bipolar M-F scale. Three, the use of gender difference in response to test items as the sole criterion for an M-F indicator was open to

serious question. The suggestion that item response was at least partially the result of social desirability influences pointed to one source of impurity in M-F assessment that needed further evaluation. Constantinople concluded that M-F measurement would not improve substantially until instruments were constructed to reflect the theoretical conceptualization of masculinity and femininity as separate, essentially orthogonal personality dimensions.

The Androgyny Approach

Soon after the publication of Constantinople's review, Sandra Bem and Janet Spence converged on a set of assumptions that constituted the core of a new model for M-F research. Reflecting Constantinople's concern about the construction of M-F tests which operationalized masculinity and femininity as antithetical, Bem (1974) and Spence (Spence, et al, 1975) proposed new guidelines for scale development. 1) Masculinity and femininity should not be thought of as opposite ends of a single, bipolar dimension, but instead as separate, orthogonal, equally important aspects of human personality. 2) Individuals do not have to be either masculine or feminine (or somewhere ambiguously or undesirably in between), but can instead be both masculine and feminine (androgynous), integrating in a single personality the attributes of instrumentality and expressiveness (Parsons & Bales, 1955) or agency and communion (Bakan, 1966). The term "androgyny" was quickly adopted as the label for this new approach to set it apart from the traditional, unidimensional, bipolar M-F research model.

In order to evaluate their view, both Bem and Spence recognized the need for new instrumentation that was not developed from the

premise that scale items had to be indicators of either masculine (and, therefore, not feminine) or feminine (and, therefore, not masculine) characteristics. Working independently, each attempted to construct an instrument that operationalized the definition of psychological masculinity and femininity as clusters of socially desirable attributes stereotypically considered to differentiate males and females and thus define the psychological core of masculine and feminine personalities (Spence & Helmreich, 1978). In 1974, Bem published the Bem Sex-Role Inventory (BSRI) and Spence introduced the Personal Attributes Questionnaire (PAQ).

The appearance of these two instruments revolutionized M-F research and set off a virtual explosion of publication of androgyny literature. Although there were some detractors (Pedhazur & Tetenbaum, 1979; Locksley & Colten, 1979), the appeal of the concept and the instruments designed to measure it was apparent (Harrison, 1975; Kaplan & Bean, 1976; Pleck, 1975). The new research approach was firmly established and prompted the development of three additional instruments designed to yield androgyny scores. The PRF ANDRO was based on Jackson's Personality Research Form and constructed following Bem and Spence's socially desirable, stereotypic definition of M-F (Berzins, et al, 1978). The other two instruments did not take the social desirablity issue into account. They were essentially empirically derived scales that were designed to provide for androgyny scoring. Baucom (1976) developed his inventory from the California Psychological Inventory. Heilbrun's (1976) independent masculinity and femininity scales were drawn from the item pool of the Adjective Check List.

All of the new androgyny instruments provided for scoring of independent M and F scales. Those scores were then used to classify the respondent in a fourfold typology. Subjects with high M and low F scores are masculine sex-typed. Those with high F and low M are feminine sex-typed. Those with low scores on both scales are labeled "undifferentiated," and those with high scores on both scales are androgynous. The Bem and Spence instruments have been extensively reviewed. The other three have not received as much attention but have been the subject of some comment in the literature.

The Bem Sex-Role Inventory

Bem has identified four features of the BSRI that distinguish it from traditional M-F tests: 1) It includes both a masculinity and a femininity scale. 2) Rather than following the traditional procedure of selecting items based upon differential endorsement patterns, BSRI items were chosen because they were judged to be more desirable in American society for one gender than the other. 3) The BSRI characterizes a respondent as masculine, feminine, undifferentiated, or androgynous as a function of the differences between his or her endorsement of masculine or feminine items. 4) The BSRI includes a Social Desirability scale (N) that is completely neutral with respect to gender. This scale was utilized during the development of the inventory to insure that the resulting measure was not simply tapping a general tendency to endorse socially desirable trait items. The scale later served as a neutral context for M and F scale comparison.

The 20 M, 20 F, and 20 N BSRI items were selected from an initial pool of 400 adjectives or phrases. Items for the M scale were

selected if they were judged to be more socially desirable for an American male than female by both genders in the normative group. Items for the F scale were selected from those judged to be more socially desirable for females. The N scale items were selected from those that were judged to be no more desirable for one sex than the other. The 60 BSRI items are listed in Table 2.3 along with their BSRI scale assignment and their item number from the instrument employed in this study.

The BSRI instructs a person to indicate on a 7-point, Likert-like scale how well each of the 60 trait items describes him/herself. Three scores are calculated based upon the item responses. Only the M and F scores are used to determine the person's classification in the four-fold typology. Bem's initial classification procedures resulted in only three categories: male, female, and androgyny. A person could be androgynous if both M and F scale scores were high or if both scores were low. This approach drew both statistical (Strahan, 1975) and conceptual (Spence, et al, 1976) criticism, and Bem adopted what is now called the median-split method that is used with all the major androgyny instruments. The median-split method compares a person's M and F scores to scale medians calculated from a normative population. A person is classified male sex-typed if his/her M score is above the M median and F below the F median. A female sex-typed classification results if a person's F score is above the F median and M score is below the M median. An undifferentiated label results when both the M and F scores are below their respective median. Conversely, one is described as androgynous when both the M and F scores are greater than their respective median.

Psychometric analysis of the BSRI reported by Bem (1974) included

Table 2.3

Bem Items, Item Numbers, and Scale Assignments

Item	#	M, F, N Scale	Item	#	M, F, N Scale
acts as a leader	685	M	eager to soothe hurt feelings	766	F
adaptable	686	N	feminine	778	F
affectionate	688	F	flatterable	782	F
aggressive	690	M	forceful	786	M
ambitious	691	M	friendly	792	N
analytical	692	M	gentle	797	F
assertive	698	M	gullible	802	F
athletic	699	M	happy	804	N
cheerful	718	F	has leadership abilities	809	M
childlike	750	F	helpful	814	N
compassionate	727	F	independent	826	M
competitive	729	M	individualistic	828	M
conceited	732	N	inefficient	830	N
conscientious	736	N	jealous	841	N
conventional	740	N	likable	848	N
defends own beliefs	752	M	loves children	849	F
does not use harsh language	761	F	loyal	850	F
dominant	763	M	makes decisions easily	853	M

Table 2.3 (Continued)

Item	#	M, F, N Scale	Item	#	M, F, N Scale
masculine	864	M	tactful	968	N
moody	862	N	tender	972	F
reliable	900	N	theatrical	975	N
secretive	914	N	truthful	983	N
self-reliant	917	M	understanding	989	F
self-sufficient	963	M	unpredictable	995	N
sensitive to the needs of others	964	F	unsystematic	999	N
shy	929	N	warm	1006	F
sincere	932	N	willing to take a stand	1016	M
soft-spoken	942	F	willing to take risks	1013	M
solemn	943	N	yielding	1018	F
strong personality	967	M			
sympathetic	962	F			

Total Items = 60

Masculinity Scale = 20

Femininity Scale = 20

Neutral Scale = 20

support for the inventory's internal consistency and test-retest reliability and a correlational analysis of the relationship between the M and F scales. The interscale correlations (r=.11 for males, r= -.14 for females) were interpreted as empirical support for the theoretical orthogonality of masculinity and femininity.

Heilbrun's Masculinity and Femininity Scales

In contrast to the construct-validation approach to scale construction employed by Bem, Heilbrun employed a more purely empirical approach to develop his masculinity and femininity scales (Heilbrun, 1976). His scales were developed through an identification of those adjectives from the 300 item Adjective Check List (Grough & Heilbrun, 1965) which exhibited differences in endorsement between college males identified with masculine fathers and college females identified with feminine mothers. The 28 items endorsed more by males were assigned to the masculinity scale and those endorsed more by females to the femininity scale. This approach was intended to identify items that would be endorsed differently by "two extreme criterion groups differing not only in terms of biological maleness/femaleness but also in terms of psychological masculinity/femininity" (Heilbrun, 1976, p. 184). The 54 Heilbrun scale items are listed in Table 2.4 along with their M or F scale assignment and the item number from the instrument employed in this study.

Respondents to Heilbrun's scales are instructed to check those items that they consider characteristic of their own behavior. The number of feminine items checked is then subtracted from the number of masculine items checked. This difference score is then transformed to

Table 2.4

Heilbrun Items, Item Numbers, and Scale Assignments

Item	#	M or F Scale	Item	#	M or F Scale
aggressive	690	M	fickle	779	F
appreciative	694	F	forceful	786	M
arrogant	696	M	forgiving	788	F
assertive	698	M	forsighted	787	M
autocratic	701	M	frank	791	M
conceited	732	M	friendly	792	F
confident	733	M	frivolous	793	F
considerate	737	F	handsome	803	M
contented	739	F	hard-headed	806	M
cooperative	742	F	helpful	814	F
cynical	748	M	industrious	840	M
deliberate	753	M	ingenious	834	M
dependent	765	F	inventive	839	M
dominant	763	M	jolly	842	F
emotional	768	F	masculine	864	M
excitable	774	F	modest	861	F
enterprising	769	M	opportunistic	871	M
fearful	777	F	outspoken	876	M
feminine	778	F	praising	886	F

Table 2.4 (Continued)

Item	#	M or F Scale	Item	#	M or F Scale
self-confident	915	M	submissive	958	F
sensitive	919	F	sympathetic	962	F
sentimental	920	F	talkative	969	F
sharp-witted	925	M	timid	976	F
shrewd	928	M	tough	979	M
sincere	932	F	vindictive	1003	M
stern	949	M	warm	1006	F
strong	954	M	worrying	1017	F

Total Items = 54

Masculinity Scale = 28

Femininity Scale = 26

a T score (M=50, SD=10) with higher scores indicating masculinity and lower scores femininity. In a modified version of the median-split procedure, the scores of Heilbrun's M and F scales may be used to classify subjects as masculine, feminine, undifferentiated, or androgynous.

Psychometric evaluation of Heilbrun's scales revealed moderate, negative correlations ($r = -.42$ for males, $r = -.24$ for females) between the M and F scales, raising some question about their independence. Kelly and Worell (1977) conclude that this may be due, in part, to the fact that a number of apparently socially undesirable items are included in the instrument.

Evaluation of the Androgyny Model

While most authors seem to regard the new two-dimensional, orthogonal M-F model as an improvement over the traditional bipolar paradigm, major methodological and conceptual criticisms are apparent. In fact, it appears that the new instruments are subject to the same basic criticism made by Constantinople with respect to the traditional M-F tests. Despite the change in approach, questions about dimensionality, bipolarity, and clarity of theoretical and empirical conceptualization of masculinity and femininity remain. Further, the new model has not completely addressed the problems caused by stereotypic, socially desirability influences on test item response.

Factor analytic studies of the BSRI and PAQ have supported the proposition that the underlying structure of the new androgyny-based instruments cannot be represented as one bipolar M-F dimension. On the other hand, most investigators have found more than the two orthogonal factors postulated by Bem and Spence. Whetton and Swindel's (1977)

analysis of the responses to the BSRI yielded five primary and twelve weaker factors. Although one primary masculine and one primary feminine factor did emerge, Bem's two factor premise was not fully supported. A number of studies (Waters, et al, 1977; Gaudreau, 1977; Moreland, et al, 1978; Bohannon & Mills, 1979; Gross, et al, 1979; Collins, et al, 1979) have produced relatively similar four factor solutions to BSRI analysis. Generally, each found factors related to those Gaudreau labeled "masculine," "feminine," "maturity," and "sex of subject." The sex of subject factor has been in nearly every BSRI analysis. It has resulted from only two items: "masculine" and "feminine." Seeing the influence of those two items as interference with the intent of BSRI assessment, Bem has removed them from the instrument (Bem, 1979).

Pedhazur and Tetenbaum (1979) have criticized the preceding studies for analyzing male and female responses as one combined data set. Factoring male and female responses separately, their analysis produced one masculine, one feminine, one sex of subject, and one bipolar "self-sufficiency" factor. The factor loadings upon which that interpretation was based are listed in Table 2.5. Also analyzing male and female responses separately, Sassenrath and Yonge (1979) limited their input to the forty items from the BSRI M and F scales. They found six factors: four masculine, one feminine, and one sex of subject.

Factor studies of the PAQ have yielded fewer underlying dimensions than have been found for the BSRI. Gross, Bettis, Small, and Erdwins (1979) factored male and female PAQ responses as one group and found four factors: a bipolar M-F, masculine, feminine, and "decisive

Table 2.5

BSRI Item Factor Loadings for Separate Male and Female Groups
Four-Factor Solution, Orthogonal Rotation
From Pedhauzer and Tetenbaum*

Item	Female Factors 1	2	3	4	Male Factors 1	2	3	4
self-reliant	.360	.135	.492	.007	.043	.152	.524	.009
defends own beliefs	.506	.176	.106	-.133	.060	.192	.422	.085
independent	.442	.098	.480	-.049	.003	.247	.657	.053
athletic	.168	-.008	.018	-.192	.035	.178	.086	.350
assertive	.770	-.015	.015	-.073	.027	.680	.451	-.042
strong personality	.689	.044	.058	.005	.064	.632	.466	.013
forceful	.768	-.016	-.011	-.047	.002	.655	.377	.145
analytical	.363	.006	.178	-.037	.162	.151	.177	.097
has leadership abilities	.731	.096	.127	.051	.287	.568	.382	.149
willing to take risks	.497	.075	.036	-.071	.214	,367	.405	.109
makes decisions easily	.464	.145	.236	.009	.058	.360	.251	.171
self-sufficient	.468	.109	.460	-.119	.040	.187	.597	.110
dominant	.687	-.080	-.106	-.128	.004	.648	.289	.074
masculine	.133	-.265	-.064	-.507	.130	.101	.059	.416
willing to take a stand	.615	.144	.122	-.071	.215	.315	.588	.115
aggressive	.674	-.151	-.190	-.177	.101	.667	.227	.048
acts as a leader	.738	.108	.086	.075	.213	.627	.366	.090

Table 2.5 (Continued)

Item	Female Factors 1	2	3	4	Male Factors 1	2	3	4
individualistic	.519	.216	.217	-.197	-.029	.181	.431	.073
competitive	.506	-.091	-.081	.233	.219	.398	.078	.340
ambitious	.502	.083	-.045	.168	.301	.533	-.062	.109
yielding	-.262	.340	-.093	.083	.249	-.203	-.010	-.024
cheerful	.192	.423	.174	.007	.426	.234	.188	.205
shy	-.422	-.105	-.128	-.021	.055	-.400	-.102	-.007
affectionate	.187	.545	-.195	.146	.646	.280	-.065	-.116
flatterable	.134	.026	-.336	.183	.276	.075	-.188	-.215
loyal	.088	.396	.081	-.008	.199	.126	.422	.092
feminine	.120	.447	-.000	.511	-.065	-.056	.068	-.748
sympathetic	.080	.689	-.039	.024	.702	.037	.117	.062
sensitive to the needs of others	.115	.679	.066	-.097	.687	.131	.262	.021
understanding	.110	.713	.039	.129	.593	.036	.295	.090
compassionate	.127	.741	-.057	-.107	.743	.080	.242	.069
eager to soothe hurt feelings	-.031	.541	-.206	-.018	.534	-.024	.007	.053
soft-spoken	-.217	.309	.071	.149	.336	-.230	.042	.095
warm	.146	.626	-.077	.219	.734	.245	.018	.017
tender	.075	.727	-.057	.243	.744	.154	-.001	-.177
gullible	-.140	.198	-.480	-.044	.085	-.011	-.243	-.428
childlike	-.016	.025	-.461	-.120	.033	-.001	-.289	-.489
does not use harsh language	-.113	.221	.078	.068	.175	-.064	.128	.104

Table 2.5 (Continued)

Item	Female Factors 1	2	3	4	Male Factors 1	2	3	4
loves children	-.019	.434	.073	.045	.547	.068	-.048	.199
gentle	.004	.671	-.040	.189	.732	.049	.039	-.029

Factor loadings equal to or greater than |.400| are underlined.

The first twenty items listed are from the BSRI masculinity scale.

The second twenty items listed are from the BSRI femininity scale.

*From Pedhazur & Tetenbaum, 1979

action" combination. Gaa, Liberman, and Edwards (1979) found four somewhat different PAQ dimensions in their analysis of combined group responses: "empathy" from F items, "emotional" from M and F items, "aggressive" from M and F items, and "self-confident" from items from both scales. In their analysis of the 8 M and 8 F PAQ items as well as the full 24 item PAQ, Helmreich, Spence, and Wilhelm (1981) factored responses from six groups (males and females from high school, college, and parent samples). The results of the twelve analyses produced very similar two-factor solutions, which the authors interpreted as firm support of the construct validity of the PAQ.

Initial empirical support for masculinity-femininity orthogonality was based upon the lack of correlation between the M and F scales of the new androgyny instruments. Since a bipolar scale with M and F at the extreme poles would be characterized by a strong, negative M-F correlation, it was reasoned that essentially uncorrelated or only moderately correlated M and F scales within an instrument would indicate an orthogonal M-F relationship. The M and F scale correlations presented in Table 2.6 have been cited as evidence against bipolarity and for orthogonality of the M and F scales of each test.

The rejection of the bipolar M-F model has also been supported by factor analysis. With the exception of the "sex of subject" factor resulting from the two since discarded "masculine" and "feminine" items from the BSRI, factor studies of the new instruments have not revealed any primary bipolar M-F factors. Some researchers, however, seemed to view the discrediting of the bipolar concept as sufficient reason to adopt the androgyny approach completely (Bohannon & Mills, 1979). Myers

Table 2.6

Between and Within Instrument M & F Scale Correlations

Within Instrument M & F Scale Correlations

	Males	Females
BSRI (Bem, 1974)	.11	-.14
PAQ (Spence, 1978)	.22	.09
PRF-ANDRO (Berzins, 1978)	-.05	-.16
Heilbrun (1976)	-.42	-.24

Between Instrument M Scale Correlations*

	PAQ	PRF-ANDRO	HEILBRUN
BSRI	.85	.76	.75
PAQ		.66	.70
PRF-ANDRO			.61

Between Instrument F Scale Correlations*

	PAQ	PRF-ANDRO	HEILBRUN
BSRI	.73	.62	.68
PAQ		.59	.51
PRF-ANDRO			.57

*From Kelly, Furman, and Young, 1978

and Gonda (1982) have taken issue with the logic of the selection of the androgyny model by default. They argued that defining "orthogonal" as "not bipolar" was a dichotomy of choice that ignored the possibility that M and F scales might be correlated to some degree that was neither orthogonal (r=.00) nor bipolar (r=-1.00).

In defense of those who supported the androgyny paradigm, factor analytic study did provide some evidence that scales could be developed to yield two independent M and F factors. Factoring of the PAQ, for example, has supported that notion. The two factors resulting from PAQ analysis have been somewhat confusing none the less. For, while admitting to some conceptual embarrassment, Spence and Helmreich (1978) found it necessary to include what they thought was a bipolar M-F scale in the PAQ along with independent M and F scales. Although they found a two-factor solution to factor analysis of the PAQ items, Helmreich and Spence (1981) continued to interpret the factor loadings as support for the construct validity of their instrument.

An interesting explanation of the lack of perfect orthogonality between M and F scales grew out of the concept of "implicit personality." A number of authors (Lippa, 1977; Bem, 1979; Major, et al, 1981; Foushee, et al, 1979; McPherson & Spetrino, 1983) have argued that as the idea of masculinity and femininity bipolarity is so ingrained in American society, respondents to M-F instruments will think in bipolar terms about some items. That tendency interacts with the measurement process to cause less than perfectly orthogonal results.

Questions about scale validity have been frequently raised from study of interinstrument scale correlations. The moderate to high

intercorrelations listed in Table 2.6 have not been interpreted as unqualified support for the validity of the androgyny-based scales (Edwards & Norcross, 1980). The fact that a significant amount of variance is not shared between instruments has been viewed as an indication that the scales were sampling overlapping but not identical content domains (Lenney, 1979; Gayton, et al, 1977). Identical problems had been identified in evaluation of traditional M-F tests.

Nominal-level correlations resulting from analysis of the proportion of agreement of subject classification by the various instruments have prompted even more serious reservations about scale validity. Kelly, Furman, & Young (1978), for example, found that only 30% of their subjects were placed in the same category of the fourfold typology by the BSRI, PAQ, PRF-ANDRO, and Heilbrun measures. Not surprisingly, that lack of agreement has led to considerable criticism of test scoring and classification procedures (Strahan, 1975; Sedney, 1981; DeFronzo & Boudreau, 1977; Orlofsky, et al, 1977) as well as efforts to develop interval rather than nominal-level scoring methods (Kalin, 1981; Strahan, 1979; Bryan, et al, 1981). Arguing that instrument scores should be capable of reflecting infinitely varying degrees of M and/or F, Friemuth and Hornstein (1982) have suggested that instrumentation providing continuous M-F scoring is a prerequisite to improved M-F measurement.

Neither Heilbrun nor Baucom attempted to address problems caused by stereotypic social desirability influences on subject response. Thus, criticisms directed at traditional M-F tests in that regard are also applicable to their instruments. The BSRI. PAQ, and PRF-ANDRO were designed to control for that interference, but that effort has led to

a different criticism. Limiting the selection of scale items to those traits perceived to be socially desirable restricts the operational definition of M-F to only part of the interpersonal domain (Myers & Gonda, 1982b). Kelly and Worrell (1977) suggested that sex-role research should be expanded to examine socially undesirable characteristics so that the complexity of M-F might be more completely assessed. Likewise, Bem and Spence's rationale for item selection limits domain sampling because items seen as equally desirable for both genders cannot be used in the M and F scales which provide the scores used for subject classification (Locksley & Colten, 1979). The BSRI has been further criticized by Pedhazur and Tetenbaum (1979) for defining a more socially desirable stereotype for males than females. Bem attempted to balance that difference in her short form BSRI (Bem, 1979). Taylor and Hall (1982), however, took issue with that course of action. They reasoned that as the male stereotype has been seen as more socially desirable in American society (D'Andrade, 1966), M-F measures should not be modified to camouflage that reality.

Based upon the analyses and criticisms above, it is not possible to determine whether the failure to clearly validate the androgyny instruments should be attributed to the instruments themselves, the underlying theory of androgyny, or a combination of both. A few authors suggest that M-F assessment would be more precise if the theoretical conceptualization of M-F were less ambitious and global (Myers & Gonda, 1982b; Freimuth & Hornstein, 1983; Storms, 1979; Deaux, 1984). They have suggested that masculintiy and femininity are typically thought of in such broad terms that they tend to be confused with other psychological

concepts. Wiggins and Holzmuller (1978) saw the terms as a source of such ambiguity that they recommended that they be replaced by more narrow labels. Bernard (1981) suggested that an investigation of the subtrait structure of M-F may improve understanding of sex-roles and provide new terms for the constructs under study. Moreland, Gulanick, Montague, and Harren (1978) have proposed that "masculinity" and "femininity" be replaced by "assertiveness" and "warmth." Even Spence and Helmreich (1978) admitted that "masculinity" and "femininity" were not exactly descriptive of the content of the PAQ scales. They have, none the less, elected to retain the terms on the basis of their belief that they more clearly convey what is being measured to the general public.

Despite the continued appeal of the concept of androgyny and the instruments designed to identify it, the multiplicity of criticisms identified above suggest that an adequate measure of M-F has yet to be developed. Downing (1979) suggested that such an instrument will not appear until researchers resolve the logical inconsistency between the complexity of their theory and the simplicity of their measurement methodology. The recommendations for replacing the global labels "masculinity" and "femininity" with more narrow terms address Downing's concern by attempting to simplify theoretical conceptualization. Many authors, however, have agreed with Spence and Helmreich's (1978) contention that the androgyny model's greatest weaknesses are methodological and have focused on improving M-F measurement with the expectation that results provided by better instrumentation will more fully support current androgyny theory.

Personality Test Construction

Loevinger (1966) has observed that in the field of personality

research efforts to resolve inconsistencies between theory and systematic observation have almost always led to a regretable narrowing of theory. As a result, psychologists are faced with the choice between what Meehl (1954) has termed a "clinical" or "actuarial" approach to assessment. Clinicians tend to gather data in an informal fashion and propose subjective — but typically untestable — theoretical frameworks for their observations. Conversely, those taking the actuarial route tend to follow a more formal, statistical method of data collection and analysis and limit their theoretical propositions to those that may be tested by the scientific method. Holt (1970) has suggested that while the clinical approach has sometimes led to exaggerated or misleading theory, the actuarial/statistical approach has often oversimplified personality inquiry by resticting attention to measurable — but frequently trivial — issues. Loevinger suggested that the inability to solve this dilemma has been due, in large part, to an unwarranted acceptance of the traditional assessment techniques psychologists have employed in their investigations. In particular, she attributed much of the difficulty to the adoption of the achievement test as the predominant model for personality assessment tools. While hailing the achievement test as one of the great accomplishments of psychology, she determined that its construction on a scaling model which defined linear, unidimensional, additive measurement was incompatible with the assessment of multidimensional personality variables. She concluded that personality investigators would continue to be frustrated with their data collection until they adopted new techniques that would more adequately tap the complex concepts they have proposed.

This view reflects Cronbach's (1960) expectation that as the

science of psychology matured, an evolution from naturalistic observation to highly structured techniques and from impressionistic descriptions to quantitative measurement would ensue. Ideally, the development of more sophisticated assessment techniques would make it possible to evaluate theory through formal hypothesis testing and effectively close the gap between clinical observation and quantitative measurement. Efforts to develop instrumentation to provide quantitative measurement have been predominantly guided by three test construction strategies: 1) the rational-theoretical, 2) the empirical, and 3) the internal-consistency (Lanyon & Goodstein, 1982).

Rational-theoretical construction is based upon the selection of test items by experts who develop instrument items from an a priori evaluation of their value in assessing the targeted theory or construct. The Edwards Personality Preference Schedule (EPPS, Edwards, 1959), the Thematic Appreciation Test (TAT, Murray, 1943), and the Personality Research Form (PRF, Jackson, 1967) are examples of instruments constructed from the rational-theoretical approach. This procedure assumes that if something exists, it can be measured, and experts in the particular research area are best qualified to design tools to evaluate their theories.

The empirical approach to instrument design relies on quantitative analysis of test item characteristics. Items are selected solely on the basis of their empirically demonstrated utility in differentiating among subject groups which differ on particular psychological variables. The California Psychological Inventory (CPI, Grough, 1964), the Minnesota Multiphasic Personality Inventory (MMPI, Hathaway & McKinley, 1943), Parker's (1969) ACL-Fem scale, and Heilbrun's (1976) masculinity and femininity

scales are products of an empirical test construction process. Differing significantly from the rational-theoretical approach, the empirical procedure implies that if something is being measured, it exists, and experts must build theory to explain the quantitative results. While empirical test constructors have sometimes argued that their approach is superior because it is totally atheoretical, Lanyon and Goodstein (1982) have cautioned against accepting that claim in its entirety. They suggest that although test items are identified from a mostly theoretically neutral stance, the data provided by the resulting instrumentation have been interpreted from an existing theoretical perspective. As a result, theory and assessment are not as distinctly separated as some would suggest.

The internal-consistency strategy is actually a particular type of empirical test construction based upon factor analysis. Following the administration of an item pool, factor analytic techniques are used to identify groups of items that exhibit highly correlated response patterns. It is assumed that items demonstrating similar response are measuring closely related concepts or traits while those producing differing results are tapping distinctly different underlying constructs. Highly correlated items are assigned to factors which are incorporated in a test to measure particular aspects of the variable under investigation. The Guilford Tests (Guilford, 1959), the Thurstone Temperament Scale (Thurstone, 1949), and the Sixteen Personality Factor Questionnaire (16PF, Cattell, 1965) have been developed through an internal-consistency test construction strategy.

These three approaches are not mutually exclusive, and many tests have been developed using combinations of the methods. The Bem Sex-Role

Inventory (BSRI, Bem, 1974), for example, was designed using all three stretagies. The initial pool of potential test items was identified by a panel of M-F experts based upon theoretical and rational evaluation of the items' value in assessing the underlying M-F construct. Selection of the 60 BSRI items was then made using empirical analysis of the responses of the subjects who rated the items with regard to the characteristics of the stereotypic, socially desirable male and female. Finally, factor analytic results were used to evaluate and refine the instrument with a focus on improving the internal consistency of the M and F factors within the instrument.

Even though these three approaches have been generally accepted by personality test developers, the psychometric principles upon which they are based have been subject to considerable criticism. The rational-theoretical approach has been criticized for its failure to use any quantitative procedures. The empirical approach has been found wanting because it has almost always resulted in the construction of tests based on the assumption of unidimensional, linear, additive scaling. The internal-consistency strategy has suffered from the shortcomings of factor analytic techniques. As a result, Kratochwill (1982) has urged personality investigators to resist the temptation of adopting these traditional procedures merely because they are familiar and widely used. Suggesting that personality assessment is still in its infancy, he has encouraged a more concerted evaluation of alternative psychometric approaches to the design of assessment devices.

Given the current mulitidimensional conceptualization of many psychological variables, that search necessarily omits consideration of the unidimensional scaling models which have received the most attention in

the more frequently referenced texts on test construction and psychometric methods (e.g., Coombs, 1964; Cronbach, 1949; Guilford, 1954; Nunnally, 1959; Torgerson, 1958; van der Ven, 1973). Among multidimensional techniques, only factor analysis has been extensively employed in the development of personality tests. More recently, however, there has been an increase in the use of multidimensional scaling approaches to assessment (e.g., Rosenberg, 1968; Russell, 1978).

Despite the widespread use of factor analysis in the construction and evaluation of personality instrumentation, the techniques have not been without their critics. Mathematically-oriented statisticians, for example, have complained that the procedures are not truly objective. By way of illustration, they point out that factor analytic output depends, in part, on an investigator's selection of procedural options at each of three steps in the analysis: 1) the preparation of the correlation matrix prior to analysis, 2) the extraction of the initial factors, and 3) the rotation to a terminal solution. As a result, it is entirely possible for different researchers to obtain different results even when analyzing the same input. Further, even when interpreting the same results, it is frequently difficult to get researchers to agree on what they actually mean. Proponents of factor analysis argue that proper use of their techniques does provide objective, interpretable measurement, but van der Ven (1973) has concluded that the procedures are not sufficiently rigorous to meet the demands of the scientific method.

Focusing more specifically on personality assessment, a number of authors have cautioned researchers to be extremely suspect of the use of factor analytic techniques which assume that interval data may be

linearly transformed to identify underlying factors that are orthogonal to one another. Suggesting that some personality variables may not be linearly related, Loevinger (1966) concluded that factor analytic techniques which require an assumption of a linear relationship among variables would be blind to a curvilinear relationship and yield, at best, misleading output. Similarly, Thomas (1981) has questioned whether the factor results that have been offered as evidence of orthogonal relationships among personality dimensions (e.g., M-F) are a true reflection of underlying structure or an artifact of the procedures themselves.

Advocates of multidimensional scaling (MDS) have argued that their procedures offer an approach to assessment that holds a number of advantages over factor analytic methods. For example, MDS techniques are not necessarily restricted by the assumptions of linearity and independence among variables, permitting identification of curvilinear and oblique relationships as well as the linear, orthogonal structure imposed by factor analysis. That MDS techniques have been little used in personality research appears to be due to the fact that they are relatively new additions to the psychometric arena. Thus, practitioners have not become completely familiar with the type of measurement they provide. As summarized by Kruskal and Wish (1978):

> These techniques use proximities among any kind of objects as input. A proximity is a number which indicates how similar or how different two objects are, or are perceived to be, or any measure of this kind. The chief output is a spatial representation, consisting of a geometric configuration of points, as on a map. Each point in the configuration corresponds to one of the objects. This

> configuration reflects the "hidden structure" in the data, and often makes the data easier to comprehend. (p. 7)

As such, MDS procedures might be used in personality test construction and refinement in much the same way as factor analysis has been employed. MDS techniques could be used to identify underlying factors among test items without artificially forcing them into linear, orthogonal relationships.

As close mathematical relatives of factor analysis, MDS techniques are complex and subject to the same "subjectivity" and "interpretability" criticisms identified above. When previous research makes it possible to designate a two-dimensional solution and impose rather than discover the two defining structural dimensions, however, the procedures are much less complicated and the results far easier to interpret. One such approach, combining Guttman's (1954) two-dimensional "circumplex" and interpersonal theory (Adams, 1964; Bierman, 1969; Carson, 1969; Chance, 1966; DeVogue & Beck, 1978; Foa, 1961; Leary, 1957; McLemore & Benjamin, 1979), has been proposed as an alternative strategy for personality test construction (McCormick, 1977).

Kruskal and Wish (1978) have observed that while most MDS techniques are most useful in revealing patterns in data which result from large differences among observations, Guttman's approach is designed to analyze relationships among highly correlated objects (e.g., personality test items). Further, the adoption of the two primary dimensions of "power" and "affiliation" as the axes of the two-dimensional space defined by an interpersonal circumplex (Kiesler, 1983), has provided a standard frame of reference, greatly simplifying interpretation of results. Most recently, McCromick (1977) has outlined a two-dimensional scaling process,

which is based on an interpersonal circumplex model, that may be used to scale personality test items. Initial applications of these techniques (McCormick & Kavanagh, 1981; Baldanado, 1982; Smoley, 1983) have resulted in recommendations for further investigation of their use in the construction of instruments designed to assess personality variables that have been conceptualized as resulting from the interaction of two, primary, underlying personality dimensions.

Circumplex Models for Psychological Variables

Circumplex models have, in fact, been proposed for a variety of psychological variables. Guttman's (1954) initial model grew out of his belief that psychological tests and scales could be ordered on a circular continuum according to the degrees of correlation among them. In an empirical demonstration of that hypothesis, he reported a circular relationship among the scales of Thurstone's test of mental ability and the Wechsler-Bellvue Intelligence Scales (Guttman, 1957). Mukherjee (1975) provided confirmation of Guttman's results in an analysis of the Wechsler Preschool and Primary scales. Schaefer (1961) and Slater (1962) found a circular order among MMPI scales. Cole (1973) reported a similar order among the scales from the Strong, Kuder, Holland, and ACT interest inventories. Schaefer (1959), Roe and Siegelman (1963), and Slater (1962) found a circular order among rating scales for maternal behavior, and similar results were reported for ratings of child behavior by Schaefer and Bayley (1963), Becker and Krug (1964), and Baumind and Black (1967). Freedman, Leary, Ossorio, and Coffey (1951) developed a circular model for interpersonal behavior, and Lorr, Klett, and McNair (1963) developed a set of rating scales for psychotic behavior which followed a circular order. Lorr and

McNair (1967) constructed an inventory of interpersonal behavior using that structure. Stern (1970) found a circular order among the scales of his Activities Index, and Wiggins (1979) demonstrated a circular order among scales of personality tests. Most recently, Benjamin (1979) proposed a model for social behavior based upon an integration of the Leary (1957) and Scahefer (1959) circles. Indeed, the application of the circumplex would appear to be quite general in psychology.

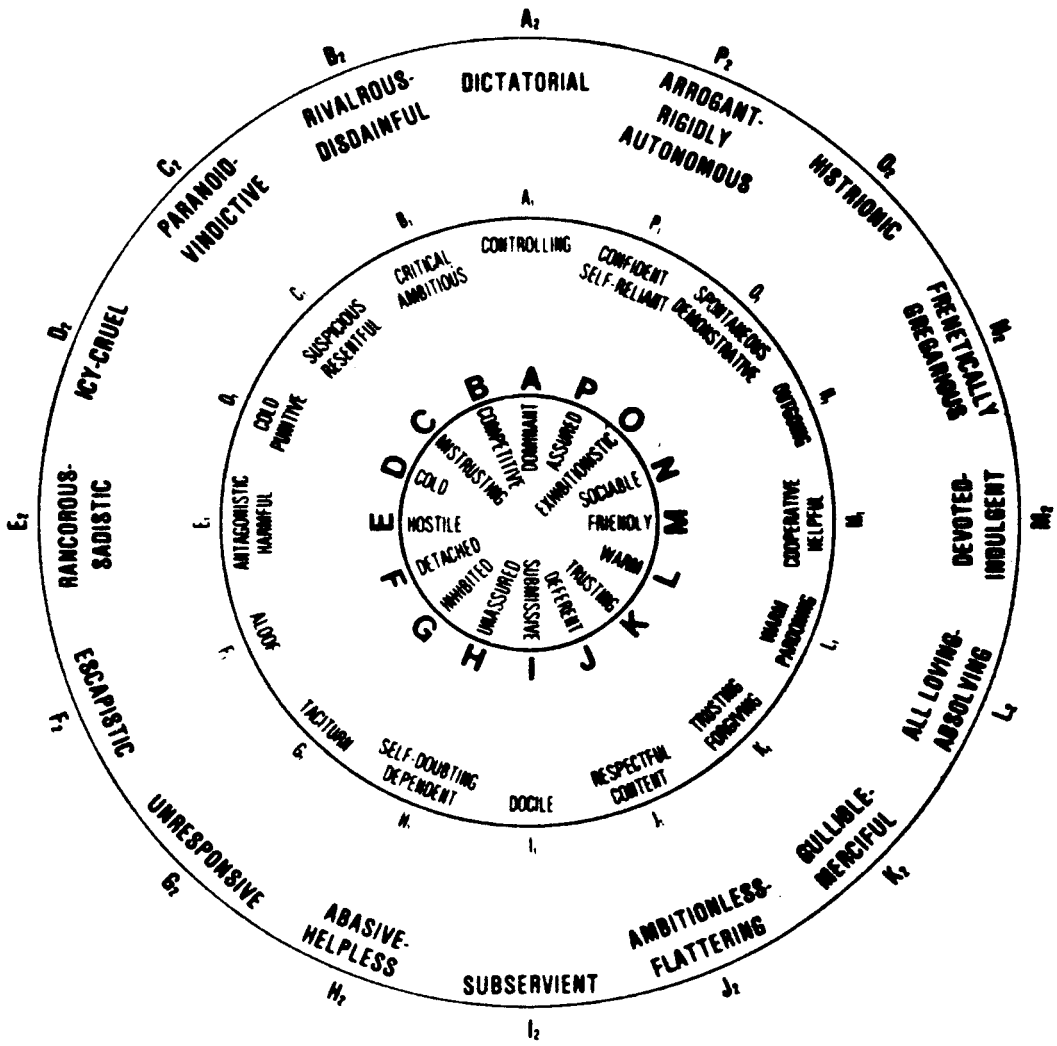
In his review of the concept of interpersonal complimentarity, Kiesler (1983) focused considerable attention on cirucumplex models. The results of that critique included his proposal of two criteria by which circumplex models might be evaluated. The first was his theoretical taxonomy of the domain of interpersonal behavior (Figure 2.1). The second was an identification of the theoretical, methodological, and empirical features which he suggested should be incorporated in any comprehensive interpersonal circumplex:

One, an interpersonal circle defines a circular array of categories that operationalize the domain of interpersonal behavior. The ordering of categories is circular and thus without a beginning or end.

Two, categories on the circular continuum at opposite ends of circle diameters are classes of behavior representing behavioral contrasts and/or semantic opposites. Categories should thus be highly negatively correlated with its polar opposite and show a zero correlation with categories at the polar extremes of orthogonal (perpendicular) diameters.

Three, the circular array represents a two-dimensional Euclidian space reflecting the joint influence of the two basic interpersonal dimensions, designated by most authors as "control" and "affilation." The dimensions define the vertical and horizontal axes of the circle.

Figure 2.1



Kiesler's (1983, p. 189) Theoretical Interpersonal Circumplex

Four, each of the categories on the continuum is a blend of the two axis dimensions reflecting mathematically weighted combinations of control (-4 at the left of the circle through +4 at the right) and affiliation (-4 at the bottom through +4 at the top of the circle). For example, category H_2 (abasive-helpless) in Figure 2.1 is defined by a combination of -1 affiliation and -3 control, and category K_2 (gullible-merciful) results from a combination of +2 affiliation and -2 control.

Five, empirical intercorrelations among categories should reveal a circumplex ordering. Adjacent categories on the continuum should be positively correlated and opposite categories should be negatively correlated. Guttman (1954) demonstrated that such an ordering would result when an intercorrelation matrix approximated that presented in Table 2.7. An essentially circular order among variables is indicated by a matrix in which the highest correlations are next to the principle diagonal, and along any row (or column) the correlations decrease in size as one moves away from the diagonal and then increase again (Lorr & McNair, 1965).

Six, vector lengths indicate the intensity of the behavior being measured. Longer vector lengths indicate more intense or extreme measurement.

Seven, to permit more precise measurement, a circle should provide at least two levels of intensity/extremeness. The middle circle in Figure 2.1 reflects a moderate level of intensity and the outer circle a more extreme level.

Eight, to facilitate more precise discrimination among behaviors, labels of categories should show minimal semantic/behavioral overlap with adjacent categories.

Table 2.7

The Intercorrelations for an Equally-Spaced, Uniform, Perfect, Additive Circumplex When n = 6 and m = 4 *

Test	t_1	t_2	t_3	t_4	t_5	t_6
t_1	1.00	.75	.50	.25	.50	.75
t_2	.75	1.00	.75	.50	.25	.50
t_3	.50	.75	1.00	.75	.50	.25
t_4	.25	.50	.75	1.00	.75	.50
t_5	.50	.25	.50	.75	1.00	.75
t_6	.75	.50	.25	.50	.75	1.00
Total	3.75	3.75	3.75	3.75	3.75	3.75

*After Guttman (1954)

Nine, to promote comprehensive assessment, categories should be fully defined by subclasses of behaviors/definitions at each level of intensity.

Ten, items selected to describe behaviors on the circle should be either unambiguous adjectives or verb phrases describing overt behavior. Semantic ambiguity would lead to reduced discriminability and impair the model's theoretical and practical effectiveness.

Using these criteria to evaluate existing interpersonal circumplex models, Kiesler concluded that those of LaForge and Suczek (1955), Lorr and McNair (1966), and Wiggins (1979) were the most adequate. Although each failed to meet all his expectations, they were in basic agreement with the labels and ordering of the categories on his theoretical taxonomy.

McCormick's Two-Dimensional Scaling Technique

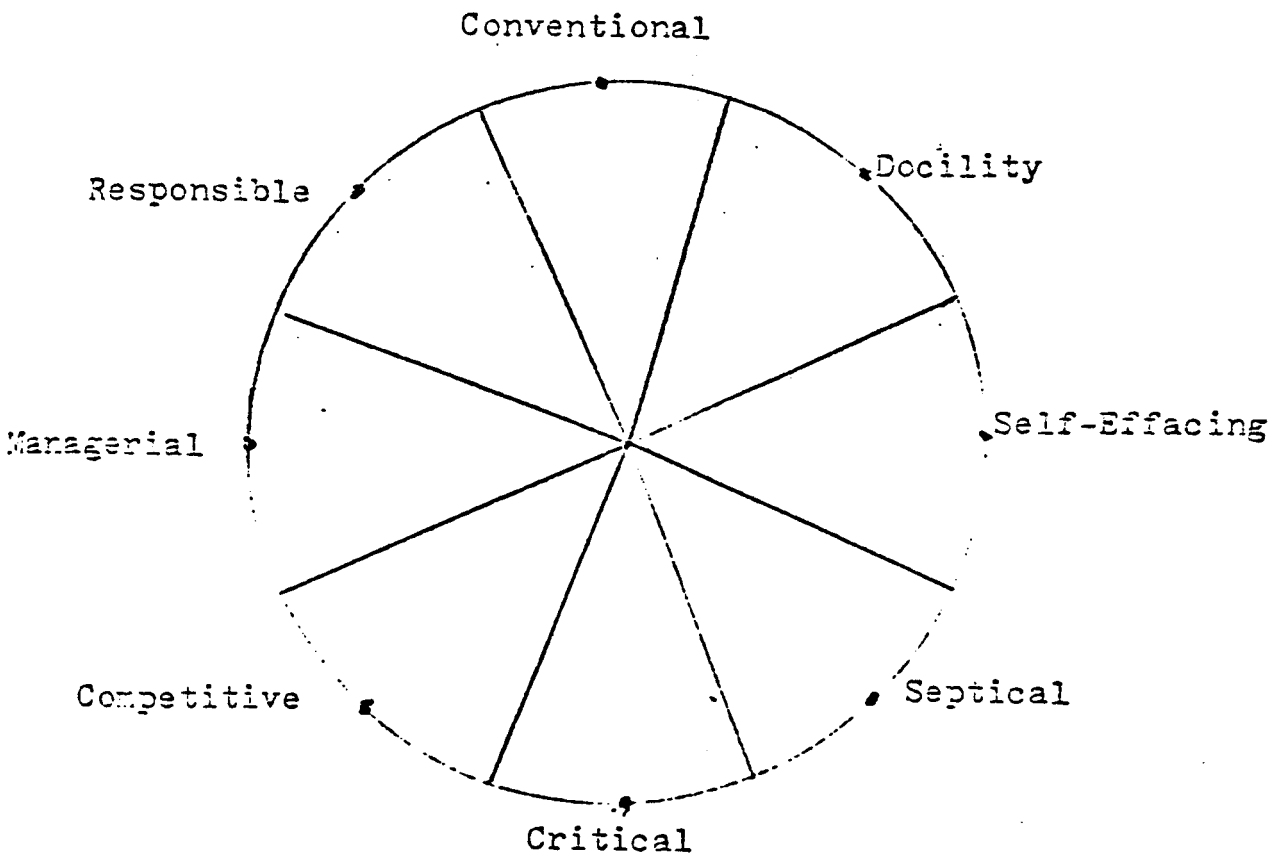
While the circumplex models reviewed by Kiesler were designed from analysis of the intercorrelations among, or factor loadings of, scales on personality instruments, McCormick's (1977) procedures provide for item-scaling. Integrating Leary's (1956) theoretical circular model for interpersonal behavior, Schlosberg's (1952) sorting/scaling procedures, and Ross' (1938) statistical work, he has outlined a simple two-dimensional technique that may be used to order personality trait items on a circular interpersonal continuum.

The Interpersonal Checklist (ICL, LaForge & Suczek, 1955) was developed from a theoretical circular model of interpersonal behavior (Freedman, et al, 1951; Leary, 1956, 1957). That model evolved out of an attempt to relate a number of general categories of behavior on a two-dimen-

sional grid. Postulating that behavior is a combination of two primary dimensions, power and affiliation, the categories were placed on the grid using the two primary factors as orthogonal axes. The dominance and submission categories were placed at the opposite ends of the power axis, and the love and hate categories were placed at the extreme ends of the affiliation axis. The twelve remaining categories were plotted in accordance with their relationship with love-hate and dominance-submission. These initial sixteen categories were eventually reduced to eight by revising their labels to define eight single-adjective behaviors (See Figure 2.2). The ICL was then constructed to contain eight scales of sixteen items each. Scales were to correspond to one of the eight categories of the interpersonal circle which placed the scales at equally-spaced intervals around the continuum. In a factor analytic study of the ICL, Rinn (1965) empirically confirmed the orthogonal relationship between the love-hate and dominance-submission scales as well as the relative ordering of the remaining categories. He did not, however, find that the categories were separated by equal intervals on the circle.

Schlosberg (1941) used Woodworth's (1938) six-point scale to study judgements of emotional expressions in 72 pictures. Subjects sorted the pictures into bins labeled with the names of Woodworth's scale points. Studying the resulting frequency distributions, Scholsberg discovered that there was more overlap between adjacent than nonadjacent categories. As the sixth category overlapped the first and the fifth more than any others, he argued that this implied a circular rather than linear continuum. He further concluded that the circular distribution was defined by two orthogonal dimensions: pleasantness-unpleasantness and attention-rejection. In an attempt to validate his thinking, Schlosberg (1952)

Figure 2.2



The Theoretical Relationship of the
Eight Categories of Leary's (1956, 1957)
Circular Model of Interpersonal Behavior

asked subjects to sort Woodworth's pictures and rate each of them twice, once on a nine-point pleasantness-unpleasantness scale and again on an attention-rejection scale. Using the two dimensions as orthogonal axes and the ratings from the two dimension scalings, he calculated the angular placement of the pictures. Comparing those results with the angular values from the sorting procedures yielded correlations of .94, .92, and .96 in three separate studies, indicating that the procedures could be employed interchangeably. Abelson and Sermat (1962) confirmed Scholsberg's findings using mulitidimensional scaling techniques.

Using the principles of vector algebra, Ross (1938) demonstrated that circular frequency distributions could be represented by vectors in complex number notation (a + bi). The polar coordinates of a vector were calculated:

$$r = \sqrt{(\Sigma a)^2 + (\Sigma bi)^2}$$

$$\text{and } \Theta = \tan^{-1}\left(\frac{\Sigma bi}{\Sigma a}\right)$$

where r is the vector length,

and Θ is the vector angle.

The angle was interpreted as a measure of central tendency of a distribution. Vector lengths were scalar values that varied from a maximum of "n" (number of observations in the distribution) when all cases fell at the same point on the circular continuum down to zero when the cases were equally distributed.

McCormick modified Ross' work to fit two dimensional scaling procedures and replaced the complex number notation with their equivalent trigonometric functions. Polar coordinates are thus calculated in the

following manner:

$$r = \sqrt{x^2 + y^2}$$

$$\theta = \tan^{-1}\left(\frac{y}{x}\right)$$

where x equals the scale mean on the horizontal axis, and y equals the scale mean on the vertical axis.

The angle is a measure of the mean direction of the subject ratings and vector length is an indication of the intensity of subject response.

McCormick (1977) applied Schlosberg's sorting/scaling procedures to the items from the Interpersonal Checklist. Subjects sorted the items into bins labeled with the category names from the ICL. They also rated the items on two nine-point Likert-like scales: Love-Hate and Dominance-Submission. Circular orderings for the sort were determined following Schlosberg. The two dimensional scaling results were used to calculate polar coordinates following McCormick's modification of Ross' formulas. The correlation between the angular placements from the sorting and scaling procedures was found to be .89, supporting Schlosberg's conclusion that the two techniques provided essentially identical results. McCormick also found further confirmation for the orthogonal relationship between the two scaling dimensions and the relative order of the categories of Leary's theoretical interpersonal circumplex. He did not, however, find that the categories were spaced at equal intervals around the continuum. Russell (1980) provided further support for McCormick's two dimensional scaling procedures in a study of affect words. He determined circular orderings from Schlosberg's sorting procedures, McCormick's circumplex scaling technique, and multidimensional scaling methods

and found essentially identical results with each of the approaches.

In contrast to Kiesler's (1983) emphasis on the information provided by both polar coordinates of points in two-dimensional space, McCormick concluded that the measurement of direction was more fundamental; and, as a result, recommended that attention be more narrowly focused on angular placements. Suggesting that the meaning of intensity and vector lengths needed further study, he adopted a "unit circle" circumplex. In such a model, all points are plotted on the circumference of the circumplex, irregardless of the initial vector lengths. While that information may be referenced separately, the spatial representation of a unit circle summarizes angular placement, facilitating interpretation of the relative directions among the observations.

In a further investigation of this approach, McCormick and Kavanagh (1981) have suggested that two-dimensional item-scaling and the unit circle circumplex provide the foundation for significantly improved personality test construction. On the one hand, they agree with those who have proposed a two-dimensional model for personality measurement. On the other, they support those (e.g., Guilford, 1954) who have recommended item-scaling rather that item-factoring in the construction of psychometric instruments.

With regard to the use of the circumplex model in personality assessment, McCormick and Kavanagh have identified two advantages that have not been previously recognized: 1) They suggest that the nature of the measurement represented on the unit circle is frequently more appropriate for personality research than that provided by traditional scaling approaches. Reflecting Steven's (1951) distinction between

prothetic and metathetic continua, they have concluded that the ordering of observations based upon differences in magnitude (prothetic measurement) resulting from linear scaling models is not always compatible with the conceptualization of personality variables. It may not be appropriate, for example, to think of self concept in terms of "greater than" or "less than." Individuals may exhibit differing self concepts, but it is not necessarily appropriate to describe a particular person as having more self concept than another. To say that someone has a more positive or more negative self concept than someone else does make conceptual sense, but that is a differentiation of "kind" rather than magnitude. Given the fact that the circular continuum of a circumplex has no beginning (zero or minimum point) or end (maximum value) such as are found on a linear continuum, concepts such as "greater than" or "less than" have no meaning. Circular orderings identify differences in "kind" (metathetic measurement), which, McCormick and Kavanagh suggest, is more meaningful in personality assessment. 2) If a third dimension were eventually needed for adequate description of personality concepts as some authors have proposed (e.g., Schaefer, 1971; Schlosberg, 1954; Schultz, 1958), McCormick and Kavanagh have suggested that their procedures could be easily modified to include a third scale. Given empirical evidence of an orthogonal relationship and appropriate labels for the extreme poles of the new dimensions, three rather than two item-scalings would be required. Item angles would then be determined using spheric rather than plane trigonometric functions and represented in three rather than two-dimensional space.

Although item-scaling is not dependent on a circumplex model,

McCormick and Kavanagh have suggested that applying them in concert would significantly improve personality test construction. Following traditional procedures, test items are typically selected and assigned to scales based upon expert opinion or the intercorrelations calculated from an analysis of the responses of subjects who have used the items to describe themselves or others. In addition to problems caused by disagreement among experts, this approach suffers from the difficulty of attempting to separate instrument variance from subject variance. If item intercorrelations are determined using responses from subjects who used the items to describe themselves, for example, it is extremely difficult to determine what portion of the item's characteristics is due to social desirablity influences and what is due to the variable targeted for assessment. McCormick and Kavanagh suggest that their procedures may be employed to address this problem. Following their recommendations, items would be scaled prior to test construction by subjects who would be instructed to rate items according to their "semantic meaning" on both the Love-Hate and Dominance-Submission scales of their circumplex. The resulting item placements would then provide a representation of "semantic space" that would not include measurement "interference" caused by the subject's use of the items to describe themselves or others.

Further, McCormick and Kavanagh have argued that item-scaling provides considerably more information than that provided by item-factoring. For one thing, item scaling provides a measure of variability in response that may be used to evaluate item-ambiguity and item-discriminability. For another, it yields a visual and numerical representation of the items' relative placements on the circular continuum.

Neither of these outputs is directly available from item-factoring procedures.

This information would be particularly valuable at the points of selection of test items and the assignment of the items to scales. As McCormick and Kavanagh (1981) point out, this process has two aspects:

> The first involves the notion that any given scale should consist of items related for the most part, to only one characteristic of behavior; this is the notion involved in the concept of homogeneity. The second involves the notion of the relative independence of the characteristics being measured. This, we would argue, is primarily a problem of how discriminable the characteristics are from each other on the circular continuum. This, in turn, depends on the variability of the basic frequency distributions as well as their central tendencies. (p. 439)

Item-scaling procedures appear to be well-suited to address these needs. For example, homogeneous scales that clearly measure only one attribute could be constructed by selecting items whose angular placements fall in close proximity to one another on the circular continuum. Similarly, scales intended to distinguish between characteristics could be developed by selecting groups of items from different portions of the circle.

McCormick and Kavanagh have suggested that these procedures would significantly improve scale homogeneity, discriminability, and the stability of the assignment of items to scales. A number of authors have demonstrated that traditional scale construction has resulted in highly unstable item assignments (Eysenck & Eysenck, 1969; Sells, et al, 1970; Howarth & Browne, 1972). That is, analytic results frequently place items in scales other than those intended by the test constructors, or,

even worse, identify totally different factors than those proposed. As a result, test scales may be found to be measuring characteristics very different from those intended by the experts who constructed the instruments. McCormick and Kavanagh have suggested that developing scales on the basis of the information provided by item-scaling would enable researchers to design stable test scales that more adequately assess the targeted construct.

Summary

Based upon the results of their study, McCormick and Kavanagh (1981) have proposed additional evaluation of the application of their scaling procedures to the items from existing personality tests. At the same time, a number of authors have suggested further M-F research that exhibits an apparent confluence with McCormick and Kavanagh's recommendations. Berzins, Welling, and Wetter (1978), for example, have encouraged investigation of the conceptual and empirical similarity between the M-F construct and the categories of Leary's theoretical interpersonal circle. Further, following their observation that the scales from the Bem Sex-Role Inventory (BSRI, Bem, 1974) reflected the dominance and nurturance scales of their interpersonal circumplex, Wiggins and Holzmuller (1979) recommended a more detailed analysis of the influence of individual BSRI items on the properties of the scales to which they were assigned. Given the convergence of these proposals, this study was designed to investigate the application of McCormick's (1977) two-dimensional scaling techniques to the items from instruments designed to measure psychological masculinity-femininity.

CHAPTER III

METHOD

The primary purpose of this study was to investigate the application of a direct, two-dimensional scaling technique to the items from existing measures of psychological masculinity-femininity (M-F). Specifically, the methodology reported here was designed to evaluate the use of McCormick's (1977) scaling procedures to the items from: 1) Parker's (1969) ACL-Fem scale, a traditional, bipolar M-F test; 2) The Bem Sex-Role Inventory (BSRI, Bem, 1974) which was constructed to reflect the orthogonal M-F relationship proposed in androgyny theory; and 3) Heilbrun's (1976) masculinity and femininity scales which were empirically derived from the Adjective Check List (Grough & Heilbrun, 1965) and designed to provide androgyny scores. Male and female subject groups scaled each item according to its semantic meaning, first on a love-hate dimension and again on a dominance-submission dimension. Initial investigation was focused on the scaling procedures themselves. The results of the scalings were then used to examine the underlying structure of the three selected M-F instruments.

Hypotheses

The following hypotheses were tested in the evaluation of the scaling procedures:

Ho_1: There will be no significant difference in item scaling between male and female subject groups.

Ho_2: The item frequency distributions will be uniform. (Indicating an inability on the part of subjects to successfully scale the items on the love-hate and dominance-submission dimensions.)

Ho_3: The item scale means will not be significantly different from zero. (Indicating that the items were not scalable on the dimensions.)

Research Questions

The results of the item scalings were employed to analyze the three M-F measures. The research questions of primary interest in that analysis were as follows:

1. Do the angular placements of a test's items cover the entire circular, interpersonal continuum?
2. Does the circular ordering of items indicate an orthogonal or bipolar relationship between masculinity and femininity?
3. Do the placements of the items indicate that the instruments are measuring the same M-F construct?
4. How do the BSRI item placements from this investigation compare to those calculated from the factor loadings from Pedhauzer and Tetenbaum's (1979) study?

Subjects

The subjects selected for this study were graduate and undergraduate students from Loyola University of Chicago and Elmhurst College. All were voluntary participants who could withdraw from the study at any time. Each subject was informed prior to participation that the

purpose of the study was to investigate a new technique of scaling personality trait items and that the group data as a whole was of interest. They were told that the study was not an investigation of their individual personalities and that participants would perform a function similar to that of a normative group in test construction procedures. Only those volunteers who agreed to spend the required 3-4 hours to complete the scaling and return the questionnaires within a week of receiving them were accepted. One hundred male and 100 female volunteers completed the item scaling for the study.

Procedure

The items from the three selected instruments for this study were included in McCormick's (1980) pool of 1068 interpersonal trait items which was employed in this investigation. Each subject received the 1068 items for scaling on two bipolar dimensions, love-hate and dominance-submission, which were presented as nine-point Likert-like scales anchored by "Extremely," "Strongly," "Moderately," "Mildly," and "Neutral." Subjects were instructed to rate each item twice, once on each scale, according to the relationship of the items's semantic meaning and the given dimension.

Subjects were given a brief explanation of the study and a detailed explanation of the scaling procedure. They were informed that the items would be used to study new test construction procedures and that subject responses could not be used to describe individual volunteers in any way. They were told that there were no right or wrong responses and that only the group results — not the responses of any individual — would be analyzed. Each volunteer was then given two item lists. The first enumerated the 1068 items, including those from the three instruments

selected for this study, along the left side of the pages with the nine-point love-hate scale extending from the item across the page. The second list contained the same items with the Dominance-Submission Likert-like scale.

Subjects were told to examine the instruments. They were again informed that they were to make a judgment as to where the items should be placed on each scale based upon the item's semantic meaning. The experimenter explained how a response might be made using bogus items and asked if the subjects had any questions. After questions were answered, subjects were thanked for volunteering to participate in the study and were reminded that the instruments needed to be returned within a week. The only identifying information requested from the subjects was an indication of their gender at the top of the first page of each of the two item lists.

Statistical Analysis

The instruments were inspected upon their return, and during the course of the data collection eleven instruments (4 from male volunteers and 7 from females) were not accepted for analysis because the subjects had failed to respond to all the items. After acceptable instruments were identified, the gender of the subject and the responses to the items on both scaling dimensions were key punched on standard IBM cards with the dominance-submission ratings first, followed by those for the love-hate scale. The punched cards were then used as input to an SAS routine which calculated item frequency distributions and the following univariate statistics: mean, standard deviation, standard error, median, interquartile range, skewness, and kurtosis. Analyses were performed on three

data sets: male responses, female responses, and the responses of both genders combined.

Null hypothesis #1 was tested by Kolmogorov-Smirnov two-sample tests which identified differences in response between the male and female subject groups as revealed by differences in central tendency, dispersion, and/or skewness of the item frequency distributions. A significant Kolmogorov-Smirnov test in this case indicated some difference between male and female response, suggesting that it would be potentially misleading to combine male and female responses in further analyses.

Null hypothesis #2 was tested by Kolmogorov-Smirnov one-sample tests which determined the goodness-of-fit between the observed item frequency distributions and the theoretical normal distribution. A significant Kolmogorov-Smirnov one-sample result indicated that the distribution of response to an item was not similar to the normal curve, suggesting random scaling by the subjects. A random (or uniform) distribution indicated uncertainty on the part of subjects, suggesting that the item was not relevant to the given dimension. Non-significant test results indicated that the subjects comprehended the requested task, attended to it properly, and found the item to be scalable on the given dimension.

Null hypothesis #3 was tested with t-tests of the item means of both scaling dimensions. A non-significant t-test indicated that a mean was not significantly different from the neutral or zero point of the given Likert-like scale. Neutral items indicated that the item may not be scalable on the particular bipolar dimension. Items that exhibited zero means on both scales were probably not relevant to the interper-

sonal domain defined by the love-hate and dominance-submission dimensions. Further, items whose means were not significantly different from zero did not permit calculation of an angular placement or vector length, leaving them unscaled by McCormick's two-dimensional technique.

Calculation of Item Angular Placements from Scale Means

The two scale means for each item were used to calculate a vector length and an angular placement on the circular continuum, Using the love pole of the love-hate axis as the conventional zero degree point on the circumference of the circle, the angle calculated identified the number of degrees of separation between an item's placement and zero degrees.

Where y equals the item mean on the dominance-submission scale and x equals the mean on the love-hate scale, item angles were calculated from the following formula:

$$\theta = \tan^{-1}\left(\frac{y}{x}\right)$$

Vector lengths (r), sines, and cosines, were calculated from the scale means as follows:

$$r = \sqrt{x^2 + y^2}$$

$$\sin\theta = \frac{y}{r}$$

$$\cos\theta = \frac{x}{r}$$

Calculation of Resultant (Mean) Angles

Using the sines and cosines as item coordinates, a resultant or mean angle was calculated for combinations of items. For example, a mean angle for the BSRI M scale was determined from the sines and cosines of all the items assigned to it in the inventory. Mean angles were calculated using the following formula:

$$\text{Mean } \Theta = \arctan\left(\frac{\Sigma \sin\theta}{\Sigma \cos\theta}\right)$$

Calculation of Angles from Factor Loadings

McCormick (1977) demonstrated that angular placements could be determined from factor analytic results by substituting item factor loadings for the scale means in the equations above. The angles obtained from item factor loadings may then be compared to those found from two-dimensional scalings of the same items, permitting an evaluation of the similarity or dissimilarity of the structural analysis provided by the two procedures. It should be noted that such a comparison must be interpreted with caution, particularly when a factoring identifies more than two primary underlying dimensions. Further, if the factor loadings have resulted from a rotated final solution to an analysis, the comparison should be made even more carefully. Both of these cautions must be applied to the comparison between the BSRI item placements calculated from this study's scaling results and those from the factor loadings reported by Pedhauzer and Tetenbaum (1979). An appropriately tentative interpretation of the comparison, however, may be of heuristic value.

Batschelet's Confidence Intervals

Batschelet (1981) has provided a comprehensive review of descriptive and inferential circular statistics. While his initial intent was

to prepare a layman's guide to circular statistics for biologists, he found that the techniques he outlined had application in a number of disciplines. His confidence intervals for mean angles on a circular continuum (Figure 3.1) were employed in this investigation to identify significant differences among angles.

Figure 3.1

Batschelet's (1981) Confidence Intervals

for Mean Angles on a Circular Continuum

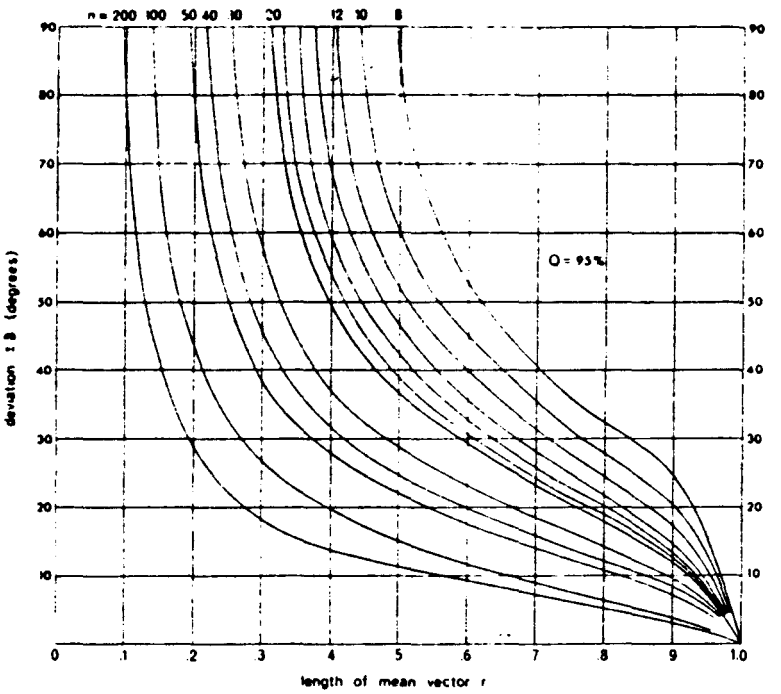


Chart for determining a confidence interval of the mean angle with a 5% confidence coefficient. The sample size is n.

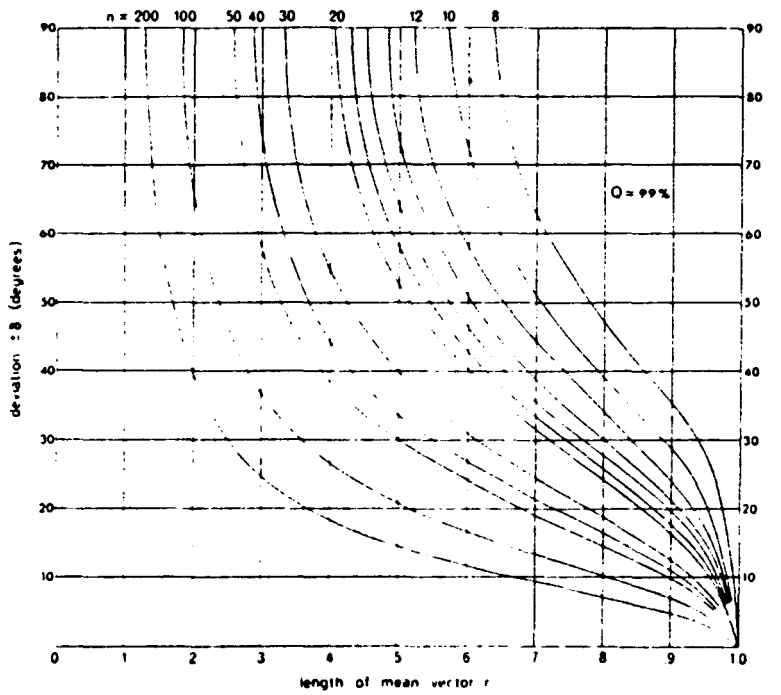


Chart for determining a confidence interval of the mean angle with a 1% confidence coefficient. The sample size is n.

CHAPTER IV

RESULTS

The information presented here provides a systematic review of the results of the data analyses which were detailed in Chapter III. Results of the tests of the three hypotheses directed at McCormick's direct, two-dimensional item scaling procedures are presented first. Second, the placements of the items on the circular, interpersonal continuum are examined in light of research questions 1, 2, and 3 which were focused on the underlying structure of the Bem, Parker, and Heilbrun M-F instruments. Finally, research question #4 is addressed through a comparison of the Bem item placements from this study and those calculated from the item factor loadings reported by Pedhauzer and Tetenbaum (1979) in their analysis of the BSRI masculinity and femininity scales.

Hypothesis #1, Kolmogorov-Smirnov Two-Sample Tests

Differences in the scaling of items between the male and female subject groups were identified by Kolmogorov-Smirnov two-sample tests of the item frequency distributions. The distributions for all the scaled items are presented in Appendix A, and those found to exhibit significant differences in gender response are marked with an asterisk. Thirty-three percent of the Bem, 13% of the Heilbrun, and 20% of the Parker items differed on the dominance-submission dimension. Sixty-

two percent of the Bem, 48% of the Heilbrun, and 60% of the Parker items were rated differently on the love-hate dimension. Given these percentages, Hypothesis #1 was not rejected, and the male and female item scalings were treated as separate data sets throughout the remainder of the investigation.

Hypothesis #2, Kolmogorov-Smirnov One-Sample Tests

The item frequency distributions in Appendix A were also examined to determine if subjects were able to scale items successfully on both dimensions. Kolmogorov-Smirnov one-sample goodness-of-fit tests were used to analyze the difference between the observed and the theoretical normal distributions. A significant test identified observed distributions which were not normal, indicating uniform, random subject response. An identification of a large number of uniform distributions would have raised questions about the validity of McCormick's procedure. The few random ratings that were actually revealed, however, provided support for his technique. As a result, the uniform distributions that did occur were interpreted to mean that the subjects did not find the meanings of those particular items to be related to the given scaling dimension.

Table 4.1 lists the 5 Bem, 5 Heilbrun, and 7 Parker items that were found to be randomly rated by at least one subject group on at least one of the two scales. The fact that only 17 Kolmogorov-Smirnov one-sample tests were significant supported the conclusions that the subjects were able to scale the items successfully, attended to their task, and found the items relevant to the interpersonal domain

Table 4.1

Items Exhibiting Uniform Frequency Distributions
on the Dominance-Submission and/or Love Hate Dimensions

Subject Group & Item Number	Scaling Dimension	Item
Bem Items		
Male #766	D-S	eager to soothe hurt feelings
Male #1006	D-S	warm
Female #964	D-S	sensitive to the needs of others
Female #698	L-H	assertive
Female #750	L-H	childlike
Heilbrun Items		
Male #1006	D-S	warm
Female #774	D-S	excitable
Female #788	D-S	forgiving
Female #698	L-H	assertive
Female #871	L-H	opportunistic
Parker Items		
Male #1006	D-S	warm
Female #774	D-S	excitable
Female #788	D-S	forgiving
Female #878	D-S	patient
Female #965	D-S	soft-hearted
Female #871	L-H	opportunistic
Female #986	L-H	unassuming

defined by the love-hate and dominance-submission scales. As none of the items was randomly rated on both scales, Hypothesis #2 was rejected, and all items were retained for further analysis.

Hypothesis #3, t-tests on Means

One-sample t-tests were used to identify item scale means that were not significantly different from zero in a test of Hypothesis #3. A significant test indicated that the mean subject group rating of the item was "neutral" and suggested that the item's meaning may not be defined by the given dimension. A great many items found to have means not significantly different from zero would have indicated that additional dimensions might be needed to more completely define the interpersonal domain. As only 10 "double zero" items were identified, however, providing support for the adequacy of Leary's (1956) two proposed orthogonal dimensions. From a strictly procedural point of view, an item exhibiting means of zero on both scales was not sufficiently quantified to permit the mathematical calculation of its angular placement on the circular continuum, leaving it unscaled by McCormick's approach.

Appendix B lists the item means and standard deviations for male and female subject groups on both scaling dimensions. Item means not significantly different from zero are identified by an asterisk. Table 4.2 presents those items which were rated "neutral" on both scales by at least one subject group. Of those ten items, only two (#793 "frivolous" and #984 "unaffected") were rated "double-zero" by both genders. Thus, Hypothesis #3 was rejected, and all items were retained for analysis.

Angular Placement of Items on the Unit Circle

Appendix C presents the sines, cosines, and angular placements of

Table 4.2

Items Exhibiting Means Not Significantly Different from Zero on both the Dominance-Submission and Love-Hate Scales

Subject Group	Item #	Item	M,F,N Scale
Bem Items			
Male	740	conventional	M
Male	975	theatrical	N
Female	none	----	-
Heilbrun Items			
Male	793	frivolous	F
Female	793	frivolous	F
Female	861	modest	F
Parker Items			
Male	740	conventional	F
Male	793	frivolous	F
Male	815	high-strung	F
Male	984	unaffected	F
Female	793	frivolous	F
Female	833	informal	F
Female	984	unaffected	F
Female	931	simple	F

items calculated following the procedures detailed in Chapter III. Table 4.3 lists the items according to the rank order of their angles calculated from male subject responses. Inspection of those tables permits an examination of the differences in male and female response as well as the relationships among the items. As one reads through the rank order list, for example, it is evident that the meanings of items change gradually as the placements move around the continuum. Thus, items having similar meanings are found near to one another on the circle. For example, males rated the Bem items "dominant" and "forceful" such that they were placed at 95 and 106 degrees, respectively. Conversely, items whose meanings are dissimilar are separated by large arcs of the circle, as illustrated by the fact that females scaled the Heilbrun items "fearful" and "confident" such that they are found at 217 and 45 degrees, respectively.

It is also apparent that the items placed in Quadrants I (0 to 90 degrees) and IV (270 to 360 degrees) are more socially desirable than those in Quadrants II (90 to 180 degrees) and III (180 to 270 degrees). All of the Bem M and F scale items, which were selected based on the perception that they were socially desirable for both genders, are found in or very near Quadrants I and IV. Similarly, all of the Parker items from the ACL social desirability scale (Parker & Veldman, 1969) are found in the first and fourth quadrants.

Figures 4.1, 4.2, and 4.3 present a spatial representation of angular placements and provide a visual impression of the differences and similarities among items and the underlying structure of the three M-F instruments. It is immediately apparent, for example, that most of the Bem items are found in Quadrants I and IV, reflecting her limited

Table 4.3

Item Ordering from Smallest to Largest Male Subject Angular Placement

Subject Group & Item Number	Angle	Item	M,N,F Scale
Bem Items			
Male #989	0	understanding	F
Female	9		
Male #1006	1	warm	F
Female	13		
Male #736	2	conscientious	N
Female	25		
Male #850	9	loyal	F
Female	12		
Male #983	10	truthful	N
Female	20		
Male #792	10	friendly	N
Female	17		
Male #968	14	tactful	N
Female	26		
Male #900	20	reliable	N
Female	27		
Male #718	22	cheerful	F
Female	22		
Male #804	23	happy	N
Female	25		
Male #686	28	adaptable	N
Female	22		
Male #853	54	makes decisions easily	M
Female	45		
Male #963	56	self-sufficient	M
Female	39		
Male #967	57	strong personality	M
Female	51		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M.F,N Scale
Male #699	57	athletic	M
Female	33		
Male #1016	61	willing to take a stand	M
Female	51		
Male #752	66	defends own beliefs	M
Female	50		
Male #685	66	acts as a leader	M
Female	53		
Male #809	68	has leadership abilities	M
Female	55		
Male #691	68	ambitious	M
Female	70		
Male #826	68	independent	M
Female	44		
Male #740	69	conventional	N
Female	15		
Male #917	70	self-reliant	M
Female	48		
Male #828	71	individualistic	M
Female	49		
Male #1013	74	willing to take risks	M
Female	64		
Male #864	75	masculine	M
Female	46		
Male #729	77	competitive	M
Female	70		
Male #692	80	analytical	M
Female	54		
Male #698	82	assertive	M
Female	53		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #690	92	aggressive	M
Female	106		
Male #763	95	dominant	M
Female	87		
Male #786	107	forceful	M
Female	99		
Male #975	124	theatrical	N
Female	42		
Male #732	144	conceited	N
Female	139		
Male #841	173	jealous	N
Female	153		
Male #995	202	unpredictable	N
Female	192		
Male #914	225	secretive	N
Female	153		
Male #999	228	unsystematic	N
Female	216		
Male #830	230	inefficient	N
Female	211		
Male #862	237	moody	N
Female	158		
Male #802	259	gullible	F
Female	231		
Male #750	270	childlike	F
Female	283		
Male #929	276	shy	F
Female	265		
Male #1018	287	yielding	F
Female	284		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #943	296	solemn	N
Female	283		
Male #782	297	flatterable	F
Female	335		
Male #778	304	feminine	F
Female	0		
Male #761	316	does not use harsh language	F
Female	340		
Male #942	319	soft spoken	F
Female	355		
Male #766	328	eager to soothe hurt feelings	F
Female	355		
Male #962	330	sympathetic	F
Female	7		
Male #972	331	tender	F
Female	359		
Male #797	338	gentle	F
Female	2		
Male #964	341	sensitive to the needs of others	F
Female	4		
Male #727	344	compassionate	F
Female	9		
Male #688	351	affectionate	F
Female	15		
Male #849	354	loves children	F
Female	10		
Heilbrun Items			
Male #739	1	contented	F
Female	16		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #1006	1	warm	F
Female	13		
Male #886	2	praising	F
Female	32		
Male #842	6	jolly	F
Female	22		
Male #792	10	friendly	F
Female	17		
Male #803	24	handsome	M
Female	26		
Male #774	50	excitable	F
Female	41		
Male #834	56	ingenious	M
Female	30		
Male #839	57	inventive	M
Female	40		
Male #787	57	forsighted	M
Female	50		
Male #733	58	confident	M
Female	45		
Male #969	61	talkative	F
Female	53		
Male #791	62	frank	M
Female	48		
Male #769	64	enterprising	M
Female	53		
Male #840	66	industrious	M
Female	45		
Male #915	68	self-confident	M
Female	50		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #925	69	sharp-witted	M
Female	43		
Male #954	70	strong	M
Female	56		
Male #864	75	masculine	M
Female	46		
Male #753	75	deliberate	M
Female	52		
Male #698	82	assertive	M
Female	52		
Male #876	91	outspoken	M
Female	61		
Male #949	92	stern	M
Female	99		
Male #690	93	aggressive	M
Female	106		
Male #763	95	dominant	M
Female	87		
Male #871	106	opportunistic	M
Female	110		
Male #786	107	forceful	M
Female	99		
Male #979	112	tough	M
Female	99		
Male #701	125	autocratic	M
Female	107		
Male #928	127	shrewd	M
Female	118		
Male #696	130	arrogant	M
Female	135		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #1003	139	vindictive	M
Female	148		
Male #806	140	hard-headed	M
Female	134		
Male #732	144	conceited	M
Female	139		
Male #748	157	cynical	M
Female	151		
Male #779	229	fickle	F
Female	199		
Male #793	233	frivolous	F
Female	62		
Male #1017	242	worrying	F
Female	206		
Male #777	247	fearful	F
Female	218		
Male #958	270	submissive	F
Female	242		
Male #976	271	timid	F
Female	276		
Male #765	286	dependent	F
Female	252		
Male #778	304	feminine	F
Female	0		
Male #861	311	modest	F
Female	351		
Male #768	313	emotional	F
Female	351		
Male #920	319	sentimental	F
Female	352		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #962	330	sympathetic	F
Female	7		
Male #919	335	sensitive	F
Female	3		
Male #742	343	cooperative	F
Female	0		
Male #737	344	considerate	F
Female	12		
Male #932	346	sincere	F
Female	8		
Male #788	351	forgiving	F
Female	359		
Male #694	353	appreciative	F
Female	9		
Male #814	359	helpful	F
Female	21		
Parker Items			
Male #989	0	understanding	F
Female	9		
Male #796	0	generous	F
Female	17		
Male #739	1	contented	F
Female	16		
Male #1006	1	warm	F
Female	13		
Male #886	2	praising	F
Female	32		
Male #716	2	charming	F
Female	19		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #736	2	conscientious	F
Female	25		
Male #1009	6	wholesome	F
Female	26		
Male #697	9	artistic	F
Female	14		
Male #850	9	loyal	F
Female	12		
Male #792	10	friendly	F
Female	17		
Male #866	20	natural	F
Female	14		
Male #892	19	pleasure-seeking	M
Female	49		
Male #892	22	cheerful	F
Female	22		
Male #803	24	handsome	M
Female	26		
Male #902	28	responsible	F
Female	38		
Male #700	30	attractive	F
Female	26		
Male #821	30	idealistic	F
Female	18		
Male #1014	35	wise	M
Female	38		
Male #874	38	outgoing	F
Female	43		
Male #722	38	clear-thinking	M
Female	36		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #880	39	planful	F
Female	34		
Male #887	42	progressive	M
Female	41		
Male #872	45	optimistic	F
Female	32		
Male #901	45	resourceful	M
Female	40		
Male #784	45	flirtatious	F
Female	18		
Male #884	47	poised	F
Female	37		
Male #946	47	spontaneous	F
Female	33		
Male #770	49	enthusiastic	F
Female	35		
Male #947	50	spunky	F
Female	42		
Male #984	50	unaffected	F
Female	97		
Male #774	51	excitable	F
Female	41		
Male #853	54	mannerly	F
Female	44		
Male #834	56	ingenious	M
Female	30		
Male #839	57	inventive	M
Female	40		
Male #787	57	foresighted	M
Female	51		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #733	57	confident	M
Female	45		
Male #723	57	clever	M
Female	43		
Male #969	61	talkative	F
Female	53		
Male #1019	61	zany	F
Female	8		
Male #764	64	dreamy	F
Female	53		
Male #741	66	cool	M
Female	57		
Male #915	68	self-confident	M
Female	50		
Male #925	69	sharp-witted	M
Female	43		
Male #954	69	strong	M
Female	56		
Male #740	69	enthusiastic	F
Female	14		
Male #907	72	robust	M
Female	62		
Male #753	75	deliberate	M
Female	53		
Male #864	75	masculine	M
Female	46		
Male #951	79	stolid	M
Female	124		
Male #730	81	complicated	F
Female	56		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #949	92	stern	M
Female	99		
Male #690	92	aggressive	M
Female	106		
Male #707	105	bossy	F
Female	117		
Male #871	106	opportunistic	M
Female	108		
Male #786	107	forceful	M
Female	99		
Male #811	107	headstrong	F
Female	116		
Male #979	112	tough	M
Female	99		
Male #860	115	mischievious	F
Female	100		
Male #955	117	stubborn	F
Female	117		
Male #93	122	egotistical	M
Female	121		
Male #906	123	rigid	M
Female	135		
Male #701	125	autocratic	M
Female	107		
Male #868	126	noisy	F
Female	151		
Male #928	127	shrewd	M
Female	117		
Male #696	130	arrogant	M
Female	135		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #927	131	show-off	M
Female	136		
Male #695	133	argumentative	M
Female	126		
Male #825	133	impulsive	F
Female	105		
Male #725	135	coarse	M
Female	159		
Male #806	140	hard-headed	F
Female	134		
Male #916	145	selfish	F
Female	143		
Male #936	147	sly	M
Female	167		
Male #939	153	snobbish	F
Female	150		
Male #971	163	tempermental	F
Female	129		
Male #865	169	nagging	F
Female	168		
Male #990	180	unemotional	M
Female	177		
Male #815	183	high-strung	F
Female	144		
Male #819	190	hurried	F
Female	136		
Male #973	200	tense	F
Female	157		
Male #827	202	indifferent	M
Female	178		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #996	205	unrealistic	F
Female	204		
Male #978	207	touchy	F
Female	158		
Male #760	208	disorderly	F
Female	199		
Male #759	210	dissatisfied	M
Female	192		
Male #1003	210	vindictive	M
Female	148		
Male #1000	210	unexcitable	M
Female	206		
Male #889	212	prudish	F
Female	210		
Male #785	220	foolish	F
Female	220		
Male #896	221	rattlebrained	F
Female	215		
Male #823	228	immature	F
Female	211		
Male #779	229	fickle	F
Female	199		
Male #793	233	frivolous	F
Female	62		
Male #1010	235	whiney	F
Female	211		
Male #862	237	moody	F
Female	158		
Male #743	239	cowardly	F
Female	227		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #867	241	nervous	F
Female	206		
Male #1017	244	worrying	F
Female	206		
Male #777	247	fearful	F
Female	218		
Male #735	249	confused	F
Female	226		
Male #959	251	superstitious	F
Female	220		
Male #835	253	inhibited	F
Female	215		
Male #958	270	submissive	F
Female	242		
Male #976	271	timid	F
Female	276		
Male #857	278	meek	F
Female	249		
Male #764	284	dreamy	F
Female	330		
Male #986	285	unassuming	F
Female	298		
Male #765	286	dependent	F
Female	252		
Male #767	287	effeminate	F
Female	259		
Male #715	291	changeable	F
Female	358		
Male #931	296	simple	F
Female	316		

Table 4.3 (Continued)

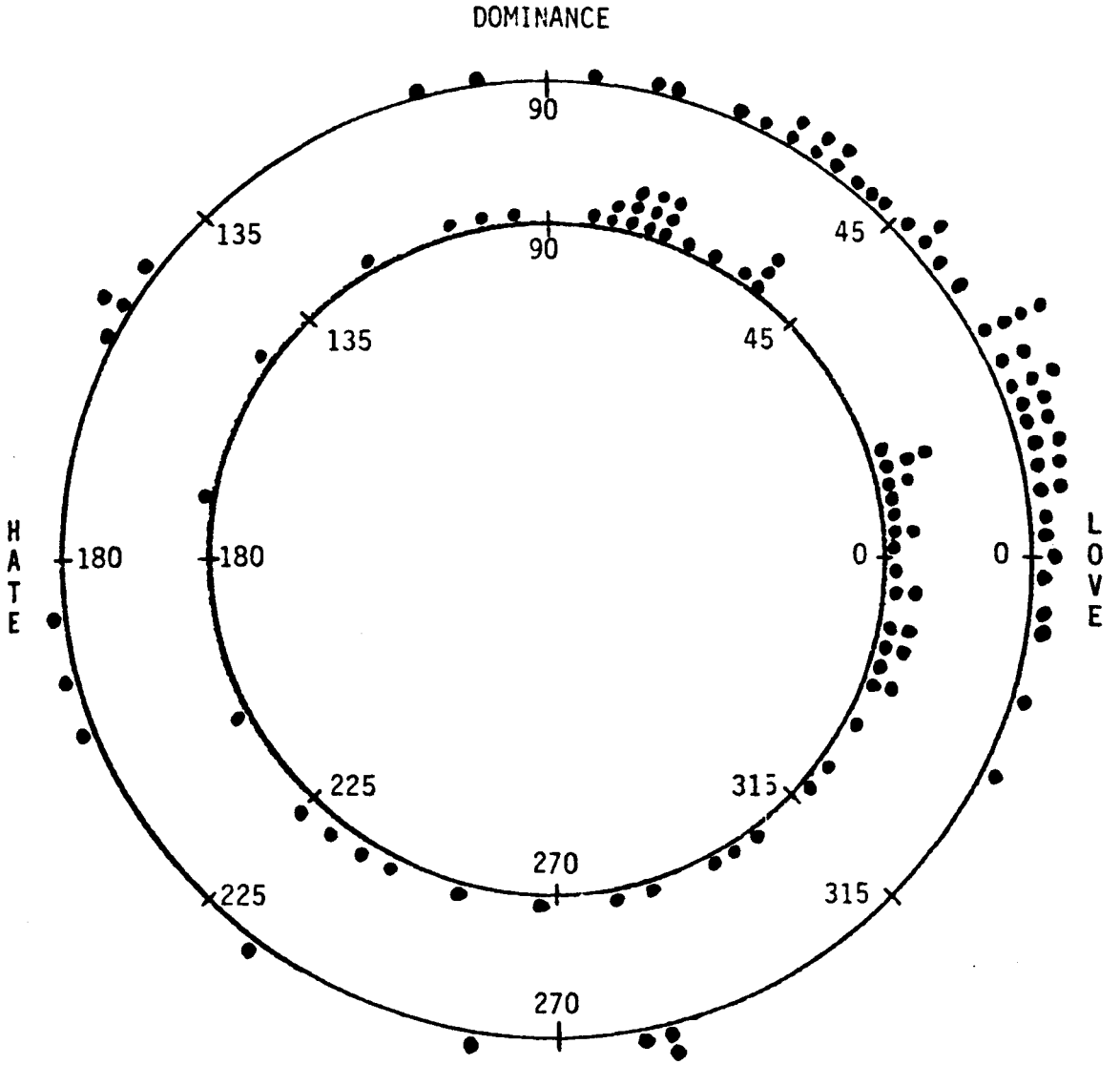
Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #778	304	feminine	F
Female	0		
Male #861	311	modest	F
Female	352		
Male #768	313	emotional	F
Female	351		
Male #366	313	thoughtful	F
Female	349		
Male #965	319	soft-hearted	F
Female	354		
Male #920	319	sentimental	F
Female	352		
Male #878	328	patient	F
Female	355		
Male #962	330	sympathetic	F
Female	7		
Male #977	335	tolerant	F
Female	1		
Male #919	335	sensitive	F
Female	3		
Male #797	338	gentle	F
Female	2		
Male #742	343	cooperative	F
Female	0		
Male #833	343	informal	F
Female	357		
Male #737	344	considerate	F
Female	12		
Male #932	345	sincere	F
Female	8		

Table 4.3 (Continued)

Subject Group & Item Number	Angle	Item	M,F,N Scale
Male #843	350	kind	F
Female	7		
Male #688	351	affectionate	F
Female	15		
Male #788	351	forgiving	F
Female	359		
Male #694	353	appreciative	F
Female	9		
Male #881	354	pleasant	F
Female	15		
Male #980	357	trusting	F
Female	9		
Male #814	359	helpful	F
Female	21		

Bem Sex-Role Inventory

Item Placements



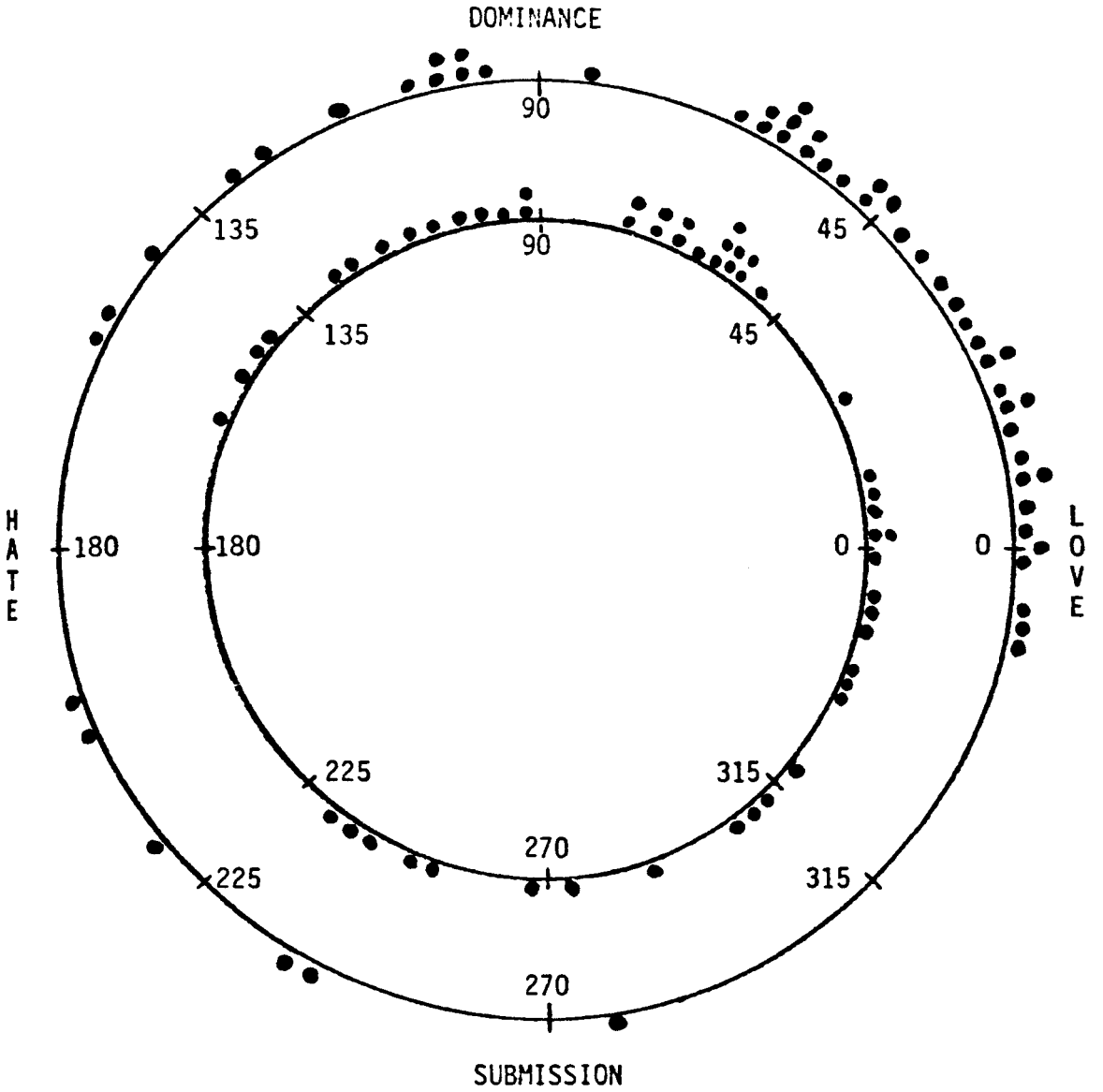
Outer Circle: Female Subjects

Inner Circle: Male Subjects

Figure 4.1

Heilbrun

Item Placements



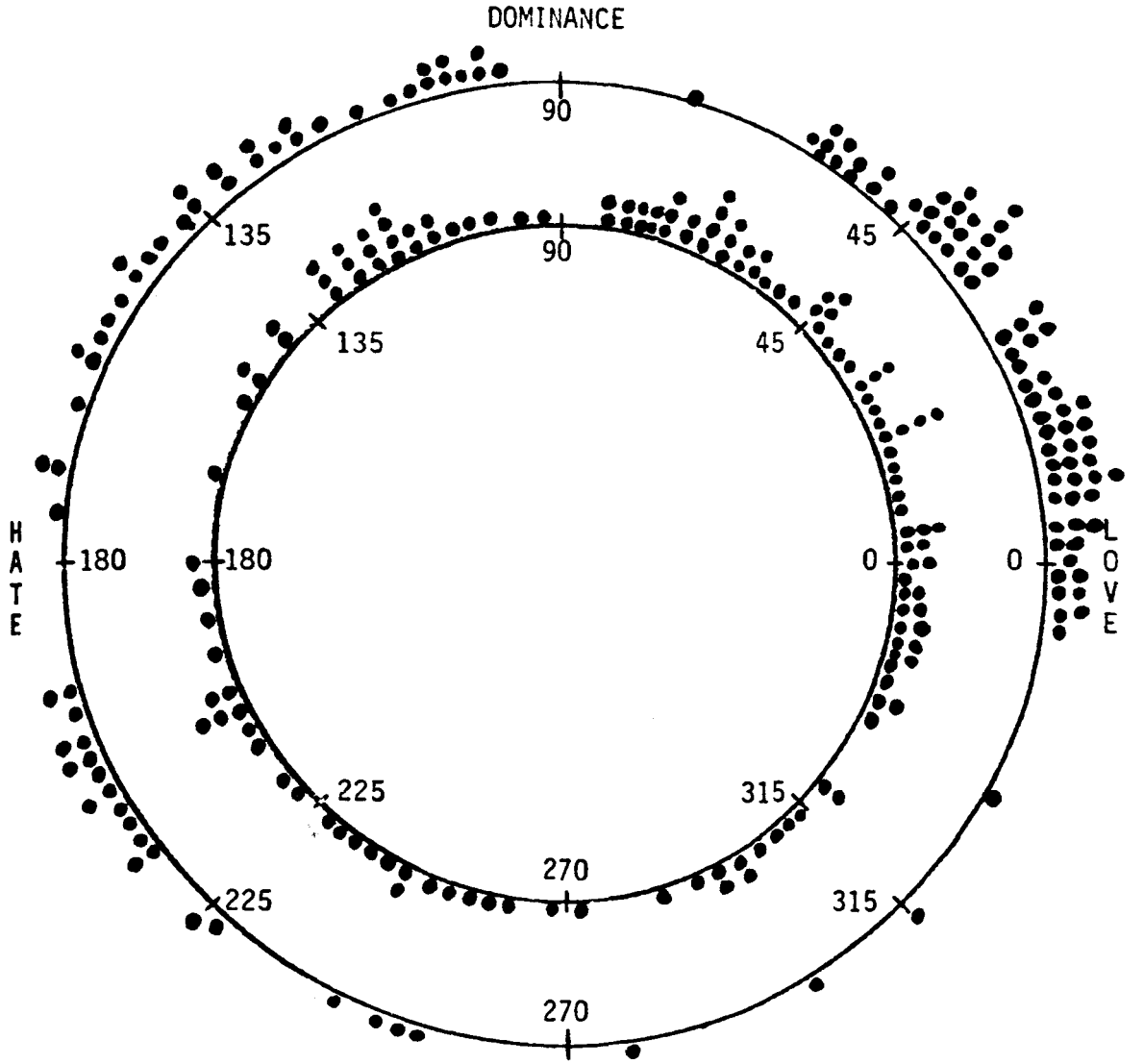
Outer Circle: Female Subjects

Inner Circle: Male Subjects

Figure 4.2

Parker

Item Placements



Outer Circle: Female Subjects

Inner Circle: Male Subjects

Figure 4.3

definition of the M-F construct. On the other hand, neither Parker nor Heilbrun restricted their M-F definition to desirable traits, so it is not surprising that their items more completely cover the circle.

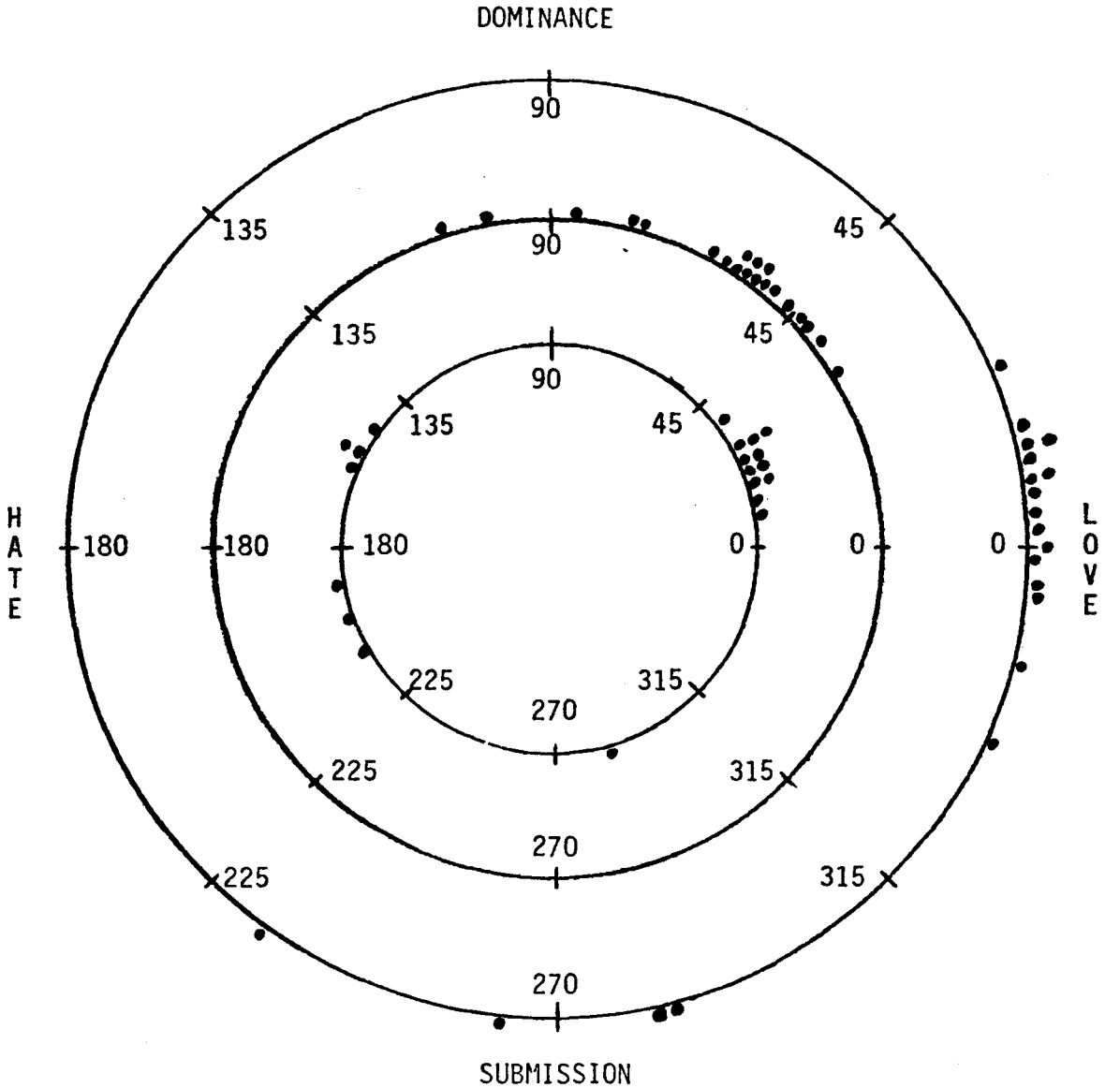
The figures also permit identification of concentrations and gaps on the continuum. Items tend to be clustered at 45 and 360 degrees, for example, and gaps are apparent around 260 and 180 degrees. Further, it is evident that the clusters and gaps are not at the same points in the male and female circular orderings. Inspection of Table 4.1 reveals that these differences are due to dissimilar item scalings of both M and F scale items. Male subjects tended to scale M items closer to the dominance pole than the females, whose M items cluster around 45 degrees. Similarly, males placed F scale items nearer the submission pole than did females, whose F items are clustered around the 0 degree love pole.

Masculinity and Femininity Scale Comparisons

Figures 4.4 through 4.9 present a spatial representation of the angular placements of the items assigned to the masculinity and femininity scales of the Bem, Parker, and Heilbrun instruments. The Bem figures also contain a circle of the placements of the BSRI's neutral scale items. An examination of these concentric graphs reveals that most M scale items are placed between 25 and 150 degrees. On the other hand, most of the Bem and Heilbrun F items are found between 225 and 45 degrees, while the Parker F scale items are distributed more completely around the entire interpersonal continuum. Similarly, the Bem neutral items are found in all four quadrants of the circle.

Given these configurations of the underlying structures of the

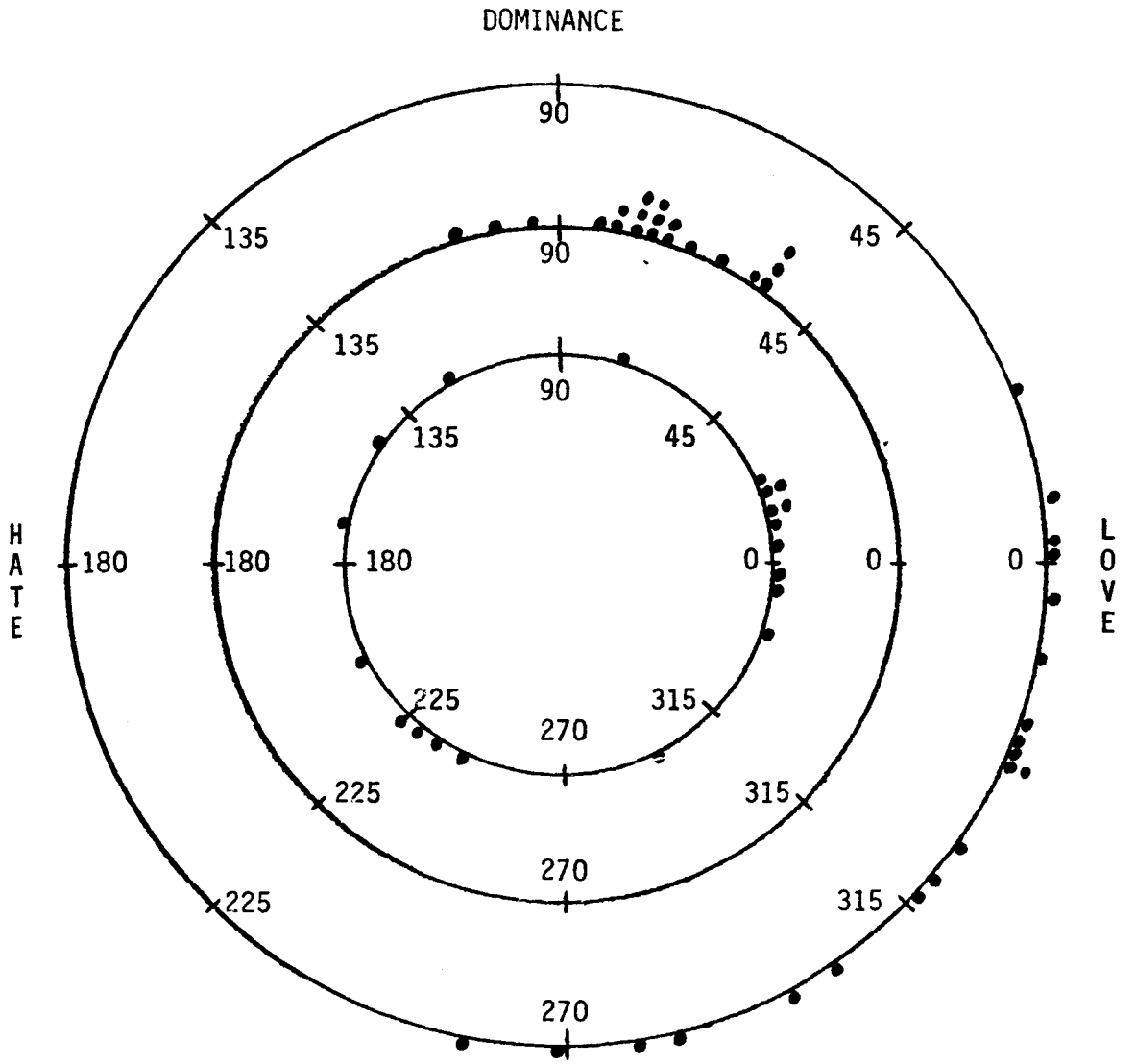
Bem Sex-Role Inventory Items
Female Distribution



Outer Circle: Femininity Scale Items
Middle Circle: Masculinity Scale Items
Inner Circle: Neutral Scale Items

Figure 4.4

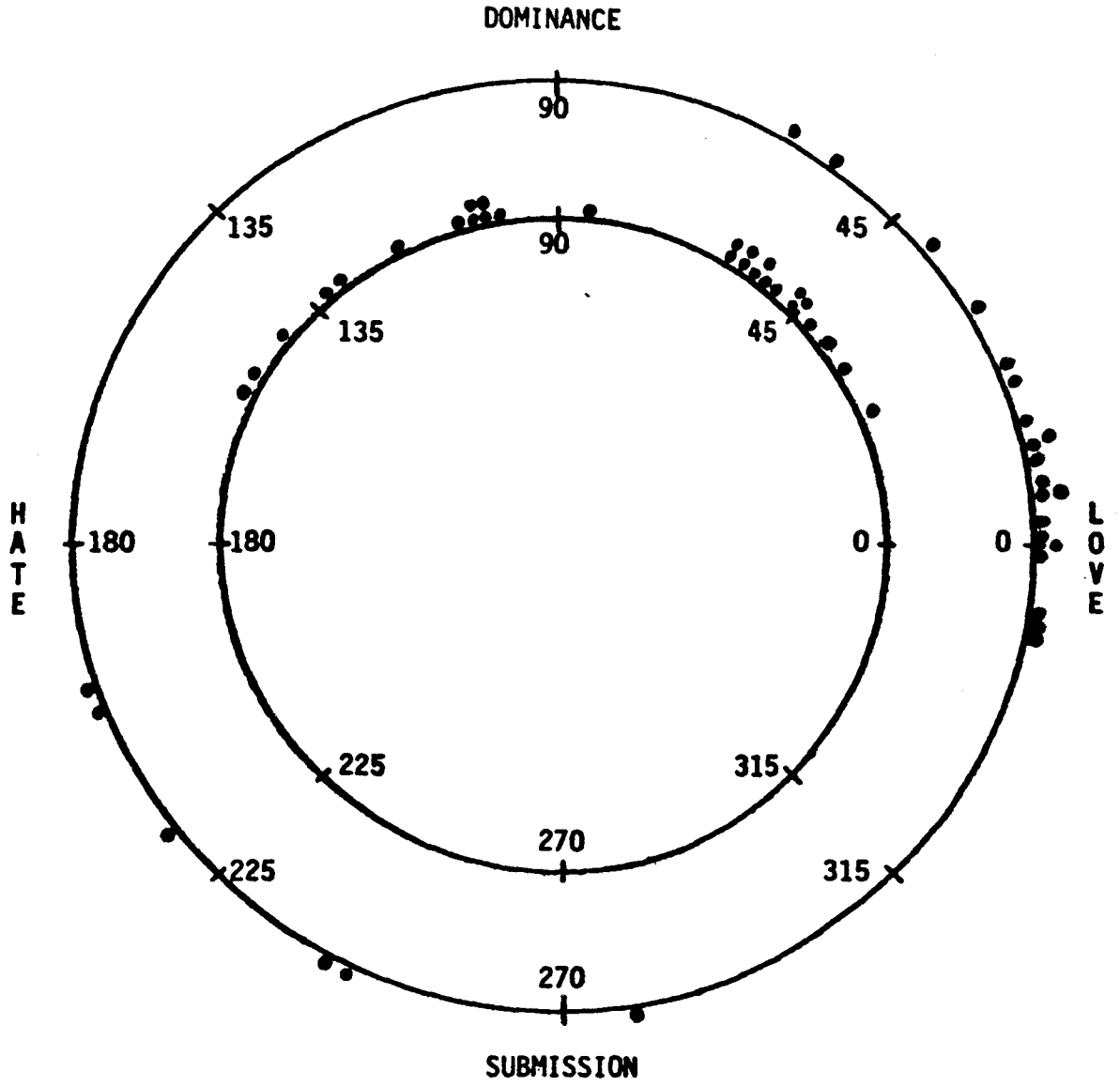
Bem Sex-Role Inventory Items
Male Distribution



Outer Circle: Femininity Scale Items
Middle Circle: Masculinity Scale Items
Inner Circle: Neutral Scale Items

Figure 4.5

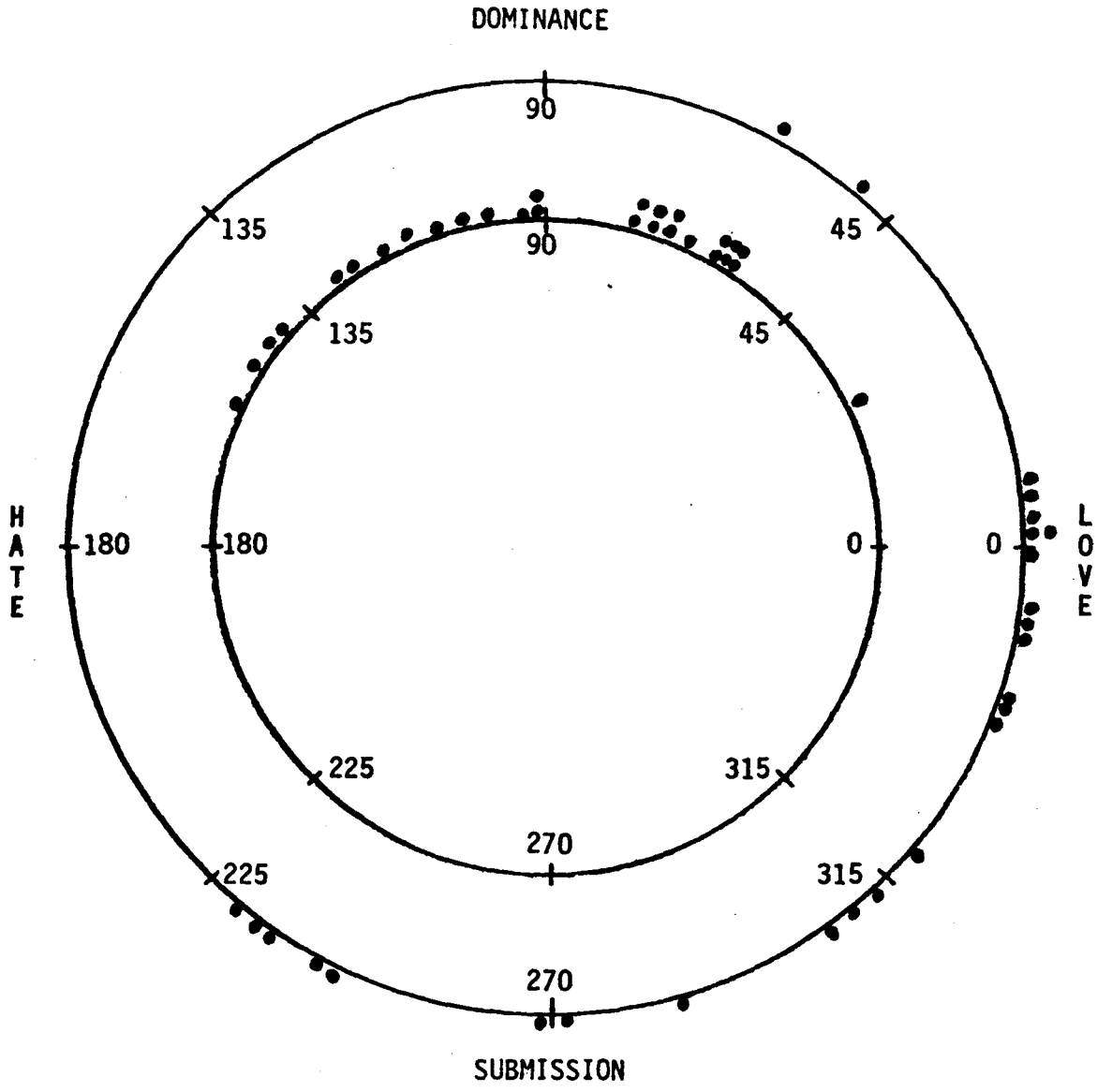
Heilbrun Items
Female Distribution



Outer Circle: Femininity Scale
Inner Circle: Masculinity Scale

Figure 4.6

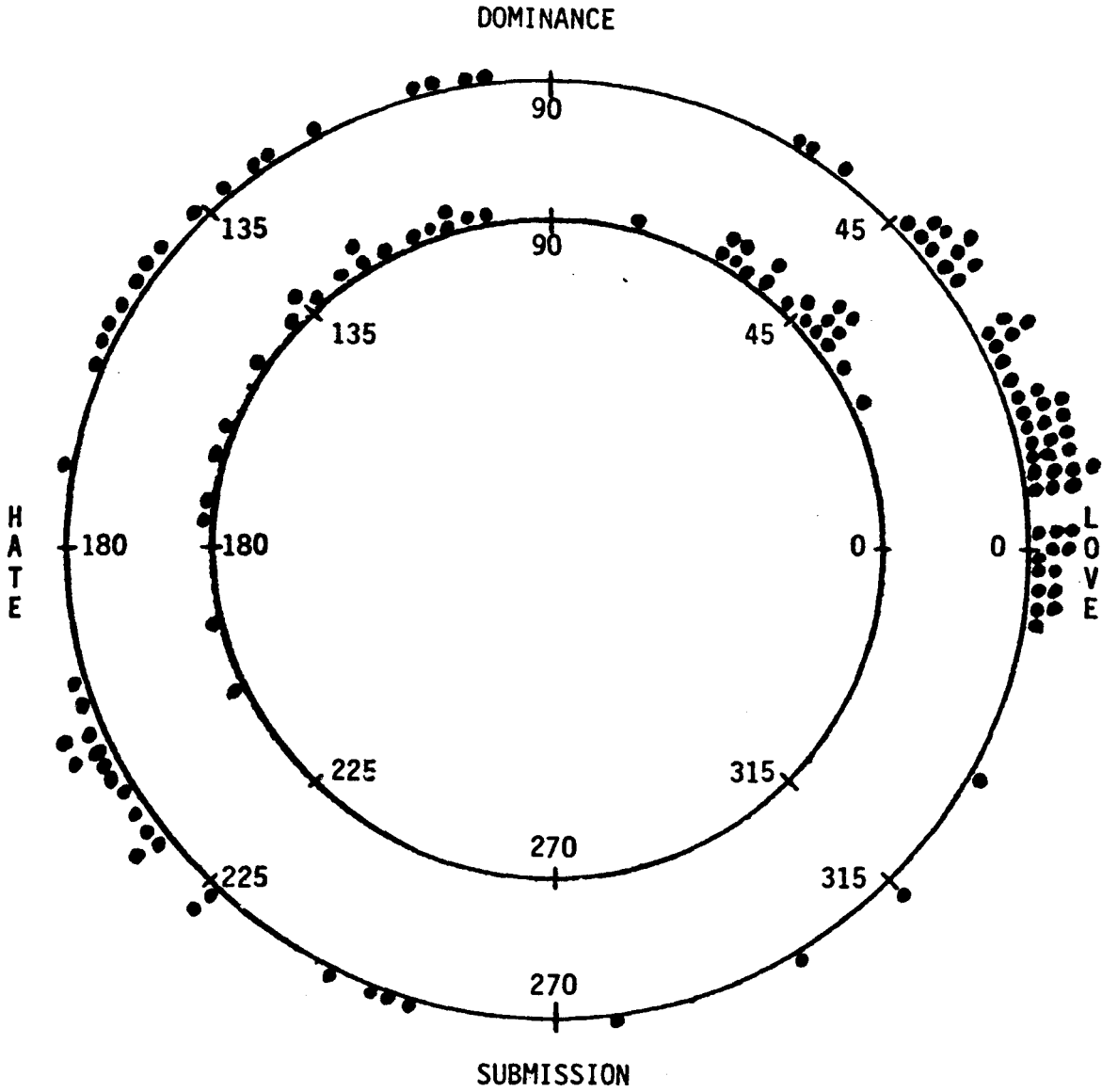
Heilbrun Items
Male Distribution



Outer Circle: Femininity Scale
Inner Circle: Masculinity Scale

Figure 4.7

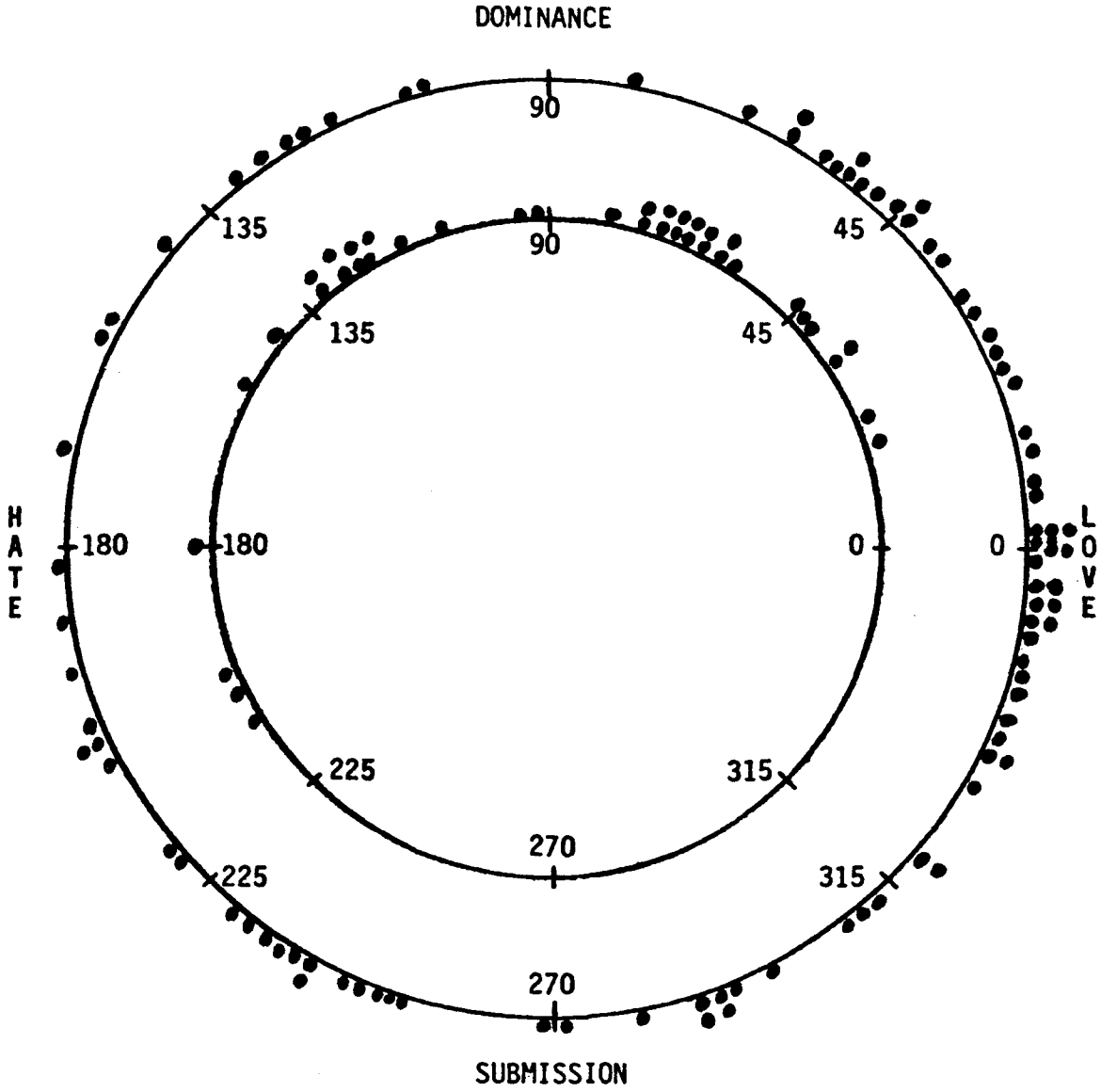
Parker Items
Female Distribution



Outer Circle: Femininity Scale
Inner Circle: Masculinity Scale

Figure 4.8

Parker Items
Male Distribution



Outer Circle: Femininity Scale
Inner Circle: Masculinity Scale

Figure 4.9

three M-F measures, a number of differences are evident. One, F items cover much larger arcs of the circles than M items, suggesting that the femininity construct being tapped by all three instruments is more heterogeneous than that defined by M items. Two, most of the Bem M and F items are in the socially desirable Quadrants II and IV, while the BSRI neutral items are found in Quadrants II and III as well as II and IV. Most of Heilbrun's F items are socially desirable, but about half of his M items are in Quadrant III. Parker's M items are about equally divided between Quadrants I and II, but his F items are spread fairly evenly among all four. Three, the relationship between the Bem and Heilbrun M and F items does indicate orthogonality rather than bipolarity, but the Parker placements may be interpreted as support for both orthogonal and bipolar M-F relationships. Four, although M item placements reflect relatively close agreement between the genders, the F item plots reveal pronounced subject group differences. In particular, males placed far more F items in Quadrant IV, indicating a larger submissive item rating, while females scaled those same items less submissive and more loving. As a result, Quadrant IV is relatively void of female subject item placements on all three instruments.

Table 4.4 presents the ranges, sum of sines, sum of cosines, and mean scale angles of the M and F scale items, calculated using the equations detailed in Chapter III. These numerical results confirm the general, visual impression provided by the concentric graphs, making it even more apparent that: 1) The F item ranges are much larger than those of the M items; 2) The Parker items cover more of the continuum than those from the Bem and Heilbrun measures; 3) The M

Table 4.4

M & F Scale Ranges, Sum of Sines, Sum of Cosines, and Mean Angles

Subject Group	Item Range	Sum of Sines	Sum of Cosines	Angle
		Masculinity Scale Items		
BSRI				
Males	54 - 106	18.5334	5.9263	72
Females	33 - 106	16.0613	10.0609	57
Combined	33 - 106	34.5947	15.9862	65
Heilbrun				
Males	24 - 156	23.6803	- .4623	90
Females	26 - 150	21.1474	4.4413	78
Combined	24 - 156	44.8277	3.9790	85
Parker				
Males	19 - 202	25.4694	- 2.0848	96
Females	26 - 206	25.1894	.8511	88
Combined	19 - 206	50.6588	- 1.2337	90
		Femininity Scale Items		
BSRI				
Males	259 - 21	- 9.4907	13.0044	323
Females	231 - 22	- 3.0902	14.3435	347
Combined	231 - 22	-12.5809	27.3479	334
Heilbrun				
Males	229 - 51	- 9.3232	14.5925	326
Females	199 - 40	.4185	13.2869	2
Combined	199 - 51	- 8.9047	27.8794	342
Parker				
Males	0 - 359	- 8.7343	24.5219	343
Females	0 - 358	11.4847	26.7435	23
Combined	0 - 359	2.7504	56.2654	3

scale items are clustered around the dominance pole of the circle, and the F items are generally found toward the love point; 4) Males scaled M items more dominant and F items more submissive than females, and there is more difference between the genders in the ratings of F items; and 5) The relationship between the M and F scales is more orthogonal than bipolar.

Table 4.5 provides for further examination of the M-F relationship through a comparison of the degrees of separation between the mean M and F scale angles. It is apparent from these differences that a bipolar M-F relationship (as would be indicated by a separation of 180 degrees) is not suggested. The separations do more closely reflect a 90 degree, orthogonal relationship, but the differences are dissimilar enough from 90 to suggest that masculinity and femininity might not be related in either an orthogonal or bipolar manner. It is interesting to note that an othogonal M-F relationship is strongly supported when the combined subject group ratings are analyzed; but when male and female ratings are treated separately, an orthogonal M and F scale difference is not necessarily evident.

Angular Placements of BSRI Items from Factor Loadings

Table 4.6 lists the vector lengths, sines, cosines, and angular placements of the BSRI M and F scale items calculated from the factor loadings reported by Pedhauzer and Tetenbaum (1979). Following McCormick's (1977) recommended procedures outlined in Chapter III, the two most significant factors from Pedhauzer and Tetenbaum's study were designated as the primary, orthogonal dimensions of a circumplex. For female subjects, factor 1 was selected for the horizontal and factor 2

Table 4.5

M and F Scale Mean Angles

and the Degrees of their Separation on the Circle

Subject Group	Masculinity Scale Mean Angle	Femininity Scale Mean Angle	Degrees of Separation
	BSRI Items		
Males	72	323	109
Females	57	347	70
Combined	65	334	91
	Heilbrun Items		
Males	90	325	124
Females	78	2	76
Combined	85	342	103
	Parker Items		
Males	96	343	113
Females	88	23	63
Combined	91	3	88

Table 4.6

Angles, Vector Lengths, Sines, and Cosines
Bem Sex-Role Inventory Items

Calculated Using Factor Loadings from Pedhauzer and Tetenbaum*

Item No.	Angle	Vector Length	Sine	Cosine
Female Subjects				
688	24	.704	.398	.918
718	29	.486	.481	.877
750	2	.033	-.030	1.000
727	6	.747	.107	.995
761	340	.186	-.344	.941
766	356	.534	-.045	1.000
778	221	.086	-.651	-.756
782	15	.286	.262	.965
797	4	.734	.067	.997
802	352	.086	-.128	.988
849	7	.551	.123	.993
850	32	.236	.533	.843
964	10	.699	.187	.983
929	277	.404	-.990	.136
942	328	.407	-.499	.826
962	3	.703	.053	.999
972	12	.771	.200	.979
989	3	.594	.061	.998
1006	18	.774	.317	.948
1018	320	.321	-.632	.776
685	81	.745	.991	.145
690	102	.690	.977	-.219
691	81	.508	.988	.163
692	89	.363	1.000	.017
698	90	.770	1.000	-.019
699	91	.168	1.000	-.048
729	100	.514	.984	-.177
752	69	.536	.672	.252
763	94	.691	.994	-.083
786	91	.768	1.000	-.021

Table 4.6 (Continued)

Item No.	Angle	Vector Length	Sine	Cosine
809	82	.737	.992	.130
826	77	.453	.976	.216
828	67	.562	.923	.384
853	75	.486	.954	.248
864	153	.296	.449	-.895
917	69	.384	.938	.352
963	76	.480	.975	.227
967	86	.690	.999	.064
1013	81	.502	.990	.149
1016	79	.631	.975	.193
Male Subjects				
688	24	.704	.398	.918
718	29	.486	.481	.877
750	2	.033	.030	1.000
727	6	.747	.107	.995
761	340	.186	-.344	.941
766	356	.534	.045	1.000
778	221	.086	-.651	-.756
782	15	.286	.262	.965
797	4	.734	.067	.997
802	352	.086	.128	.988
849	7	.551	.123	.993
850	32	.236	.533	.843
964	10	.699	.187	.983
929	277	.404	-.990	.136
942	3	.703	.053	.999
972	12	.771	.200	.979
989	3	.594	.061	.998
1006	18	.774	.317	.948
1018	320	.321	-.632	.776
942	328	.405	-.499	.826
685	71	.662	.947	.322
690	81	.675	.988	.150
691	60	.612	.871	.492
692	47	.221	.683	.733
698	87	.681	.999	.036

Table 4.6 (Continued)

Item No.	Angle	Vector Length	Sine	Cosine
699	79	.181	.983	.193
729	62	.434	.877	.482
752	74	.201	.756	.214
763	90	.648	1.000	.006
786	90	.653	1.000	.003
809	63	.636	.893	.451
826	82	.249	.992	.133
828	98	.183	.995	-.158
853	81	.365	.986	.159
864	52	.164	.793	.616
917	74	.158	.962	.271
963	78	.191	.979	.209
967	84	.635	.995	.101
1013	60	.425	.864	.504
1016	56	.381	.827	.564

*(See Table 2.5, pp. 28-30)

for the vertical axes of the circle (See Table 2.5, pp. 28-30). For male subjects, factor 2 was designated the horizontal and factor 1 the vertical defining dimensions of the circumplex. Item loadings from those factors were then substituted for scale means in McCormick's trigonometic equations, yielding a circular ordering of the items. Table 4.7 presents a comparison of the angles found using the factor loadings with those determined from the direct, two-dimensional items scalings of this investigation. As mentioned previously, such comparisons must be made with the recognition of a number of extraneous influences (i.e., Pedhauzer and Tetenbaum found a four- rather than two-factor, rotated solution to their analysis of responses of subjects who used the items to describe themselves, while subjects from this study rated the items according to their semantic meanings on two, imposed dimensions), but they do permit a tentative evaluation of the agreement between the two techniques.

Using Batschelet's (1981) confidence intervals (See Table 3.1, p. 67) to identify significant differences between items, it is apparent from Table 4.7 that most of the factor loading angles do differ from those resulting from the item scaling procedures. It is also obvious, however, that there are a significant number of similarities among female placements of F items and male placements of M items. Further, only three female comparisons (those for "athletic," "masculine," and "gullible") and four of those for males ("childlike," "flatterable," "feminine," and "gullible") exhibit separations greater than 45 degrees. Interestingly enough, each of those items has been removed from the short form of the BSRI (Bem, 1979).

Table 4.7

Bem Sex Role Inventory Item Placements

Circular Scaling and Factor Loading Angles

Item (#)	Scaled Angle Interval	Factor Angle
Female Subjects		
individualistic (828)	49±12	67*
self-reliant (963)	49±11	69*
defends own beliefs (752)	50±11	69*
makes decisions easily (853)	44±10	75*
self-sufficient (963)	39±10	76*
independent (826)	43±11	77*
willing to take a stand (1016)	50±11	79*
acts as a leader (683)	53±8	81*
willing to take risks (1013)	63±11	81*
ambitious (991)	70±10	81*
has leadership abilities (809)	55±10	82*
strong personality (967)	50±10	86*
analytical(692)	54±18	89*
assertive (698)	52±10	90*
athletic (699)	33±14	91*
forceful (786)	99±16	91
dominant (763)	87±11	94
competitive (729)	70±12	100*

Table 4.7 (Continued)

Item (#)	Scaled Angle Interval	Factor Angle
aggressive (690)	106±11	102
masculine (864)	46±20	153*
gentle (797)	2±11	0
tender (972)	359±12	6
understanding (989)	9±12	9
sensitive to the needs of others (964)	4±10	10
compassionate (727)	9±10	10
loyal (850)	12±10	12
warm (1006)	13±13	13
feminine (778)	0±30	15
affectionate (688)	15±10	18
cheerful (718)	22±14	24
flatterable (782)	335±360	79
shy (929)	265±40	256
yielding (1018)	284±24	322*
gullible (802)	231±17	324*
soft-spoken (942)	354±40	324
childlike (750)	283±40	327*
does not use harsh language (761)	340±18	332
sympathetic (962)	7±16	352
loves children (849)	10±10	356*

Table 4.7 (Continued)

Item (#)	Scaled Angle Interval	Factor Angle
eager to soothe hurt feelings (766)	355±18	356
Male Subjects		
analytical (692)	79±23	47*
masculine (864)	75±19	52*
willing to take a stand (1016)	61±15	56
ambitious (691)	68±18	60
willing to take risks (1013)	74±20	60
competitive (729)	76±14	62
has leadership abilities (809)	68±13	68
acts as a leader (685)	66±10	71
defends own beliefs (752)	66±14	74
self-reliant (917)	69±17	74
self-sufficient (963)	56±18	78*
athletic (699)	57±19	79*
aggressive (690)	92±11	82
makes decisions easily (853)	54±19	81*
independent (826)	68±15	82
strong personality	57±16	84*
assertive (698)	82±16	87
dominant (763)	95±14	90
forceful (786)	106±14	90*

Table 4.7 (Continued)

Item (#)	Scaled Angle Interval	Factor Angle
individualistic (828)	70±19	98*
childlike (750)	270±15	2*
sympathetic (962)	330±24	3*
understanding (989)	0±20	3
gentle (797)	338±11	4*
compassionate (727)	343±13	23*
loves children (849)	354±11	7*
sensitive to the needs of others (964)	330±14	12*
flatterable (782)	297±24	15*
warm (1006)	2±90	18
affectionate (688)	351±12	24*
cheerful (718)	21±24	8
loyal (850)	9±14	32*
feminine (778)	304±19	221*
shy (929)	276±17	277
yielding (1018)	286±20	320*
soft-spoken (942)	318±21	328
does not use harsh language (761)	316±24	340
gullible (802)	259±19	352*
eager to soothe hurt feelings (966)	328±17	356*

*Factor angle does not fall in scaled angle 99% confidence interval (Batschelet, 1981).

CHAPTER V

DISCUSSION

The primary purpose of this study was to investigate the validity of a two-dimensional scaling of items from selected measures of psychological masculinity-femininity (M-F). In addition, the results of the scaling procedures were employed to evaluate the Bem (1974), Heilbrun (1976), and Parker (1969) M-F instruments.

Gender Differences

The identification of the significant differences in the scaling of items between male and female subject groups, which led to the decision that Hypothesis #1 should not be rejected, suggests two interpretations. One is the conclusion that these results should be attributed to actual differences between the genders. However, as the analyses of the two-dimensional scalings of the items from the ICL (McCormick & Kavanagh, 1981) and the MMPI (Smoley, 1983) did not reveal gender differences, it is necessary to question whether those found in this investigation were actually related to gender or some other, unidentified difference between the subject groups. The volunteers for this study were not randomly selected, thus it is approriate to be somewhat cautious about the comparability of the subject groups, particularly in light of the results of the MMPI and ICL studies.

While it is true that the items scaled in this study were selected for M-F assessment on the basis of an empirically demonstrated

utility in differentiating between the genders, the identification of that utility was made from analyses of male/female use of the items in describing themselves or others. In this investigation, subjects were instructed to scale the items according to their semantic meaning. Thus, differences in the ratings of items should not have been related to differences in concept of masculinity-femininity, sex-roles, or socially desirable stereotypes. Rather, the scaling differences should have been the result of differences in understanding of what the items mean. If the differences between the genders found in this study are, in fact, real, the implications go well beyond scaling and personality test construction. For although is has been suggested that males and females use words differently at times (e.g., Steinmann, 1958), the extent of such differences has been regarded as limited to a small number of words. The differences found here are of a significantly higher percentage of frequency.

While previous research does require that the gender differences be regarded with skepticism, it does not absolutely refute the possibility that they were the result of male/female differences. Perhaps the M-F items are different in some way from those on the ICL and MMPI. Perhaps they are so obviously related to sex-role concepts that subjects scaled them accordingly. It is not possible to reach a confident conclusion based upon the results of this study alone. However, the differences do raise interesting questions and appear to deserve further investigation.

Two-dimensional Item Scaling

Rejection of null hypotheses 2 and 3 provides further support

for the validity of McCormick's direct, two-dimensional item scaling procedures. The results of the two-sample Kolmogorov-Smirnov tests of the item frequency distributions suggest that the subjects attended to the scaling task and found the M-F items meaningful on the dominance-submission and love-hate dimensions. Had there been a significant number of uniform frequency distributions, the validity of the scaling procedure would have been challenged. However, as the vast majority of item frequency distributions more closely approximated the theoretical normal distirbution, it is appropriate to conclude that the subjects were able to scale the items successfully.

The results of the t-tests on item means also indicate that the subjects found the items relevant to the two scaling dimensions and suggest that the interpersonal domain is sufficiently defined by the two primary, orthogonal axes of Leary's (1956, 1957) circular model. If the t-test results had identified a significant number of item scale means that were not different from zero, both the validity of the scaling procedures and the sufficiency of the two dimensions would have been questioned. However, as very few items were found to exhibit zero means, both the procedures and dimensions are supported.

Underlying Structure of the M-F Tests

Analyses of the circular placements of the items and the relationships of the mean angles of the items assigned to the masculinity and femininity scales of the Bem (1974), Heilbrun (1976), and Parker (1969) M-F instruments raise a number of questions about the validity of the instruments themselves as well as the theoretical conceptualization of masculinity-femininity which the androgyny theorists have

proposed. Based upon the item scaling results from this investigation, masculinity and femininity do not appear to be related in either a bipolar or orthogonal manner. The item placements provide little, if any, support for the traditional concept of a bipolar (180 degree M and F scale mean angle separation) M-F relationship. On the other hand, while the mean scale angle separation did approximate a 90 degree (orthogonal) relationship when male and female responses were analysed as one combined group, the M and F scale separations were not orthogonal when the genders were treated as separate groups.

These results cast considerable doubt on the validity of M-F theory and the procedures employed in the construction of the selected M-F instruments. Perhaps the orthogonal relationship proposed by the androgyny school has been based upon factor analytic procedures which artificially forced M and F items into an orthogonal relationship. If masculinity and femininity are not truly independent personality dimensions, the test construction and scoring methods employed by Bem (1974), Spence (Spence & Helmreich, 1978), and Heilbrun (1976) are founded upon inappropriate assumptions. As a result, the concept of androgyny is severely damaged. Although the concept might still have meaning even if masculinity and femininity are not independent/orthogonal, it would certainly need to be significantly redefined both empirically and theoretically.

Comparison of the circular plottings of items from the Bem, Heilbrun, and Parker instruments provide further affirmation of the conclusion that the three measures are not assessing the same M-F construct. The Bem and Heilbrun items tend to be found in the same

general arcs of the circle. However, even though the two measures were constructed to reflect similar concepts of androgyny, their items do not define identical M-F constructs. Parker's items cover the circle more completely, reflecting the fact that he did not restrict his definition of M-F to socially desirable traits; but even his items do not sample the entire circular continuum. Large gaps are noticable on the concentric graphs of the item placements of all three instruments, which is not a problem if masculinity-femininity is not a concept that is defined by the entire interpersonal domain. If that is the case, however, the terms "masculinity" and "femininity" could be interchangeable with appropriately placed adjectives from Keisler's (1983) or Leary's (1956, 1957) interpersonal circles. Thus, it might be better to drop the sex-role labels in favor of less ambiguous terms as has been suggested by Wiggins and Holzmuller (1979) and Bernard (1979). If masculinity and femininity are concepts that should be defined by the entire interpersonal domain, the three instruments examined here are not constructed with items that sufficiently sample the complete circular continuum.

Questions about the construct and convergent validity of M-F measures are at the heart of the dilema facing M-F research. Two-dimensional item scaling procedures do not completely clarify these difficulties, but they do provide a new approach to an evaluation of the inconsistencies between M-F theory and measurement. McCormick's (1977) techniques make it possible to evaluate potential M-F test items before as well as after their use as M-F indicators. Using the results of a direct, two-dimensional scaling of items prior to test

construction, for example, should make it possible for researchers to construct an M-F instrument that more adequately reflects the intended underlying M-F theroy. The placement of items on the circular continuum also permits an evaluation of an M-F instrument after it has been constructed and administered.

Although the scaling procedrues themselves do not in and of themselves provide answers as to whether M-F should be restricted to a definition by socially desirable traits or if masculinity and femininity should be conceptualized as orthogonal dimensions, they do offer methods of evaluating the degree of agreement between empirical results and theory. While it is true that personality assessment in general and masculinity-femininity research particularly have been predominantly empirically based, researchers in the field certainly are not anti-theoretical. It would appear that the circumplex model and two-dimensional item scaling might provide a new technique with which they might bridge the gap between theory and assessment.

Factor Analysis and Circular Scaling

Although the comparison of the item placements calculated from Pedhauzer and Tetenbaum's (1979) factor anlysis of the Bem Sex-Role Inventory items with those found in this investigation was made while recognizing a number of significant reservations, the simlilarity of the two resulting orderings does appear to suggest that factor analysis and circular scaling procedures may provide very similar representations of the underlying structure of a data set. At best, the comparison provides modest support for the validity of McCormick's (1977) procedures, but it would seem appropriate to conclude that the results do warrent

further investigation.

Two-dimensional Item Scaling and The Circumplex Model

The results of this investigation are consistent with those reported by McCormick and Kavanagh (1981), McCormick (1977), Thomas (1981), Baldanado (1982), and Smoley (1983) and provide further support for the circumplex and two-dimensional scaling procedures. The model is apparently compatible with a breadth of psychological and educational variables, and the procedures appear to offer an improved approach to the construction and evaluation of measures intended to assess concepts in the affective domain. McCormick's direct item scaling procedures may be employed to provide valuable information about items prior to test construction, which should lead to improved item selection and test scale homogeneity and discriminability. It would appear that Batschelet's (1981) circular statistics deserve further investigation in light of their apparent usefulness with the circumplex. It appears that the spatial representation provided by the circumplex may be employed to analyse the underlying structure of data in much the same way that factor analysis has been used. And McCormick's procedures appear to be expandable to three or more dimensions should that prove necessary as some theorists have suggested.

Given the results of this study, further research focused upon the meaning of vector lengths, the orthogonality of alternative scaling dimensions, the compatibility between factor analysis and circumplex procedures, the use of Batschelet's circular statistics with the circumplex model in psychology and education, and the empirical and theoretical relationship between masculinity and femininity seems most appro-

priate. Indeed, the applicability of Guttman's (1954) circumplex and McCormick's direct, two-dimensional item scaling procedures appears to be quite general and deserves continued investigation.

SUMMARY

McCormick's (1977) two-dimensional item scaling procedures were employed to scale the items from the Bem Sex-Role Inventory (Bem, 1974), Heilbrun's (1976) masculinity and femininity scales, and Parker's (1969) Fem Scale to a circumplex model (Guttman, 1954). Items were scaled according to their semantic meaning on both the primary dimensions (love-hate and dominance-submission) of Leary's (1956, 1957) interpersonal behavior circle by 100 male and 100 female graduate and undergraduate students. A modification of Ross' (1938) vectorial methods for circular scales was used to place the items in the Euclidean space defined by Leary's orthogonal axes. The item scaling results were used to evaluate both the scaling procedures themselves and the three masculinity-femininity (M-F) instruments.

It was determined that the subjects were able to successfully scale the items on both the love-hate and dominance-submission dimensions. A significant number of differences in the scaling of items between males and females were identified, and the angular placements of the Bem Sex-Role Inventory calculated from the item scalings and Pedhauzer and Tetenbaum's (1979) factor laodings were found to be quite similar.

Evaluation of the angular placement of items on the circular continuum raised a number of questions regarding the validity of the three M-F measures. The items from the instruments were not found to fall on identical arcs of the circle, and none of the measures adequately

sampled the entire interpersonal domain. Further, analysis of the relationship between the masculinity and femininity scales of the instruments did not support the traditional bipolar M-F concept nor the orthogonal M-F relationship proposed by andorgyny theorists.

The results of the investigation were found to be consistent with previous research and provided further support for the applicability of the circumplex model and McCormick's scaling techniques. Recommendations for further research were made with a particular emphasis on the investigation of the use of direct, two-dimensional item scaling procedures in the construction and evaluation of instrumentation designed to assess variables in the affective domain.

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APPENDIX A

Item Frequency Distributions

Item #	-4	-3	-2	-1	0	1	2	3	4
Bem Items: Love (4) - Hate (-4) Dimmension									
Male #685 *	0	0	2	4	35	25	20	7	7
Female	0	0	0	0	21	9	38	22	10
Male #686 *	0	0	0	0	25	32	31	4	8
Female	0	0	3	0	16	7	37	20	17
Male #688 *	0	0	0	0	4	20	39	20	17
Female	0	1	5	1	8	4	19	25	37
Male #690	0	6	17	19	33	7	6	5	7
Female	8	11	21	11	17	7	7	8	4
Male #691	0	0	3	5	51	20	13	2	6
Female	1	5	8	6	22	16	19	14	9
Male #692 *	0	2	3	8	63	10	11	1	2
Female	0	1	13	2	26	16	21	8	13
Male #698 *	0	0	2	18	55	9	10	5	1
Female	0	0	0	5	26	14	30	12	13
Male #699 *	0	0	0	7	50	14	15	5	9
Female	0	0	3	2	27	15	19	15	19
Male #718 *	0	0	3	2	17	40	29	6	3
Female	0	0	1	3	11	24	27	15	19
Male #727 *	0	0	0	0	6	29	36	24	34
Female	0	0	2	3	3	8	26	24	34
Male #729 *	0	0	2	13	43	23	15	3	1
Female	2	0	8	15	20	15	29	3	8
Male #732 *	2	3	39	32	19	3	1	1	0
Female	18	17	19	20	15	2	6	2	1

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #736 *	0	0	1	3	21	31	31	7	6
Female	0	0	1	0	14	14	34	19	18
Male #740	0	0	9	8	59	13	8	2	0
Female	0	0	6	6	45	19	20	4	0
Male #750	2	3	8	3	60	15	7	2	0
Female	0	5	23	10	18	17	12	10	5
Male #752	0	0	0	0	54	22	18	2	4
Female	2	1	2	2	13	24	29	13	14
Male #761	0	0	0	1	30	51	16	1	1
Female	1	0	2	1	15	28	26	18	9
Male #763	0	1	17	24	30	16	11	1	0
Female	2	1	14	26	19	14	15	6	4
Male #766	1	0	0	1	8	36	44	8	2
Female	1	1	2	5	12	22	29	11	17
Male #778	1	1	5	0	39	22	19	4	8
Female	3	1	4	6	24	20	24	6	12
Male #782	0	0	3	10	42	24	16	2	3
Female	3	1	17	12	17	22	17	8	3
Male #786	1	2	24	30	26	8	7	0	2
Female	0	12	13	22	21	15	13	3	1
Male #792	0	1	0	0	9	31	38	12	9
Female	0	1	1	2	10	17	31	22	16
Male #797 *	0	0	0	0	7	27	35	16	15
Female	0	0	3	0	6	16	20	27	28
Male #802 *	2	5	12	16	43	13	8	0	1
Female	6	9	30	22	19	7	4	3	0
Male #804	0	0	3	3	45	19	20	6	4
Female	0	2	1	1	12	16	19	28	21
Male #809 *	0	0	0	0	47	30	20	2	1
Female	0	0	0	4	25	9	37	19	6

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #814	0	0	1	5	14	26	39	5	10
Female	0	1	4	3	14	12	41	12	13
Male #826 *	0	0	3	14	33	19	22	5	4
Female	1	0	4	3	12	18	32	16	14
Male #828 *	0	0	4	10	45	21	14	0	5
Female	0	1	5	2	23	17	23	15	14
Male #830 *	2	0	21	42	35	0	0	0	0
Female	12	15	37	23	12	0	1	0	0
Male #841 *	6	8	35	30	9	5	5	2	0
Female	22	16	22	18	9	4	6	0	3
Male #848 *	0	0	0	0	16	35	34	8	7
Female	0	0	0	0	7	20	34	24	15
Male #849	0	0	0	1	5	14	35	18	27
Female	1	0	0	1	9	8	23	31	27
Male #850 *	0	0	0	0	9	22	40	10	19
Female	1	1	0	1	4	5	29	29	30
Male #853 *	0	0	0	0	48	24	21	3	4
Female	0	0	1	5	16	13	20	32	13
Male #862	1	1	11	27	47	9	4	0	0
Female	0	8	24	40	11	9	5	1	0
Male #864 *	3	2	0	1	64	12	9	6	3
Female	0	5	2	5	33	20	16	6	13
Male #900 *	0	0	0	0	20	26	33	13	8
Female	0	0	0	0	6	16	27	31	20
Male #914	2	0	10	26	51	6	3	1	1
Female	1	5	25	27	20	12	7	2	1
Male #917 *	0	0	0	0	51	35	12	0	0
Female	0	1	2	5	11	22	30	17	12
Male #929	2	2	2	12	49	20	12	2	1
Female	2	1	11	27	27	15	15	1	1

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #932 *	0	0	0	0	7	33	42	10	8
Female	1	0	0	1	8	21	24	24	21
Male #942	0	0	0	0	32	38	24	4	2
Female	1	2	2	2	15	28	29	16	5
Male #943	0	0	3	16	47	20	13	1	0
Female	1	2	6	12	25	20	21	4	9
Male #962 *	0	0	0	5	12	48	26	6	3
Female	0	1	0	3	10	23	34	15	14
Male #963 *	0	0	0	4	31	35	23	6	1
Female	0	0	0	1	18	19	26	17	19
Male #964	0	0	0	0	4	24	34	18	20
Female	0	2	0	2	3	7	26	35	25
Male #967 *	0	0	0	0	44	25	20	8	3
Female	0	0	2	1	17	26	22	23	9
Male #968 *	0	0	3	6	30	30	24	6	1
Female	1	1	0	0	12	22	21	18	15
Male #972 *	0	0	0	0	14	23	43	9	10
Female	0	2	4	0	4	11	34	26	19
Male #975 *	0	2	6	3	77	8	4	0	0
Female	0	0	3	4	35	26	17	9	6
Male #983 *	0	0	0	0	8	33	41	7	11
Female	1	3	0	5	8	12	29	14	28
Male #989 *	0	0	1	0	8	24	51	8	8
Female	0	1	4	4	10	10	24	21	26
Male #995 *	1	5	15	20	50	4	3	0	2
Female	9	21	18	15	23	10	4	0	0
Male #999	2	7	15	25	51	0	0	0	0
Female	8	18	19	26	28	1	0	0	0
Male #1006 *	0	0	0	0	13	21	45	7	14
Female	1	1	1	5	7	16	22	24	23

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #1013 *	0	0	1	10	54	16	17	1	1
Female	0	1	7	4	22	24	31	6	5
Male #1016 *	0	0	0	1	37	34	25	1	2
Female	0	0	2	6	17	22	21	21	11
Male #1018	0	4	4	4	39	35	12	1	1
Female	4	3	5	19	25	18	13	10	3
Bem Items: Dominance (4) - Submission (-4) Dimension									
Male #685	0	0	0	0	4	15	39	22	20
Female	0	0	2	1	3	12	24	31	27
Male #686	0	0	11	8	18	28	29	5	1
Female	1	3	11	4	22	9	35	8	6
Male #688 *	1	5	28	10	29	14	7	2	4
Female	0	3	10	5	40	5	21	9	7
Male #690	0	0	1	3	7	20	32	24	13
Female	0	0	2	2	10	17	36	25	8
Male #691 *	0	2	3	1	7	27	37	16	7
Female	0	1	0	1	3	17	37	14	27
Male #692	0	0	3	2	17	29	40	5	3
Female	2	0	0	0	34	10	32	12	10
Male #698	0	0	0	3	10	21	38	14	14
Female	0	0	0	1	5	26	37	17	14
Male #699	0	0	3	5	23	15	34	14	6
Female	0	3	0	4	42	11	19	12	9
Male #718	0	0	5	6	45	25	18	1	0
Female	0	1	3	10	33	18	27	6	2
Male #727 *	1	3	23	29	29	5	6	3	1
Female	4	2	9	16	29	4	21	9	6
Male #729	0	0	0	1	7	16	44	20	12
Female	0	0	0	0	9	20	37	21	13

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #732	2	4	14	3	10	23	26	9	9
Female	1	0	4	6	38	11	21	14	5
Male #736 *	0	3	13	13	31	25	14	0	0
Female	1	0	4	6	38	11	21	14	5
Male #740	0	0	11	10	47	15	10	3	3
Female	0	0	17	15	32	15	15	6	0
Male #750	3	9	27	31	29	1	0	0	0
Female	5	6	28	26	16	9	5	4	1
Male #752	0	0	1	4	7	25	34	23	6
Female	0	0	0	0	5	25	47	18	5
Male #761	1	7	24	32	23	7	5	1	0
Female	8	15	11	14	28	5	9	8	2
Male #763	2	2	4	3	1	9	32	25	22
Female	0	0	1	2	3	17	29	30	18
Male #766	8	12	24	11	19	20	6	0	0
Female	4	5	22	15	21	5	14	12	2
Male #778 *	3	14	28	31	18	2	3	1	0
Female	2	5	8	20	38	8	9	7	3
Male #782 *	7	14	24	17	25	8	4	1	0
Female	0	3	18	27	19	12	15	4	1
Male #786	1	2	2	0	4	19	42	19	11
Female	0	1	5	0	4	21	36	29	4
Male #792	0	2	6	16	31	26	18	1	0
Female	1	4	5	11	32	11	24	8	4
Male #797 *	2	6	19	39	22	4	7	1	0
Female	7	4	8	23	22	6	14	9	7
Male #802	9	13	32	27	11	3	2	2	0
Female	4	13	31	35	8	5	2	2	0
Male #804	1	2	2	3	43	28	14	7	0
Female	0	1	2	3	43	13	23	9	6

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #809	0	0	0	0	5	31	35	18	11
Female	0	0	0	1	2	18	34	35	10
Male #814	0	1	11	24	32	18	13	1	0
Female	0	1	9	12	34	9	19	13	3
Male #826	0	0	0	6	6	19	42	19	8
Female	0	0	1	1	20	21	32	28	7
Male #828	0	0	2	4	22	19	30	14	9
Female	0	0	0	2	18	20	36	13	11
Male #830	3	9	27	30	24	1	5	1	0
Female	2	17	30	17	24	4	3	1	2
Male #841 *	1	2	17	12	33	11	15	5	4
Female	0	7	8	8	18	16	24	10	9
Male #848 *	1	7	14	15	34	10	15	4	0
Female	0	3	2	8	30	20	19	6	2
Male #849	2	6	20	12	33	9	10	7	1
Female	4	3	7	17	27	8	16	10	8
Male #850	1	6	15	11	18	15	22	10	2
Female	5	1	11	16	17	12	17	11	10
Male #853 *	0	0	0	2	22	36	29	9	2
Female	0	1	0	0	8	25	37	19	10
Male #862 *	0	3	27	23	29	10	8	0	0
Female	0	2	9	15	31	20	14	7	2
Male #864	0	0	0	0	14	35	37	10	4
Female	0	1	2	4	31	25	25	10	2
Male #900 *	1	1	5	10	27	30	22	3	1
Female	1	2	2	2	27	17	27	17	5
Male #914 *	2	3	17	12	41	11	7	1	0
Female	1	3	10	23	18	14	23	6	2
Male #917	2	6	21	34	24	4	6	3	0
Female	4	1	15	25	18	4	22	7	4

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #929 *	10	17	37	25	4	1	0	0	0
Female	3	12	24	29	10	9	10	2	1
Male #932	5	3	12	22	32	21	4	1	0
Female	2	1	14	9	37	11	12	12	2
Male #942	1	5	21	45	18	7	3	0	0
Female	5	5	20	27	16	11	6	9	1
Male #943	0	3	16	22	31	16	5	0	0
Female	3	4	13	11	35	21	8	3	2
Male #962	6	7	20	20	22	17	7	1	0
Female	3	8	9	16	24	10	13	11	6
Male #963	0	1	0	6	10	34	33	6	10
Female	0	1	1	1	17	21	38	14	7
Male #964 *	6	7	17	30	18	12	8	2	0
Female	10	3	11	15	20	7	15	9	10
Male #967 *	0	0	0	0	19	28	36	11	6
Female	0	0	0	1	15	12	29	33	10
Male #968 *	1	1	7	15	37	23	13	3	0
Female	2	0	5	7	29	14	28	12	3
Male #972 *	7	3	22	33	25	6	3	1	0
Female	4	8	8	21	25	9	12	7	5
Male #975	2	6	13	11	24	14	28	0	0
Female	0	2	4	6	29	21	26	8	3
Male #983	0	1	3	7	62	13	10	2	2
Female	1	3	6	7	39	7	17	10	9
Male #989	0	1	6	25	40	16	11	1	0
Female	3	3	8	17	30	10	13	9	6
Male #995	3	4	8	17	40	20	8	0	0
Female	5	10	13	9	33	13	7	5	4
Male #999	0	7	18	39	35	0	0	0	0
Female	7	10	22	23	29	3	3	1	1

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #1006	0	2	15	17	32	14	16	4	0
Female	1	4	8	14	28	11	19	11	3
Male #1013 *	0	0	0	0	17	35	28	12	8
Female	0	0	0	0	4	17	47	28	4
Male #1016	0	0	0	0	10	25	52	9	4
Female	0	2	0	2	4	21	38	25	8
Male #1018	5	10	32	34	11	7	0	0	0
Female	6	13	32	22	10	11	5	1	0
Heilbrun Items: Love (4) - Hate (-4) Dimension									
Male #690	0	6	17	19	33	7	6	5	7
Female	8	11	27	11	17	7	7	8	4
Male #694 *	0	0	1	4	11	34	37	6	7
Female	0	0	3	2	9	9	31	22	24
Male #696 *	5	6	35	32	20	5	2	0	0
Female	10	18	29	18	5	5	4	0	1
Male #698 *	0	0	2	18	55	9	10	5	1
Female	0	0	0	5	26	14	30	12	13
Male #701	5	1	28	23	34	6	0	0	0
Female	11	3	15	22	25	10	8	4	2
Male #732 *	2	3	39	32	19	3	1	1	0
Female	18	17	19	20	15	2	6	2	1
Male #733	0	1	0	0	37	31	29	1	1
Female	0	0	1	0	21	15	29	18	16
Male #737 *	0	0	0	0	8	36	38	13	5
Female	0	0	0	1	3	18	33	22	23
Male #739	0	0	0	1	38	25	29	4	3
Female	0	0	2	0	15	26	26	16	15
Male #742 *	1	0	1	3	15	46	32	2	0
Female	2	2	2	3	10	22	33	18	8

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #748	2	7	36	37	18	0	0	0	0
Female	14	18	36	20	9	0	3	0	0
Male #753 *	0	1	5	9	56	16	8	3	2
Female	0	1	5	8	28	14	20	12	12
Male #763	0	1	17	24	30	16	11	1	0
Female	2	1	14	26	19	14	14	6	4
Male #765 *	0	0	3	9	46	30	12	0	0
Female	4	7	10	25	31	9	6	4	4
Male #768	0	0	2	6	43	24	19	5	1
Female	0	1	7	10	24	20	26	7	5
Male #769 *	0	0	0	0	52	29	15	2	1
Female	6	5	0	1	16	24	25	11	12
Male #774	0	0	1	2	60	20	12	3	1
Female	0	2	5	13	28	14	28	10	10
Male #777 *	1	1	24	19	44	9	2	0	0
Female	7	10	19	39	20	4	1	0	0
Male #778	1	1	5	0	39	22	19	4	8
Female	3	1	4	6	24	20	24	6	12
Male #779	1	3	24	29	34	10	7	1	0
Female	4	6	30	28	16	11	4	1	0
Male #786	1	2	24	30	26	8	7	0	2
Female	0	12	13	22	21	15	13	2	1
Male #787	0	2	2	3	44	25	17	3	2
Female	0	0	0	0	28	30	27	11	3
Male #788	1	0	0	0	7	33	35	12	12
Female	3	0	0	4	4	23	30	21	6
Male #779	1	3	24	19	34	10	/	1	0
Female	4	6	30	28	16	11	4	1	0
Male #786	1	2	24	30	26	8	7	0	2
Female	0	12	13	22	21	15	13	2	1

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #787	0	2	2	3	44	25	17	3	2
Female	0	0	0	0	28	30	27	11	3
Male #788	1	0	0	0	7	33	35	12	12
Female	3	0	0	4	4	23	30	21	14
Male #791 *	0	0	4	2	54	16	19	4	1
Female	0	1	0	0	9	31	38	12	6
Male #792	0	1	0	0	9	31	38	12	9
Female	0	1	1	2	10	17	31	22	16
Male #793	1	1	12	21	42	15	6	1	0
Female	3	3	15	19	27	7	15	5	6
Male #803	0	0	3	3	45	19	20	6	4
Female	0	3	1	1	29	15	18	26	7
Male #806 *	4	4	37	25	20	0	0	0	0
Female	12	15	32	21	13	1	4	2	0
Male #814	0	0	1	5	14	26	39	5	10
Female	0	1	4	3	14	12	41	12	13
Male #834 *	0	0	3	2	57	23	10	2	2
Female	1	0	1	4	18	17	27	17	15
Male #839 *	0	0	0	5	44	28	18	4	1
Female	0	0	2	2	10	30	21	18	17
Male #840 *	0	0	2	2	41	30	18	4	1
Female	0	0	2	0	13	23	22	14	21
Male #842	0	0	1	0	22	30	34	6	7
Female	2	1	2	1	0	26	29	20	10
Male #861	0	0	2	5	47	34	12	0	0
Female	0	2	5	8	20	30	23	4	8
Male #864 *	3	2	0	1	64	12	9	6	3
Female	0	5	2	5	33	20	16	8	14
Male #871 *	0	0	12	34	35	15	3	0	0
Female	10	14	13	11	15	15	13	5	4

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #876 *	0	1	10	16	49	15	6	3	0
Female	0	2	7	13	24	13	22	10	9
Male #886	0	0	0	0	26	34	27	7	6
Female	2	0	1	0	13	22	30	16	16
Male #915 *	0	0	0	0	46	33	16	3	2
Female	2	0	1	4	17	17	29	16	13
Male #919 *	0	0	0	0	8	38	39	11	4
Female	0	3	1	0	7	20	23	26	20
Male #920	0	0	0	0	13	35	36	10	6
Female	1	2	0	1	12	22	25	21	16
Male #925 *	0	0	0	7	58	18	15	1	1
Female	0	0	2	9	22	15	23	17	12
Male #928	1	9	20	28	28	11	2	0	0
Female	4	11	26	18	14	14	8	3	2
Male #932 *	0	0	0	0	7	33	42	10	8
Female	1	0	0	1	8	21	24	24	21
Male #949	0	0	4	23	52	16	4	1	0
Female	2	4	11	33	23	11	9	3	4
Male #954	0	0	2	3	46	22	22	4	1
Female	0	0	2	3	25	26	27	7	10
Male #958 *	1	5	8	11	46	15	10	2	1
Female	3	13	24	22	26	9	1	1	1
Male #962 *	0	0	0	5	12	48	26	6	3
Female	0	1	0	3	10	23	34	15	14
Male #969	0	0	1	4	50	26	16	3	0
Female	2	3	3	4	22	29	28	4	5
Male #976	0	1	6	14	54	17	8	0	0
Female	0	4	3	25	34	15	16	3	0
Male #979	1	5	19	35	27	6	8	0	0
Female	3	6	17	27	12	14	17	1	3

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #1003	11	16	27	27	19	0	0	0	0
Female	26	24	20	11	6	6	4	1	2
Male #1006 *	0	0	0	0	13	21	45	7	14
Female	1	1	1	5	7	16	22	24	23
Male #1017	2	1	10	23	57	5	2	0	0
Female	5	3	7	27	43	6	8	0	1
Helibrun Items: Dominance (4) - Submission (-4) Dimension									
Male #690	0	0	1	3	7	20	32	24	13
Female	0	1	0	1	3	17	37	14	27
Male #694	5	0	19	22	22	9	18	3	2
Female	0	1	17	14	33	4	16	10	5
Male #696	0	4	7	9	8	18	21	17	16
Female	3	1	2	2	9	20	18	20	25
Male #698	0	0	0	3	10	21	38	14	14
Female	0	0	0	1	5	26	37	17	14
Male #701	2	1	3	4	24	55	18	1	0
Female	0	1	3	10	35	17	15	20	20
Male #732	2	4	14	3	10	23	26	9	9
Female	2	4	5	5	7	25	23	17	12
Male #733	1	2	4	1	9	30	32	12	9
Female	0	0	0	5	8	23	34	16	14
Male #737 *	4	0	12	34	31	8	10	0	0
Female	1	2	11	15	29	5	21	11	5
Male #739	4	2	12	8	43	13	12	5	1
Female	0	3	8	8	41	9	21	6	4
Male #742	3	4	10	22	22	12	11	5	1
Female	4	1	14	24	24	9	13	7	4
Male #748	0	1	8	7	24	38	17	3	1
Female	0	1	10	5	15	31	19	8	11

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #753	0	1	4	9	18	29	26	9	3
Female	0	0	5	2	12	23	35	18	5
Male #763	2	2	4	3	1	9	32	25	22
Female	0	0	1	2	3	17	23	30	18
Male #765	9	20	28	15	9	11	7	1	0
Female	6	19	22	27	3	4	14	3	2
Male #768	4	10	20	21	24	16	2	2	1
Female	1	8	16	18	26	8	14	7	2
Male #769	0	0	0	0	23	36	25	8	8
Female	0	0	3	1	12	28	38	16	2
Male #774	0	0	7	15	23	27	20	5	3
Female	0	0	10	16	23	7	26	16	2
Male #777	4	13	33	32	13	4	1	0	0
Female	4	7	24	33	11	6	8	1	1
Male #778 *	3	14	28	31	18	2	3	1	0
Female	2	5	8	20	38	8	9	7	3
Male #779	1	12	17	19	31	12	6	1	1
Female	2	6	19	13	34	11	14	1	0
Male #786	1	2	2	0	4	19	42	19	11
Female	0	1	5	0	4	21	36	29	4
Male #787	0	0	3	10	23	30	20	12	2
Female	0	0	1	1	19	23	23	20	3
Male #788	3	5	13	26	23	12	15	3	0
Female	6	8	16	13	16	7	21	11	2
Male #791	0	0	2	4	16	42	30	3	2
Female	0	0	0	5	13	31	31	16	4
Male #792	0	2	6	16	31	16	18	1	0
Female	1	4	5	11	32	11	24	8	4
Male #793	0	1	17	31	23	15	12	0	0
Female	2	3	9	18	36	8	14	8	1

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #803	0	2	6	3	45	32	9	3	0
Female	0	0	1	2	59	16	11	6	5
Male #806	1	3	6	6	15	17	28	19	4
Female	0	6	5	0	7	16	24	35	7
Male #814	0	1	11	24	32	18	13	1	0
Female	0	1	9	12	34	9	19	13	3
Male #834	0	0	6	5	33	28	18	3	4
Female	0	1	3	3	31	24	27	9	2
Male #839 *	0	0	0	3	30	33	23	6	5
Female	0	2	1	0	20	12	44	18	3
Male #840	0	0	0	4	12	21	34	21	8
Female	0	0	0	2	18	17	31	24	8
Male #842	0	2	6	12	49	19	1	11	0
Female	0	2	3	10	40	10	26	9	0
Male #861	0	1	20	33	31	10	5	0	0
Female	2	1	14	27	28	11	10	7	0
Male #864 *	0	0	0	0	14	35	37	10	4
Female	0	1	2	4	31	25	25	10	2
Male #871	0	2	4	0	8	40	37	6	2
Female	0	0	8	4	14	22	32	15	5
Male #876	2	2	4	5	12	20	34	15	5
Female	1	1	4	5	8	22	22	31	6
Male #886 *	0	0	7	24	39	18	11	1	0
Female	2	0	2	9	27	12	27	15	6
Male #915	0	0	1	0	6	22	40	18	13
Female	0	0	0	2	15	15	34	23	11
Male #919 *	2	6	21	34	24	4	6	3	0
Female	4	1	15	25	18	4	22	7	4
Male #920 *	9	11	32	25	15	2	4	2	0
Female	4	4	17	23	26	7	9	8	2

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #925	0	0	0	2	25	29	36	5	3
Female	0	0	1	2	25	23	30	16	3
Male #928	1	5	2	1	15	35	26	11	4
Female	1	4	7	4	6	22	29	18	9
Male #932	5	3	12	22	32	12	4	1	0
Female	2	1	14	9	37	11	12	12	2
Male #949	0	0	0	0	17	35	17	11	0
Female	0	0	2	7	11	32	33	12	3
Male #954	0	0	0	0	7	24	42	19	8
Female	0	0	0	2	9	22	29	31	7
Male #958	34	22	25	11	4	3	0	0	0
Female	12	30	29	15	6	2	6	0	0
Male #962	6	7	20	20	22	17	7	1	0
Female	3	8	9	16	24	10	13	11	6
Male #969	1	0	2	8	23	26	23	14	3
Female	0	0	3	3	26	22	33	10	3
Male #976	12	15	39	21	7	4	1	0	0
Female	6	12	29	29	8	5	7	2	1
Male #979	0	0	2	0	5	35	43	10	5
Female	0	0	1	4	11	26	29	22	6
Male #1003	0	0	3	9	13	23	22	18	11
Female	1	7	9	4	9	16	18	22	13
Male #1006	0	2	15	17	32	14	16	4	0
Female	1	4	8	14	28	11	19	11	3
Male #1017	1	3	26	27	35	3	0	0	0
Female	2	3	14	19	39	8	10	5	0
Parker Items: Love (4) - Hate (-4) Dimension									
Male # 93	4	7	36	25	17	4	5	0	1
Female	8	13	28	22	16	0	9	3	0

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #366	0	0	1	0	18	29	36	13	3
Female	1	1	1	1	31	42	21	1	0
Male #688 *	0	0	0	0	4	20	39	20	17
Female	0	1	5	1	8	4	19	25	37
Male #690	0	6	17	19	33	7	6	5	7
Female	8	11	27	11	17	7	7	8	4
Male #694 *	0	0	1	4	11	34	37	6	7
Female	0	0	3	2	9	9	31	22	24
Male #695	3	3	35	32	20	5	2	0	0
Female	9	16	28	22	9	4	8	0	4
Male #696 *	5	6	35	23	20	9	2	0	0
Female	20	18	29	18	5	5	4	0	1
Male #697 *	0	0	0	0	43	32	18	4	3
Female	0	2	1	1	22	14	22	13	25
Male #700	0	0	1	5	25	18	31	9	10
Female	4	0	0	2	22	12	21	18	20
Male #701	5	1	28	34	6	0	0	0	0
Female	11	3	15	22	25	10	8	4	2
Male #707	8	9	27	20	23	7	6	0	0
Female	9	24	20	19	11	0	4	5	0
Male #715	1	0	6	4	52	22	15	0	0
Female	2	2	8	14	22	23	19	4	5
Male #716	0	0	0	1	14	35	38	6	6
Female	0	1	0	3	9	29	32	13	13
Male #718 *	0	0	3	2	17	40	29	6	3
Female	0	0	1	3	11	24	27	15	19
Male #722 *	0	0	0	0	32	30	23	12	3
Female	0	0	1	3	18	11	29	12	26
Male #723 *	0	0	5	5	37	22	18	9	4
Female	0	0	0	4	24	13	28	13	18

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #725	4	5	34	34	23	0	0	0	0
Female	10	16	36	23	11	1	3	0	0
Male #730 *	0	0	7	9	68	5	8	1	2
Female	0	0	7	13	35	11	23	6	5
Male #733 *	0	1	0	0	37	31	29	1	1
Female	0	0	1	0	21	15	29	18	16
Male #735	1	1	19	21	47	8	2	1	0
Female	6	9	24	19	32	5	2	1	2
Male #736 *	0	0	1	3	21	31	31	7	6
Female	0	0	1	0	14	14	34	19	18
Male #737 *	0	0	0	0	8	36	38	13	5
Female	0	0	0	1	3	18	33	22	23
Male #739 *	0	0	0	1	38	25	29	4	3
Female	0	0	2	0	22	14	33	17	13
Male #740	0	0	9	8	59	13	8	2	0
Female	0	0	6	6	45	19	20	4	0
Male #741	0	0	6	10	50	17	14	2	0
Female	1	6	3	13	28	17	22	3	7
Male #742 *	1	0	1	3	15	46	32	2	0
Female	2	2	2	3	10	22	33	18	8
Male #743 *	1	2	25	38	34	0	0	0	0
Female	7	18	37	18	19	0	1	0	0
Male #753 *	0	1	5	9	56	16	8	3	2
Female	0	1	5	8	28	14	20	12	12
Male #759 *	2	1	21	44	32	0	0	0	0
Female	10	10	37	27	14	1	1	0	0
Male #760	2	3	24	33	27	7	2	0	1
Female	9	12	31	18	25	2	2	0	1
Male #764 *	0	0	5	7	44	30	14	0	0
Female	4	0	2	10	16	23	21	16	8

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #765 *	0	0	3	9	46	30	12	0	0
Female	4	7	10	25	31	9	6	4	4
Male #767 *	0	0	5	7	46	22	13	3	0
Female	3	4	12	17	38	11	6	3	5
Male #768	0	0	2	6	43	24	19	5	1
Female	0	1	7	10	24	20	26	7	5
Male #769 *	0	0	0	0	52	29	15	2	1
Female	6	5	0	1	16	24	25	11	12
Male #770 *	0	0	0	0	40	34	21	3	2
Female	1	0	0	0	14	22	26	18	19
Male #774	0	0	1	2	60	20	12	3	1
Female	0	2	5	13	28	14	18	10	10
Male #777 *	1	1	24	19	44	9	2	0	0
Female	7	10	19	39	20	4	1	0	0
Male #778	1	1	5	0	39	22	19	4	8
Female	3	1	4	6	24	20	24	6	12
Male #779	1	3	24	19	34	10	7	1	0
Female	4	6	30	28	16	11	4	1	0
Male #784	0	3	6	7	36	33	14	0	0
Female	0	4	9	20	18	18	22	7	0
Male #785	1	0	19	36	39	2	3	0	0
Female	7	12	17	29	22	7	2	2	2
Male #786	1	2	24	30	26	8	7	0	2
Female	0	12	13	22	21	15	13	3	1
Male #787	0	2	2	3	45	25	17	3	2
Female	0	0	0	0	28	30	27	11	3
Male #788	1	0	0	0	7	33	35	12	12
Female	3	0	0	4	4	23	30	21	14
Male #792	0	1	0	0	9	31	38	12	9
Female	0	1	1	2	10	17	31	22	16

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #793	1	1	12	21	42	15	6	1	0
Female	3	3	15	19	27	7	15	5	6
Male #796 *	0	0	1	3	7	32	32	16	9
Female	0	0	3	0	4	13	31	27	22
Male #797 *	0	0	0	0	7	27	35	16	15
Female	0	0	3	0	6	16	20	27	28
Male #803	0	0	3	3	45	19	20	6	4
Female	0	3	1	1	29	15	18	26	7
Male #806 *	4	4	37	35	20	0	0	0	0
Female	12	15	32	21	13	1	4	2	0
Male #811	0	3	14	33	34	8	6	1	1
Female	4	7	28	19	22	9	10	1	0
Male #814	0	0	1	5	14	26	39	5	10
Female	0	1	4	3	14	12	41	12	14
Male #815 *	1	1	17	14	49	4	11	1	1
Female	4	9	28	18	20	4	10	5	2
Male #819 *	3	1	9	17	70	0	0	0	0
Female	3	9	20	24	32	5	4	3	0
Male #821 *	0	2	3	2	46	22	20	3	1
Female	0	1	2	8	11	15	27	18	18
Male #823 *	3	1	23	27	43	3	0	0	0
Female	8	19	28	31	14	0	0	0	0
Male #825	3	2	14	31	32	10	8	0	0
Female	6	8	14	14	23	14	12	6	3
Male #827 *	0	1	23	37	34	3	2	0	0
Female	6	18	28	25	11	2	6	3	1
Male #833	0	3	2	4	56	23	7	3	2
Female	3	4	8	6	30	24	16	6	3
Male #834 *	0	0	3	2	57	23	10	2	2
Female	1	0	1	4	18	17	27	17	15

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #835 *	1	5	11	23	53	2	2	1	1
Female	4	5	34	27	20	5	5	1	0
Male #839 *	0	0	0	5	44	28	18	4	1
Female	0	0	2	2	10	30	21	18	17
Male #843 *	0	0	0	0	8	26	48	8	10
Female	0	0	0	1	9	18	28	24	20
Male #850 *	0	0	0	0	9	22	40	10	19
Female	1	1	0	1	4	5	29	29	30
Male #855	0	0	0	0	26	32	33	5	4
Female	0	0	8	3	19	6	37	14	13
Male #857 *	2	4	9	9	40	12	12	9	3
Female	4	10	18	26	19	8	5	4	6
Male #860	0	0	13	31	42	10	4	0	0
Female	3	4	11	23	22	20	16	1	0
Male #861	0	0	2	5	47	34	12	0	0
Female	0	2	5	8	20	30	23	4	8
Male #862 *	1	1	11	27	47	9	4	0	0
Female	0	8	26	40	11	9	5	1	0
Male #864 *	3	2	0	1	64	12	9	6	3
Female	0	5	2	5	33	20	16	6	13
Male #865	8	7	37	32	16	0	0	0	0
Female	10	15	34	26	11	1	1	1	1
Male #866 *	0	0	0	0	59	20	14	5	2
Female	1	0	1	4	30	13	23	9	19
Male #867	1	2	18	21	51	7	0	0	0
Female	8	1	24	28	22	9	6	0	2
Male #868 *	0	0	11	32	54	3	0	0	0
Female	5	11	29	24	22	6	3	0	0
Male #871 *	0	0	12	34	35	15	3	0	0
Female	10	14	13	11	15	15	13	5	4

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #872 *	0	0	0	0	35	41	19	4	1
Female	0	0	0	2	7	21	25	21	24
Male #874 *	0	0	3	2	23	30	27	13	2
Female	0	0	0	3	16	13	36	17	15
Male #878 *	0	0	0	0	27	36	22	7	8
Female	0	0	2	4	10	21	27	12	24
Male #880	0	0	0	0	48	23	21	4	4
Female	1	0	0	0	30	17	27	12	13
Male #881 *	0	0	0	0	14	37	36	10	3
Female	1	0	0	1	10	15	29	26	18
Male #884 *	1	1	2	4	40	28	23	1	0
Female	0	0	3	0	21	27	30	11	8
Male #886	0	0	0	0	26	34	27	7	6
Female	2	0	1	0	13	22	30	16	16
Male #887 *	0	0	0	0	51	25	19	2	3
Female	1	0	0	0	15	19	29	19	17
Male #889	2	1	23	31	35	6	2	0	0
Female	1	8	38	22	17	6	3	2	3
Male #892	0	0	2	14	35	21	15	9	4
Female	1	1	8	10	18	24	14	15	9
Male #896	2	6	31	22	38	0	0	0	0
Female	13	18	28	12	24	2	2	0	1
Male #901 *	0	0	0	0	28	34	22	12	4
Female	1	3	0	0	12	10	24	29	21
Male #902 *	0	0	0	0	16	30	34	11	9
Female	2	2	1	1	11	9	20	34	20
Male #906 *	0	3	15	46	30	4	1	0	0
Female	10	16	28	27	10	1	2	4	2
Male #907 *	0	0	2	12	45	28	10	1	1
Female	2	6	4	4	29	14	26	10	5

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #915 *	0	0	0	0	46	33	16	3	2
Female	0	1	3	4	17	17	29	16	13
Male #916 *	5	4	35	40	16	0	0	0	0
Female	20	19	30	8	6	5	7	4	1
Male #919 *	0	0	0	0	8	38	39	11	4
Female	0	3	1	0	7	20	23	26	20
Male #920	0	0	0	0	13	25	26	10	6
Female	1	2	0	1	12	22	25	21	16
Male #925 *	0	0	0	7	58	18	15	1	1
Female	0	0	2	9	22	15	23	17	12
Male #927 *	4	6	20	29	36	4	1	0	0
Female	8	23	23	25	13	3	4	0	1
Male #928	1	9	20	28	28	11	2	0	0
Female	4	11	26	18	14	14	8	3	2
Male #931	0	0	2	5	58	21	12	1	1
Female	0	1	11	15	34	18	9	9	3
Male #932 *	0	0	0	0	7	33	42	10	8
Female	1	0	0	1	8	21	24	24	21
Male #936 *	2	0	23	31	29	11	4	0	0
Female	8	23	21	30	11	5	2	0	0
Male #939	3	4	33	50	10	0	0	0	0
Female	5	22	28	28	9	4	4	0	0
Male #946 *	0	1	1	4	44	29	10	4	6
Female	0	1	0	1	19	24	25	17	13
Male #947	0	0	0	0	39	35	20	3	3
Female	0	1	4	2	13	21	28	20	11
Male #949	0	0	4	23	52	16	4	1	0
Female	2	4	11	33	23	11	9	3	4
Male #951 *	0	0	3	7	64	9	7	2	0
Female	3	7	12	17	47	8	4	2	0

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #954	0	0	2	3	46	22	22	4	1
Female	0	0	2	3	25	26	27	7	10
Male #955	2	0	20	44	24	5	4	1	0
Female	2	8	33	25	16	7	1	2	6
Male #958 *	1	5	8	11	46	15	10	2	1
Female	3	13	24	22	26	9	1	1	1
Male #959 *	2	5	9	18	53	6	4	1	2
Female	7	11	19	22	33	6	2	0	0
Male #962 *	0	0	0	5	12	48	26	6	3
Female	0	1	0	3	10	23	34	15	14
Male #965 *	0	0	1	3	20	29	30	7	10
Female	1	2	3	1	5	11	32	25	20
Male #969	0	0	1	4	50	26	16	3	0
Female	2	3	4	4	22	29	28	4	5
Male #971	0	2	19	34	37	6	2	0	0
Female	2	8	25	26	24	4	8	2	1
Male #973 *	0	1	15	27	47	6	1	1	2
Female	7	8	33	19	12	5	12	2	2
Male #976	0	1	6	14	54	17	8	0	0
Female	0	4	3	25	34	15	16	3	0
Male #977	0	0	1	4	26	38	22	5	4
Female	0	0	3	9	15	26	24	14	9
Male #978	2	3	19	25	41	7	3	0	0
Female	0	4	24	37	16	9	4	2	4
Male #979	1	5	18	35	27	6	8	0	0
Female	3	6	17	27	12	14	17	1	3
Male #980	0	0	0	0	6	30	45	9	10
Female	0	1	3	6	2	17	31	28	22
Male #984	0	0	8	15	47	19	11	0	0
Female	5	2	15	19	28	11	6	7	7

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #986	0	0	6	8	53	27	6	0	0
Female	0	1	16	12	20	24	9	10	8
Male #989 *	0	0	1	0	8	24	51	8	8
Female	0	1	4	4	10	10	24	21	26
Male #990 *	2	1	17	28	43	9	0	0	0
Female	8	14	25	27	21	1	1	2	1
Male #996	2	7	17	24	49	1	0	0	0
Female	7	19	18	25	26	4	1	0	0
Male #1000	2	9	13	20	46	9	1	0	0
Female	4	14	21	27	30	2	2	0	0
Male #1003	0	0	0	0	13	21	45	7	14
Female	1	1	1	5	7	16	22	24	23
Male #1009 *	0	0	0	0	34	32	32	1	1
Female	3	1	4	4	12	17	27	17	15
Male #1010 *	5	8	19	28	34	6	0	0	0
Female	20	24	30	16	8	0	0	1	1
Male #1014 *	0	0	0	5	33	35	21	5	1
Female	0	0	3	2	15	14	25	25	16
Male #1017	2	1	10	23	57	5	2	0	0
Female	5	3	7	27	43	6	8	0	1
Male #1019	0	1	3	7	59	23	6	1	0
Female	0	5	6	8	33	25	18	5	0
Parker Items: Dominance (4) - Submission (-4) Dimension									
Male #93	2	1	3	1	13	18	22	22	18
Female	2	1	2	4	6	14	21	33	17
Male #366	1	6	23	31	25	9	4	0	0
Female	2	6	22	11	22	11	9	6	1
Male #688	1	5	28	10	29	14	7	2	4
Female	0	3	10	5	40	5	21	9	7
Male #690	0	0	1	3	7	20	32	24	13
Female	0	1	0	1	3	17	37	14	27

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #694	5	0	19	22	22	9	18	3	2
Female	0	1	17	14	33	4	16	10	5
Male #695	0	1	9	8	7	32	22	9	12
Female	2	2	3	5	3	23	25	24	13
Male #696	0	4	7	9	8	18	21	17	16
Female	3	1	2	2	9	20	18	10	25
Male #697	0	2	15	8	45	12	11	3	4
Female	0	5	6	8	41	13	16	8	3
Male #700	0	2	5	4	41	15	21	4	8
Female	0	0	1	2	58	12	11	10	6
Male #701	2	1	3	4	24	15	10	14	16
Female	2	1	4	2	13	17	15	26	20
Male #707	0	1	10	4	5	10	33	15	12
Female	0	0	4	2	7	14	17	34	22
Male #715 *	0	6	24	38	15	12	5	0	0
Female	3	7	12	10	34	10	18	5	1
Male #716	0	2	7	12	54	15	7	3	0
Female	0	1	6	11	34	19	20	8	1
Male #718	0	0	5	6	45	25	18	1	0
Female	0	1	3	10	33	18	27	6	2
Male #722 *	0	0	0	3	31	37	24	5	0
Female	0	0	0	3	22	20	38	11	6
Male #723	0	0	0	4	26	24	29	10	9
Female	0	0	0	1	22	16	39	15	7
Male #725 *	0	0	0	1	26	30	30	7	6
Female	2	7	9	7	11	34	11	10	9
Male #730	0	1	4	4	47	21	17	5	1
Female	0	0	2	4	43	13	23	12	3
Male #733	1	2	4	1	9	30	32	12	9
Female	0	0	0	5	8	23	34	16	14

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #735	3	12	31	31	13	10	0	0	0
Female	2	10	30	22	27	2	6	1	0
Male #736 *	0	3	13	13	31	25	14	0	0
Female	1	0	4	6	38	11	21	14	5
Male #737 *	5	0	12	34	31	8	10	0	0
Female	1	2	11	15	29	5	21	11	5
Male #739	4	2	12	8	43	13	12	5	1
Female	0	3	8	8	41	9	21	6	4
Male #740	0	0	11	10	47	15	10	3	3
Female	0	0	17	15	32	15	15	6	0
Male #741	0	0	4	5	39	33	11	7	1
Female	0	1	5	7	26	26	24	10	1
Male #742	3	4	20	22	22	12	11	5	1
Female	4	1	14	24	24	9	13	7	4
Male #743	4	11	48	22	14	1	0	0	0
Female	14	22	25	20	12	4	3	0	0
Male #753	0	1	4	9	18	29	26	9	3
Female	0	0	5	2	12	23	35	18	5
Male #759	1	6	20	21	34	9	9	0	0
Female	1	9	23	16	21	11	13	5	1
Male #760	3	4	16	24	29	10	13	0	0
Female	3	11	17	13	34	4	15	3	0
Male #764 *	11	13	38	17	13	6	1	0	0
Female	5	11	19	18	28	4	7	7	1
Male #765	9	20	28	15	9	11	7	1	0
Female	5	11	19	18	28	4	7	7	1
Male #767	9	10	21	25	30	1	0	0	0
Female	4	9	22	16	31	7	5	6	0
Male #768	4	10	20	21	24	16	2	2	1
Female	1	8	16	18	26	8	4	7	2

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #769	0	0	0	0	23	36	25	8	8
Female	0	0	3	1	12	28	38	16	2
Male #770	0	2	7	3	20	25	29	10	4
Female	0	0	0	1	25	19	40	14	0
Male #774	0	0	7	15	23	27	20	5	3
Female	0	0	10	16	23	7	26	16	2
Male #777	4	13	33	32	13	4	1	0	0
Female	4	7	29	33	11	6	8	1	1
Male #778 *	3	14	28	31	18	2	3	1	0
Female	2	5	8	20	38	8	9	7	3
Male #779	1	12	17	19	31	12	6	1	1
Female	2	6	19	13	34	11	14	1	0
Male #784	0	2	6	12	39	19	17	2	1
Female	0	3	10	16	29	14	13	2	3
Male #785	3	7	15	21	41	5	6	0	2
Female	5	6	24	17	36	7	4	1	0
Male #786	1	2	2	0	4	19	42	19	11
Female	0	1	5	0	4	21	36	29	4
Male #787	0	0	3	10	23	30	20	12	2
Female	0	0	1	1	19	23	33	10	3
Male #788	3	5	13	26	23	12	15	3	0
Female	6	8	16	13	16	7	21	11	2
Male #792	0	2	6	16	31	26	18	1	0
Female	1	4	5	11	32	11	24	8	4
Male #793	0	1	17	31	23	15	12	0	0
Female	2	3	9	18	36	8	14	8	1
Male #796 *	0	1	11	22	37	12	15	2	0
Female	4	2	8	9	23	15	19	15	5
Male #797	2	6	19	39	22	4	7	1	0
Female	7	4	8	23	22	6	14	9	7

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #803	0	2	6	3	45	32	9	3	0
Female	0	0	1	2	59	16	11	6	5
Male #806	1	3	6	6	15	17	28	19	4
Female	0	6	5	0	7	16	24	35	7
Male #811	0	1	3	2	13	34	28	15	4
Female	0	2	5	5	9	23	23	22	12
Male #814	0	1	11	24	32	18	13	1	0
Female	0	1	9	12	34	9	19	13	3
Male #815	1	4	14	16	24	23	14	0	2
Female	2	4	12	8	24	14	21	13	2
Male #819	1	2	15	18	32	16	15	1	0
Female	0	0	4	12	37	12	22	10	3
Male #821	0	1	6	10	40	25	18	0	0
Female	1	2	11	11	22	17	26	7	3
Male #823	0	15	26	24	24	1	6	3	1
Female	4	16	20	20	24	13	2	1	0
Male #825	0	2	12	5	24	30	21	3	2
Female	0	5	6	9	22	18	25	11	4
Male #827	2	3	18	23	24	17	10	1	1
Female	1	4	19	15	29	7	12	9	4
Male #833	0	5	11	14	39	22	9	0	0
Female	2	1	14	9	46	13	12	3	0
Male #834	0	0	6	5	33	28	18	3	4
Female	0	1	3	3	31	24	27	9	2
Male #835	12	17	26	19	20	3	2	0	0
Female	3	7	29	29	10	6	11	5	0
Male #836	0	0	0	0	57	19	16	5	3
Female	0	0	1	2	23	17	32	10	5
Male #839 *	0	0	0	3	30	33	23	6	5
Female	0	2	1	0	20	12	44	18	3

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #843	4	1	14	32	21	13	13	2	0
Female	2	4	7	18	37	3	12	13	3
Male #850	1	6	15	11	18	15	22	10	2
Female	5	1	11	16	17	12	17	11	10
Male #855	2	2	10	20	31	21	8	5	1
Female	0	1	7	16	22	17	17	12	8
Male #857	17	20	34	14	9	4	1	0	0
Female	9	22	25	20	7	5	10	2	0
Male #860	0	0	5	7	27	31	23	5	2
Female	0	2	3	10	19	41	10	3	2
Male #861	0	1	20	33	31	10	5	0	0
Female	2	1	14	27	28	22	10	7	0
Male #862 *	0	3	27	23	29	10	8	0	0
Female	0	2	9	15	31	10	14	7	2
Male #864 *	0	0	0	0	14	35	17	10	4
Female	0	1	2	4	31	25	25	10	2
Male #865	1	1	9	14	33	10	17	4	1
Female	0	5	9	13	22	30	14	5	2
Male #866	0	0	3	8	66	10	10	2	1
Female	0	0	3	12	53	14	12	5	1
Male #867	2	5	36	28	18	7	4	0	0
Female	2	4	19	25	24	13	10	2	1
Male #868	1	3	8	6	26	22	22	10	2
Female	0	7	4	8	29	18	22	6	6
Male #871	0	2	4	0	8	40	37	6	2
Female	0	0	8	4	14	22	32	15	5
Male #872 *	0	0	2	6	31	33	17	7	4
Female	2	0	0	0	25	18	32	22	1
Male #874 *	0	2	7	3	25	26	10	15	2
Female	0	0	0	0	19	18	36	19	8

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #878	2	10	20	31	21	8	5	3	0
Female	4	13	9	17	21	13	13	6	4
Male #880	0	1	8	2	26	35	20	6	1
Female	0	1	2	4	27	29	27	9	1
Male #881	0	3	15	22	36	11	8	3	2
Female	0	3	2	14	38	15	17	7	4
Male #884	0	0	1	11	41	24	14	2	5
Female	0	0	0	3	34	24	29	7	3
Male #886 *	0	0	7	24	39	18	11	1	0
Female	2	0	2	9	27	12	27	15	6
Male #887 *	0	2	4	0	32	41	17	4	0
Female	0	1	0	0	21	18	32	20	8
Male #889	0	2	17	35	24	17	5	0	0
Female	0	8	25	22	26	7	3	8	1
Male #892 *	0	1	10	15	36	17	17	3	1
Female	0	1	1	7	24	35	24	6	2
Male #896	4	13	21	23	25	3	10	0	0
Female	4	20	25	13	23	8	4	3	0
Male #901 *	0	0	0	6	12	35	41	6	0
Female	0	0	0	0	17	21	32	24	6
Male #902	0	1	6	11	17	26	31	6	2
Female	0	0	0	2	22	16	32	20	8
Male #906 *	0	0	3	6	22	27	26	7	8
Female	1	4	9	8	7	9	22	26	14
Male #907	0	0	0	0	31	31	26	8	3
Female	0	1	4	7	16	16	28	22	6
Male #915	0	0	1	0	6	22	40	18	13
Female	0	0	0	2	15	15	34	23	11
Male #916	2	4	7	7	21	20	18	14	7
Female	1	4	10	5	11	17	18	19	15

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #919 *	2	6	21	34	24	4	6	3	0
Female	4	1	15	25	18	4	22	7	4
Male #920 *	9	11	32	25	15	2	4	2	0
Female	4	4	17	23	26	7	9	8	2
Male #925	0	0	0	2	25	29	36	5	3
Female	0	0	1	2	25	24	30	16	3
Male #927	1	3	10	7	7	20	33	10	9
Female	0	2	7	7	7	19	28	19	11
Male #928	1	5	2	1	15	35	26	11	4
Female	1	4	7	4	6	22	29	18	9
Male #931	0	4	21	37	36	2	0	0	0
Female	2	6	12	19	42	9	5	4	1
Male #932	5	3	12	22	32	21	4	1	0
Female	2	1	14	9	37	11	12	12	2
Male #936	0	7	9	8	21	29	19	6	1
Female	1	9	10	4	18	28	24	6	0
Male #939	4	5	8	6	15	19	29	10	4
Female	0	3	7	11	15	23	24	13	4
Male #946	0	0	0	8	30	39	18	4	1
Female	1	2	0	2	30	25	24	11	5
Male #947	0	0	0	0	22	47	27	4	0
Female	0	0	0	3	16	32	32	12	5
Male #949	0	0	0	0	17	35	37	11	0
Female	0	0	2	7	11	32	33	12	3
Male #951	0	0	0	0	40	34	28	3	1
Female	1	3	5	2	37	18	22	9	3
Male #954	0	0	0	0	7	24	42	19	8
Female	0	0	0	2	9	22	29	31	7
Male #955	1	1	3	6	10	21	37	12	9
Female	0	1	4	8	7	17	34	19	10

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #958	34	22	25	11	4	3	0	0	0
Female	12	30	29	15	6	2	6	0	0
Male #959	4	10	23	27	26	4	4	1	1
Female	1	15	25	19	24	10	3	3	0
Male #962	6	7	20	20	22	17	7	1	0
Female	3	8	9	16	24	10	13	11	6
Male #965 *	6	7	17	30	18	12	8	2	0
Female	9	7	14	20	16	7	12	9	6
Male #969	1	0	2	8	23	26	23	14	3
Female	0	0	3	3	26	22	33	10	3
Male #971 *	0	0	10	31	23	16	8	9	3
Female	0	3	9	10	20	12	23	17	6
Male #973	0	3	19	23	20	22	8	3	2
Female	0	7	8	14	23	21	14	7	5
Male #976	12	15	39	21	7	4	1	0	0
Female	6	12	29	29	8	5	7	2	1
Male #977	3	4	18	23	26	19	7	0	0
Female	3	11	7	13	27	9	21	8	0
Male #978	0	4	22	25	19	17	10	2	1
Female	0	5	13	16	26	13	15	7	4
Male #979	0	0	2	0	5	35	43	10	5
Female	0	0	1	4	11	26	29	22	6
Male #980	3	1	11	22	32	16	13	9	9
Female	5	5	9	11	27	12	13	11	6
Male #984	1	3	11	10	38	20	15	1	1
Female	2	6	4	10	39	17	16	2	3
Male #986	3	5	16	30	33	6	6	0	0
Female	4	10	32	29	10	3	5	3	3
Male #989	0	1	6	25	40	16	11	1	0
Female	3	3	8	17	30	10	13	9	6

Item #	-4	-3	-2	-1	0	1	2	3	4
Male #990	1	5	16	16	17	27	14	4	0
Female	7	6	11	14	19	21	5	7	9
Male #996	1	3	14	31	32	11	4	3	1
Female	2	11	23	24	20	5	5	3	6
Male #1000	0	2	23	27	21	16	11	0	0
Female	7	9	16	14	30	8	8	1	4
Male #1003	0	0	3	9	13	23	22	18	11
Female	1	7	9	4	9	16	18	22	13
Male #1006	0	2	15	17	32	14	16	4	0
Female	1	4	8	14	28	11	19	11	3
Male #1009 *	3	1	4	12	49	19	9	3	0
Female	0	2	5	11	30	11	29	10	1
Male #1010	7	16	34	16	16	6	4	0	0
Female	5	14	31	24	16	6	1	3	0
Male #1014	0	0	0	0	53	32	12	3	0
Female	0	0	1	2	25	12	39	19	2
Male #1017	1	3	26	27	35	3	0	0	0
Female	2	3	14	19	39	8	10	5	0
Male #1019 *	0	1	4	4	59	13	13	3	2
Female	1	6	9	17	36	8	16	5	2

*Significant difference between male and female distributions at the .01 level.

APPENDIX B

Item Means and Standard Deviations
Love-Hate and Dominance-Submission Scaling Dimensions

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Bem Items				
Male #685	2.39	1.09	1.06	1.35
Female	2.56	1.32	1.91	1.25
Male #686	.75	1.42	1.38	1.14
Female	.84	1.89	2.03	1.45
Male #688	- .35 *	1.73	2.26	1.09
Female	.68	1.76	2.51	1.73
Male #690	2.03	1.30	- .09 *	1.82
Female	2.37	1.32	- .69 *	2.18
Male #691	1.64	1.40	.65	1.27
Female	2.44	1.17	.91	1.95
Male #692	1.29	1.15	.23 *	1.14
Female	1.42	1.53	1.03	1.84
Male #698	1.92	1.26	.26 *	1.14
Female	2.06	1.14	1.57	1.45
Male #699	1.38	1.42	.88	1.39
Female	1.08	1.60	1.66	1.65
Male #718	.48	1.05	1.20	1.14
Female	.79	1.35	1.94	1.43
Male #727	- .58	1.43	2.02	1.12
Female	.41 *	1.96	2.61	1.43
Male #729	2.11	1.10	.49	1.11
Female	2,09	1,14	.75	1.76
Male #732	.87	2.02	-1.19	1.11
Female	1.35	1.94	-1.57	1.88

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #736	.05 *	1.33	1.33	1.21
Female	.97	1.57	2.09	1.33
Male #740	.24 *	1.35	.09 *	1.04
Female	.14 *	1.46	.53	1.18
Male #750	-1.23	1.09	- .01 *	1.25
Female	- .85	1.64	.20 *	1.95
Male #752	1.80	1.22	.80	1.06
Female	1.93	.91	1.60	1.67
Male #761	- .85	1.81	.89	.79
Female	- .58	2.09	1.61	1.43
Male #763	2,11	1,85	- .20 *	1.29
Female	2.33	1.25	- .11 *	1.77
Male #766	- .95	1.73	1.51	1.03
Female	- .13	2.04	1.65	1.67
Male #778	-1.30	1.31	.89	1.53
Female	- .13 *	2.04	1.05	1.83
Male #782	-1.16	1.59	.58	1.20
Female	- .14	1.59	.31 *	1.85
Male #786	1.90	1.47	- .58	1.40
Female	1.83	1.36	- .30 *	1.69
Male #792	.31 *	1.25	1.76	1.16
Female	.62	1.70	2.02	1.43
Male #797	- .82	1.33	2.05	1.15
Female	.62	1.70	2.44	1.45
Male #802	-1.55	1.46	- .03 *	1.40
Female	-1.37	1.36	-1.09	1.59
Male #804	.60	1.26	1.44	1.31
Female	1.00	1.43	2.13	1.59
Male #809	1.99	1.07	.80	.89
Female	2.30	1.01	1.60	1.32

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #814	.75	.80	1.52	1,29
Female	.65	1.64	1.68	1.53
Male #826	1.86	1.21	.74	1.38
Female	1.64	1.27	1.71	1.61
Male #828	1.49	1.42	.52	1.26
Female	1.73	1.27	1.49	1.67
Male #830	-1.09	1.34	- .92	.86
Female	-1.15	1.58	-1.88	1.22
Male #841	.16 *	1.71	-1.27	1.49
Female	.85	1.95	-1.70	1.98
Male #848	- .16 *	1.60	1.55	1.08
Female	.85	1.95	2.20	1.14
Male #849	- .24 *	1.74	2.45	1.23
Female	.46 *	2.02	2.50	1.43
Male #850	.34 *	1.89	2.08	1.20
Female	.58	2.14	2.62	1.93
Male #853	1.27	1.03	.91	1.08
Female	1.93	1.19	1.94	1.50
Male #862	- .60	1.29	- .39	1.03
Female	.38 *	1.51	- .94	1.29
Male #864	1.55	.99	.41	1.42
Female	1.02	1.29	.98	1.76
Male #900	.60	1.35	1.63	1.18
Female	1.26	1.57	2.43	1.16
Male #914	- .35	1.33	.36	.81
Female	.30 *	1.71	- .60	1.51
Male #917	1.60	1.21	.60	.70
Female	1.86	1.44	1.69	1.50
Male #929	-1.83	1.26	.20 *	1.27
Female	- .86	1.71	- .08 *	1.46

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #932	- .43	1.44	1.79	1.00
Female	.31 *	1.73	2.20	1.43
Male #942	- .93	1.11	1.06	.95
Female	- .48 *	1.86	1.38	1.50
Male #943	- .56	1.33	.27	1.01
Female	- .07 *	1.61	.76	1.73
Male #962	- .71	1.63	1.25	1.01
Female	.23 *	2.07	1.86	1.36
Male #963	1.49	1.32	.99	1.02
Female	.23 *	2.07	1.97	1.39
Male #964	- .75	1.63	2.26	1.15
Female	.18 *	2.36	2.56	1.39
Male #967	1.57	1.10	1.01	1.11
Female	2.08	1.24	1.70	1.37
Male #968	.22 *	1.29	.88	1.17
Female	1.08	1.24	1.91	1.45
Male #972	- .99	1.38	1.78	1.12
Female	- .03 *	1.99	2.19	1.56
Male #975	.07 *	1.68	- .05 *	.83
Female	.89	1.44	1.01	1.37
Male #983	.31	1.10	1.80	1.06
Female	.76	1.82	2.06	1.81
Male #989	.01 *	1.13	1.80	1.04
Female	.76	1.82	2.06	1.81
Male #995	- .21 *	1.35	- .51	1.28
Female	- .27 *	1.95	-1.32	1.66
Male #999	- .97	.91	- .85	1.05
Female	-1.10	1.54	-1.49	1.31
Male #1006	.05 *	1.45	1.88	1.17
Female	-1.10	1.54	2.10	1.68

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #1013	.31	1.10	1.80	1.06
Female	.76	1.82	2.06	1.81
Male #1016	1.72	.94	.94	1.02
Female	1.96	1.28	1.61	1.51
Male #1018	-1.42	1.19	.42	1.22
Female	-1.25	1.58	.32 *	1.82
Heilbrun Items				
Male #690	2.30	1.30	.09 *	1.82
Female	2.37	1.32	.69	2.18
Male #694	- .18 *	1.78	1.48	1.18
Female	.32 *	1.79	2.25	1.50
Male #696	1.40	1.98	-1.18	1.33
Female	1.95	1.90	-1.93	1.68
Male #698	1.92	1.26	.26 *	1.14
Female	2.06	1.35	.57	1.45
Male #701	1.40	1.87	- .99	1.18
Female	1.84	1.88	- .59	1.91
Male #732	.87	2.02	-1.19	1.11
Female	1.35	1.94	-1.57	1.88
Male #733	1.47	1,57	.93	.98
Female	1.90	1.31	1.89	1.41
Male #737	- .50	1.37	1.71	.97
Female	.53	1.83	2.41	1.17
Male #739	.02 *	1.62	1.06	1.07
Female	.52	1.59	1,82	1.39
Male #742	.33 *	1.72	1.07	1.01
Female	.01 *	1.86	1.53	1.65
Male #748	.60	1.28	-1.38	.93
Female	1.09	1.71	-1.96	1.34

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #753	1.01	1.41	.27 *	1.18
Female	1.55	1.37	1.17	1.72
Male #763	2.11	1.85	- .20 *	1.29
Female	2.33	1.25	.11 *	1.77
Male #765	-1.39	1.76	.39	.92
Female	-1.03	2.00	- .33 *	1.78
Male #768	- .77	1.60	.71	1.12
Female	- .13 *	1.82	.86	1.56
Male #769	1.42	1.16	.70	.87
Female	1.53	1.17	1.15	2.07
Male #774	.65	1.42	.54	.95
Female	.79	1.68	.91	1.75
Male #777	-1.47	1.18	- .61	1.10
Female	- .99	1.56	-1.29	1.27
Male #778	-1.30	1.31	.89	1.53
Female	.00 *	1.69	1.05	1.83
Male #779	- .62	1.54	- .54	1.34
Female	- .35	1.55	-1.00	1.43
Male #786	1.90	1.47	- .58	1.40
Female	1.83	1.36	- .30	1.69
Male #787	.98	1.33	.68	1.19
Female	1.58	1.18	1.30	1.09
Male #788	- .28 *	1.63	1.83	1.25
Female	- .03 *	2.17	1.88	1.62
Male #791	1.12	1.05	.60	1.13
Female	1.52	1.18	1.35	1.37
Male #792	.31 *	1.25	1.76	1.16
Female	.62	1.70	2.02	1.43
Male #793	- .29 *	1.29	- .22 *	1.18
Female	.11 *	1.64	.06 *	1.91

Item #	Domincne-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #803	-1.54	1.96	.84	1.28
Female	1.22	1.23	1.45	1.60
Male #806	1.16	1.16	-1.37	.98
Female	1.69	1.82	-1.63	1.57
Male #814	- .02 *	1.26	1.52	1.29
Female	.65	1.64	1.68	1.55
Male #834	.74	1.32	.49	1.02
Female	1.01	1.30	1.72	1.58
Male #839	1.14	1.15	.75	1.01
Female	1.58	1.33	1.88	1.44
Male #840	1.80	1.25	.81	1.08
Female	1.81	1.27	1.79	1.68
Male #842	.14 *	1.12	1.42	1.16
Female	.67	1.38	1.68	1.59
Male #861	- .56	1.10	.49	.85
Female	- .14 *	1.10	- .14 *	1.56
Male #864	1.55	.99	.41	1.42
Female	1.02	1.29	.98	1.76
Male #871	1.27	1.22	- .37	.99
Female	1.31	1.52	- .47	2.25
Male #876	1.27	1.69	- .03 *	1.15
Female	1.63	1.64	.90	1.78
Male #886	.05 *	1.11	1.33	1.12
Female	1.14	1.65	1.84	1.56
Male #915	2.06	1.15	.82	.95
Female	1.94	1.27	1.62	1.58
Male #919	- .77	1.42	1.65	.93
Female	.11 *	1.94	2.13	1.57
Male #920	-1.42	1.52	1.61	1.03
Female	- .28 *	1.83	1.88	1.58

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #925	1.26	1.05	.48	.94
Female	1.22	- .04	1.47	1.60
Male #928	1.12	1.57	- .85	1.25
Female	1.36	1.60	- .72	1.85
Male #932	- .43	1.43	1.29	1.00
Female	.31 *	1.73	2.20	1.43
Male #949	1.42	.90	- .04 *	.90
Female	1.35	1.24	- .21 *	1.68
Male #954	1.97	1.02	.75	1.08
Female	1.99	1.17	1.34	1.38
Male #958	-2.63	1.33	- .01 *	1.40
Female	-1.97	1.53	-1.03	1.47
Male #962	- .71	1.63	1.25	1.02
Female	.23 *	2.07	1.86	1.36
Male #969	1.10	1.43	.61	.94
Female	1.21	1.27	.90	1.59
Male #976	-1.87	1.29	.04 *	.98
Female	-1.19	1.67	.13 *	1.34
Male #979	1.67	1.04	- .68	1.27
Female	1.70	1.27	- .28 *	1.82
Male #1003	1.52	1.57	-1.75	1.25
Female	1.24	2.17	-2.02	1.95
Male #1006	.05 *	1.45	1.88	1.16
Female	.48	1.77	2.10	1.68
Male #1017	- .94	.99	- .46	1.00
Female	- .21 *	1.50	- .44	1.41
Parker Items				
Male #93	1.82	1.78	-1.17	1.43
Female	2.04	1.75	-1.23	1.72

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #366	- .83	1.24	.78	1.04
Female	- .30 *	1.72	1.50	1.09
Male #688	- .35 *	1.72	2.26	1.09
Female	.68	1.76	2.51	1.73
Male #690	2.03	1.30	- .09 *	1.82
Female	2.37	1.32	- .69	2.18
Male #694	- .18 *	1.78	1.48	1.18
Female	.35	1.79	2.25	1.50
Male #695	1.22	1.73	-1.14	1.15
Female	1.72	1.79	-1.26	1.92
Male #696	1.40	1.98	-1.18	1.33
Female	1.95	1.90	-1.93	1.68
Male #697	,15 *	1.53	.92	1.02
Female	.46	1.60	1.88	1.71
Male #700	.81	1.56	1.41	1.41
Female	.84	1.34	1.72	1.90
Male #701	1.40	1.87	- .99	1.18
Female	1.84	1.88	- .59	1.91
Male #707	1.72	1.79	-1.14	1.55
Female	2.28	1.55	-1.60	1.73
Male #715	- .82	1.24	.32	1.08
Female	- .02 *	1.78	.49	1.71
Male #716	.06 *	1.13	1.52	1.04
Female	.61	1.40	1.78	1.34
Male #718	.48	1.03	1.20	1.14
Female	.79	1.33	1.94	1.43
Male #722	.97	.94	1.24	1.12
Female	1.50	1.21	2.04	1.56
Male #723	1.36	1.28	.86	1.38
Female	1.66	1.21	1.76	1.50

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #725	1.34	1.15	-1.33	1.02
Female	.68	2.02	-1.76	1.33
Male #730	.59	1.21	.09 *	1.07
Female	.99	1.35	.68	1.53
Male #733	1.47	1.57	.93	.98
Female	1.90	1.31	1.89	1.41
Male #735	-1.31	1.23	- .51	1.11
Female	-1.03	1.40	- .98	1.59
Male #736	.05 *	1.33	1.33	.121
Female	.97	1.57	2.09	1.33
Male #737	- .50	1.37	1.71	.97
Female	.53	1.83	2.41	1.17
Male #739	.02 *	1.62	1.06	1.07
Female	.52	1.59	1.82	1.39
Male #740	.24 *	1.35	.09 *	1.04
Female	.14 *	1.46	.53	1.15
Male #741	.67	1.16	.29	1.09
Female	.88	1.37	.57	1.65
Male #742	- .33 *	1.72	1.07	1.01
Female	.01 *	1.86	1.53	1.65
Male #743	-1.66	1.02	- .98	.88
Female	-1.82	1.51	-1.72	1.22
Male #753	1.01	1.41	.27 *	1.18
Female	1.55	1.37	1.17	1.72
Male #759	- .59	1.37	- .97	.87
Female	- .37 *	1.78	-1.68	1.22
Male #760	- .44	1.48	- .84	1.23
Female	- .49	1.72	-1.42	1.48
Male #764	-1.70	1.38	.41	.98
Female	- .66	1.85	1.15	1.82

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #765	-1.39	1.38	.39	.92
Female	-1.03	2.00	- .33 *	1.78
Male #767	-1.38	1.31	.42	1.08
Female	- .68	1.69	- .13	1.72
Male #768	- .77	1.60	.71	1.12
Female	- .13 *	1.82	.86	1.56
Male #769	1.42	1.16	.70	.87
Female	1,53	1,17	1.15	2.07
Male #770	1.06	1.53	.93	.96
Female	1.41	1.05	2.00	1.45
Male #774	.65	1.42	.54	.95
Female	.79	1.68	.91	1.75
Male #777	-1.47	1.18	- .61	1.10
Female	- .99	1.56	-1.29	1.26
Male #778	-1.30	1.31	.89	1.53
Female	.00 *	1.69	1.05	1.83
Male #779	- .62	1.54	- .53	1.39
Female	- .35 *	1.55	-1.00	1.43
Male #784	.34 *	1.30	.33	1.18
Female	.13 *	1.47	.41	1.67
Male #785	- .59	1.48	- .70	.97
Female	- .85	1.44	-1.02	1.68
Male #786	1.90	1.47	- .58	1.40
Female	1.83	1.36	- .30 *	1.69
Male #787	.98	1.33	.64	1.20
Female	1.58	1.18	1.30	1.09
Male #788	- .28 *	1.63	1.83	1.25
Female	- .03 *	2.17	1.87	1.62
Male #792	.31 *	1.25	1.76	1.16
Female	.62	1.70	2.02	1.43

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #792	- .29 *	1.29	- .22 *	1.18
Female	.11 *	1.64	.06 *	1.91
Male #796	.01 *	1.29	1.75	1.23
Female	.71	1.96	2.38	1.34
Male #797	- .82	1.33	2.05	1.15
Female	.10 *	2.15	2.43	1.45
Male #803	.38	1.25	.84	1.28
Female	.72	1.22	1.45	1.60
Male #806	1.16	1.76	-1.37	.98
Female	1.69	1.80	-1.63	1.57
Male #811	1.40	1.32	- .43	1.25
Female	1.63	1.69	- .80	1.60
Male #814	- .02 *	1.26	1.52	1.29
Female	.65	1.64	1.68	1.55
Male #815	- .01 *	1.56	- .22 *	1.34
Female	.51	1.87	- .70	1.87
Male #819	- .09 *	1.41	- .50	.93
Female	.78	1.44	- .81	1.48
Male #821	.36	1.13	.62	1.19
Female	.59	1.70	1.80	1.66
Male #823	- .95	1.56	- .85	1.04
Female	-1.04	1.52	-1.76	1.16
Male #825	.54	1.48	- .51	1.31
Female	.81	1.72	.22 *	2.00
Male #827	- .32 *	1.52	- .79	.94
Female	.05 *	1.86	-1.32	1.71
Male #833	- .11 *	1.27	.37	1.17
Female	1 .02 *	1.40	.40 *	1.73
Male #834	.74	1.32	.49	1.02
Female	1,01	1.30	1.72	1.58

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #835	-1.65	1.47	- .52	1.18
Female	- .77	1.72	-1.10	1.58
Male #839	1.14	1.15	.75	1.26
Female	1.58	1.31	1.88	1.44
Male #843	- .34 *	1.53	1.86	1.03
Female	.28 *	1.82	2.23	1.27
Male #850	.34 *	1.89	2.08	1.20
Female	.58	2.14	2.62	1.43
Male #855	.02 *	1.50	1.29	1.04
Female	.86	1.74	1.53	1.69
Male #857	-2.06	1.39	.28 *	1.72
Female	-1.41	1.81	- .54	1.97
Male #860	.83	1.26	- .39	.97
Female	.76	1.28	- .14 *	1.56
Male #861	- .56	1.10	.49	.85
Female	- .14 *	1.54	.96	1.56
Male #862	- .60	1.29	- .39	1.03
Female	.38 *	1.51	- .94	1.29
Male #864	1.55	.99	.41	1.42
Female	1.02	1.29	.98	1.76
Male #865	.31 *	1.44	-1.59	1.09
Female	.35 *	1.57	-1.69	1.43
Male #866	.26 *	.99	.71	1.02
Female	.39	1.15	1.52	1.69
Male #867	-1.08	1.25	- .60	.99
Female	- .40 *	1.56	- .82	1.62
Male #868	.69	1.64	- .51	.73
Female	.67	1.74	-1.23	1.37
Male #871	1.27	1.23	- .37 *	.98
Female	1.31	1.52	- .47	2.25

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #872	.94	1.25	.95	.89
Female	1,44	1.37	2.28	1.33
Male #874	.96	1.52	1.23	1.23
Female	1.79	1.19	1.93	1.35
Male #878	- .82	1.49	1.33	1.18
Female	- .17 *	2.04	1.99	1.55
Male #880	.77	1.32	.93	1.10
Female	1.03	1.23	1.53	1.48
Male #881	- .17 *	1.45	1.51	.95
Female	.59	1.50	2.18	1.40
Male #884	.66	1.24	.62	1.14
Female	1.12	1.14	1.46	1.32
Male #886	.05 *	1.11	1.33	1.12
Female	1.14	1.65	1.84	1.56
Male #887	.73	1.12	.81	1.01
Female	1,71	1.31	1.98	1.43
Male #889	- .48	1.17	- .78	1.09
Female	- .55	1.65	- .96	1.60
Male #892	.26 *	1.37	.76	1.39
Female	.97	1.20	1.00	1.81
Male #896	- .98	1.53	- .72	1.18
Female	-1.14	1.68	-1.64	1.59
Male #901	1.29	.97	1.30	1.12
Female	1.81	.116	2.16	1.68
Male #902	.88	1.43	1.67	1.15
Female	1.70	1.29	2.14	1.77
Male #906	1.21	1.41	- .79	.89
Female	1,45	2.11	-1.46	1.76
Male #907	1.20	1.07	.39	1.00
Female	1.44	1.58	.78	1.83

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #915	2.06	1.15	.82	.95
Female	1.94	1.27	1.62	1.58
Male #916	.85	1.91	-1.42	.98
Female	1,29	2.09	-1.70	2.04
Male #919	- .77	1.42	1.65	.92
Female	.11 *	1.95	2.13	1.57
Male #920	-1.42	1.53	1.61	1.03
Female	- .28	1.83	1.88	1.58
Male #925	1.26	1.05	.48	.94
Female	1.39	1.22	1.47	1.60
Male #927	1.12	1.88	- .97	1.19
Female	1,49	1.77	-1.57	1.56
Male #928	1.12	1.58	- .85	1.25
Female	1.36	1.86	- .72	1.85
Male #931	- .89	.90	.43	.95
Female	- .34 *	1.50	.33 *	1.55
Male #932	- .43	1.43	1.79	1.00
Female	.31 *	1.73	2.20	1.43
Male #936	.42 *	1.63	- .66	1.18
Female	.39 *	1.75	-1.64	1.40
Male #939	.70	1.98	-1.40	.84
Female	.92	1.69	-1.58	1.40
Male #946	.83	1.02	.76	1.28
Female	1.14	1.44	1.73	1.41
Male #947	1.13	.80	.96	.99
Female	1,49	1.14	1.68	1.53
Male #949	1.42	.90	- .04 *	.90
Female	1.35	1.24	- .21	1.68
Male #951	.86	.90	.17 *	.88
Female	.76	1.56	- .52	1.39

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #954	1.97	1.02	.75	1.09
Female	1.99	1.16	1.34	1.40
Male #955	1.48	1.57	- .76	1.14
Female	1.63	1.59	- .84	1.79
Male #958	-2.63	1.33	- .01 *	1.40
Female	-1.97	1.53	-1.03	1.47
Male #959	-1.00	1.48	- .34	1.36
Female	- .93	1.53	-1.11	1.42
Male #962	- .72	1.63	1.25	1.02
Female	.23 *	2.07	1.86	1.36
Male #965	-1.28	1.26	1.45	1.30
Female	- .23 *	2.27	2.13	1.67
Male #969	1.10	1.43	.61	.94
Female	1.21	1.27	.90	1.59
Male #971	.20 *	1.57	- .68	.98
Female	.96	1.84	- .78	1.55
Male #973	- .15 *	1.55	- .41	1.15
Female	.39 *	1.79	- .94	1.87
Male #976	-1.88	1.29	.04 *	.98
Female	-1.19	1.68	.13 *	1.34
Male #977	- .50	1.42	1.07	1.14
Female	.03 *	1.90	1.37	1.51
Male #978	- .34 *	1.52	- .67	1.16
Female	.23 *	1.77	- .58	1.56
Male #979	1.67	1.04	- .68	1.27
Female	1,70	1.27	- .28 *	1.82
Male #980	- .10 *	1.47	1.89	1.00
Female	.31 *	2.07	2.06	1.61
Male #984	.12 *	1.42	.10 *	1.05
Female	.23 *	1.61	- .03 *	1.98

Item #	Dominance-Submission		Love-Hate	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Male #986	- .72	1.30	.19 *	.90
Female	-1.06	1.74	.57	1.83
Male #989	.01 *	1.13	1.80	1.04
Female	.33 *	1.89	2.12	1.73
Male #990	.00 *	1.62	- .64	1.03
Female	.06 *	2.19	-1.38	1.52
Male #996	- .40	1.36	- .86	1.07
Female	- .63	1.90	-1.41	1.39
Male #1000	- .41	1.35	- .70	1.23
Female	- .60	1.91	-1.21	1.29
Male #1003	1.52	1.57	-1.75	1.25
Female	1.24	2.17	-2.02	1.95
Male #1006	.05 *	1.45	1.88	1.16
Female	.48	1.77	2.10	1.68
Male #1009	.11 *	1.29	1.03	.89
Female	.77	1.51	1.53	1.89
Male #1010	-1.47	1.48	-1.04	1.25
Female	-1.31	1.49	-2.21	1.45
Male #1014	.65	.81	.91	1.01
Female	1.51	1.23	1.95	1.52
Male #1017	- .94	1.00	- .46	1.00
Female	- .21 *	1.49	- .44	1.41
Male #1019	.41	1.18	.23 *	.93
Female	.06 *	1.66	.41	1.43

*Mean not significantly different from zero at the .01 level.

APPENDIX C

Item Angles, Vector Lengths, Sines, and Cosines

Item #	Angle	Vector Length	Sine	Cosine
Male #685	66	2.615	.9141	.4054
Female	53	2.194	.8015	.5980
Male #686	28	1.571	.4775	.8786
Female	22	2.197	.3824	.9240
Male #688	351	2.287	-.1530	.9882
Female	15	2.600	.2514	.9652
Male #690	92	2.032	.9990	-.0443
Female	106	2.468	.9601	-.2795
Male #691	68	1.780	.9296	.3685
Female	70	2.604	.9370	.3494
Male #692	80	1.313	.9845	.1751
Female	54	1.754	.8095	.5872
Male #698	82	1.938	.9910	.1342
Female	53	2.590	.7953	.6062
Male #699	57	1.637	.8432	.5377
Female	33	1.980	.5453	.8382
Male #718	22	1.292	.3714	.9285
Female	22	2.095	.3772	.9262
Male #727	344	2.102	-.2760	.9612
Female	9	2.642	.1552	.9879
Male #729	77	2.166	.9741	.2262
Female	70	2.220	.9412	.3378
Male #732	144	1.474	.5902	-.8073
Female	139	2.071	.6520	-.7582
Male #736	2	1.331	.0380	.9993
Female	25	2.304	.4310	.9071
Male #740	69	.259	.9363	.3511
Female	15	.548	.2554	.9668

Item #	Angle	Vector Length	Sine	Cosine
Male #750	270	1.230	-.9999	-.0081
Female	283	.873	-.9734	.2290
Male #752	316	1.231	-.6907	.7232
Female	340	1.711	-.3389	.9408
Male #763	95	2.119	.9953	-.0944
Female	87	2.333	.9989	.0471
Male #766	328	1.784	-.5325	.8464
Female	355	1.655	-.0786	.9961
Male #778	304	1.569	-.8285	.5600
Female	0	1.050	.0000	1.0000
Male #782	296	1.297	-.8944	.4472
Female	335	.341	-.4150	.9098
Male #786	107	1.987	.9564	-.2920
Female	99	1.854	.9868	-.1618
Male #792	10	1.787	.1735	.9848
Female	17	2.113	.2934	.9560
Male #797	338	2.208	-.3714	.9285
Female	2	2.432	.0411	.9992
Male #802	259	1.574	-.9817	-.1906
Female	231	1.751	-.7825	-.6226
Male #804	23	1.560	.3846	.9231
Female	25	2.353	.4250	.9052
Male #809	68	2.145	.9278	.3730
Female	55	2.802	.8208	.5711
Male #814	359	1.520	-.1032	.9999
Female	21	1.801	.3608	.9326
Male #826	68	2.002	.9292	.3697
Female	44	2.369	.6922	.7217
Male #828	71	1.577	.9451	.3268
Female	49	2.283	.7577	.6426

Item #	Angle	Vector Length	Sine	Cosine
Male #830	230	1.426	-.7642	-.6450
Female	211	2.204	-.5218	-.8531
Male #841	173	1.280	.1250	-.9922
Female	152	1.901	.4472	-.8944
Male #848	354	1.558	-.1027	.9947
Female	21	2.351	.3530	.9356
Male #849	354	2.462	-.9075	.9952
Female	10	2.542	.1810	.9835
Male #850	9	2.108	.1613	.9869
Female	12	2.683	.2161	.9764
Male #853	54	1.562	.8129	.5825
Female	45	2.736	.7053	.7089
Male #862	237	.716	-.8384	-.5450
Female	158	1.014	.3748	-.9271
Male #864	75	1.603	.9668	.2557
Female	46	1.415	.7211	.6928
Male #900	20	1.737	.3454	.9384
Female	27	2.737	.4603	.8878
Male #914	225	.495	-.7071	-.7071
Female	153	.671	.4472	-.8944
Male #917	70	1.704	.9368	.3498
Female	48	2.513	.7401	.6725
Male #929	276	1.841	-.9941	.1086
Female	265	.864	-.9957	-.0926
Male #932	346	1.841	-.2336	.9723
Female	8	.979	.1395	.9902
Male #942	319	1.410	-.6595	.7517
Female	353	.763	-.3285	.9445
Male #943	296	.618	-.8994	.3471
Female	283	.779	-.9017	.9958

Item #	Angle	Vector Length	Sine	Cosine
Male #962	330	1.438	-.4939	.8695
Female	7	1.874	.1227	.9924
Male #963	56	1.789	.8329	.5534
Female	39	2.544	.6328	.7743
Male #964	342	2.381	-.3150	.9491
Female	4	2.566	.0701	.9975
Male #967	57	1.867	.8410	.5410
Female	51	2.686	.7743	.6328
Male #968	14	.907	.2425	.9701
Female	26	1.124	.4378	.8990
Male #972	331	1.035	-.4865	.8737
Female	359	2.190	-.1038	.9999
Male #975	125	.087	.8192	-.5735
Female	42	1.352	.6649	.7470
Male #983	10	1.827	.1697	.9855
Female	20	1.295	.3452	.9386
Male #989	0	1.800	.0056	1.0000
Female	9	2.147	.1552	.9879
Male #995	202	.552	-.3808	-.9247
Female	192	1.349	-.2023	-.9793
Male #999	229	1.289	-.7526	-.6585
Female	216	1.853	-.5943	-.8043
Male #1006	2	1.881	.0266	.9996
Female	13	2.155	.2250	.9744
Male #1013	74	1.652	.9622	.2723
Female	64	2.348	.8987	.4387
Male #1016	61	1.960	.8775	.4796
Female	50	2.536	.7727	.6347
Male #1018	286	1.486	-.9584	.2855
Female	284	1.290	-.9688	.2480

Item #	Angle	Vector Length	Sine	Cosine
Male #761	316	1.231	-.6907	.7232
Female	340	1.711	-.3389	.9408
Heilbrun Items				
Male #690	92	2.032	.9990	-.4429
Female	106	2.468	.9601	-.2793
Male #694	353	1.491	-.1207	.9927
Female	9	2.277	.1537	.9881
Male #696	130	1.831	.7646	-.6445
Female	135	2.744	.7107	-.7034
Male #698	82	1.938	.7646	-.6445
Female	135	2.744	.7107	-.7034
Male #701	125	1.630	.8170	-.5767
Female	108	1.932	.9522	-.3053
Male #732	144	1.474	.5902	-.8073
Female	139	2.071	.6520	-.7582
Male #733	58	1.739	.8451	.5346
Female	45	2.680	.7090	.7052
Male #737	344	1.782	-.2807	.9598
Female	12	2.468	.2148	.9767
Male #739	1	1.060	.0189	.9998
Female	16	1.893	.2747	.9615
Male #792	343	1.120	-.2947	.9556
Female	0	1.530	.0065	1.0000
Male #748	157	1.503	.3965	-.9181
Female	151	2.243	.4860	-.8739
Male #753	75	1.046	.9661	.2582
Female	53	1.942	.7881	.6025
Male #763	95	2.119	.9955	-.0944
Female	87	2.333	.9989	.0472

Item #	Angle	Vector Length	Sine	Cosine
Male #765	286	1.444	-.9628	.2701
Female	252	1.082	-.9523	.3051
Male #768	313	1.047	-.7352	.6779
Female	351	.870	-.1495	.9888
Male #769	64	1.582	.8977	.4406
Female	53	1.914	.7994	.6008
Male #774	50	.842	.7719	.6358
Female	41	1.205	.6556	.7551
Male #777	247	1.592	-.9236	-.3833
Female	218	1.626	-.6088	-.7933
Male #778	304	1.569	-.8285	.5600
Female	0	1.050	.0000	1.0000
Male #779	229	.819	-.7569	-.6536
Female	199	1.059	-.3304	-.9439
Male #786	107	1.987	.9564	-.2920
Female	99	1.854	.9868	-.1618
Male #787	57	1.168	.8387	.5446
Female	50	2.048	.7715	.6363
Male #788	351	1.851	-.1513	.9885
Female	359	1.879	-.0160	.9999
Male #791	62	1.271	.8817	.4718
Female	48	2.033	.7477	.6641
Male #792	10	1.787	.1735	.9848
Female	17	2.113	.2934	.9560
Male #793	233	.368	-.7967	-.6044
Female	62	.126	.8799	.4752
Male #803	24	.922	.4122	.9111
Female	26	1.619	.4947	.8437
Male #806	140	1.796	.6467	-.7627
Female	134	2.348	.7198	-.6942

Item #	Angle	Vector Length	Sine	Cosine
Male #814	359	1.520	-.0131	.9999
Female	21	1.801	.3608	.9326
Male #834	56	.892	.8320	.5548
Female	30	1.995	.0564	.8623
Male #839	57	1.364	.8354	.5496
Female	40	2.456	.6434	.7655
Male #840	66	1.973	.9123	.4096
Female	45	2.546	.7110	.7032
Male #842	6	1.427	.0981	.9952
Female	22	1.809	.3704	.9289
Male #861	311	.744	-.7526	.6585
Female	352	.970	-.1442	.9895
Male #864	75	1.603	.9668	.2557
Female	46	1.414	.7211	.6928
Male #871	106	1.326	.9595	-.2818
Female	110	1.392	.9412	-.3377
Male #876	91	1.273	.9997	-.0236
Female	61	1.862	.8754	.4834
Male #886	2	1.331	.0376	.9993
Female	32	2.164	.5267	.8501
Male #915	68	2.217	.9291	.3698
Female	50	2.527	.7676	.6410
Male #919	335	1.821	-.4229	.9062
Female	3	2.133	.0516	.9891
Male #920	319	2.147	-.6615	.7499
Female	352	1.901	-.1473	.9891
Male #925	69	1.348	.9345	.3560
Female	43	2.023	.6871	.7266
Male #928	127	1.405	.7971	-.6039
Female	118	1.539	.8838	-.4679

Item #	Angle	Vector Length	Sine	Cosine
Male #932	346	1.841	-.2336	.9723
Female	8	2.222	.1395	.9902
Male #949	91	1.420	.996	-.0282
Female	99	1.366	.9881	-.1537
Male #954	69	2.108	.9346	.3558
Female	57	2.399	.8295	.5585
Male #958	270	2.626	-1.000	-.0038
Female	242	2.223	-.8862	-.4633
Male #962	330	1.438	-.4939	.8692
Female	7	1.874	.1227	.9924
Male #969	61	1.258	.8745	.4850
Female	53	1.508	.8024	.5968
Male #976	271	1.879	-.9998	.0213
Female	276	1.199	-.9941	.1084
Male #979	112	1.803	.9262	-.3771
Female	99	1.720	.9867	-.1628
Male #1003	139	2.313	.6551	-.7555
Female	148	2.372	.5239	-.8518
Male #1006	2	1.881	.0266	.9996
Female	13	2.155	.2250	.9744
Male #1017	244	1.045	-.8961	-.4438
Female	206	.488	-.4307	-.9025
Parker Items				
Male #93	123	2.166	.8408	-.5413
Female	121	2.384	.8560	-.1571
Male #366	313	1.737	-.7298	.6845
Female	349	1.531	.8560	-.5171
Male #688	352	2.298	-.1530	.9882
Female	15	2.603	.2615	.9651

Item #	Angle	Vector Length	Sine	Cosine
Male #690	92	2.038	.9990	-.0443
Female	106	2.479	.9601	-.2795
Male #694	353	1.493	-.1207	.9927
Female	9	2.284	.1537	.9881
Male #965	133	1.672	.7307	-.6827
Female	126	2.136	.8067	-.7034
Male #696	140	1.837	.7646	-.6445
Female	135	2.745	.7107	-.7034
Male #697	9	.937	.1609	.9870
Female	14	1.942	.2377	.9713
Male #700	30	1.631	.4970	.8677
Female	26	1.918	.4394	.8982
Male #701	60	2.534	.8653	.5012
Female	49	3.241	.7510	.6602
Male #707	105	2.775	.9658	-.2545
Female	117	2.885	.8873	-.4610
Male #715	291	.885	-.9316	.3635
Female	358	.507	-.0404	.9992
Male #716	2	1.529	.0394	.9992
Female	19	1.887	.3442	.9460
Male #718	22	1.298	.3714	.9285
Female	22	2.094	.3772	.9262
Male #722	38	1.572	.6161	.7876
Female	36	2.531	.5924	.8057
Male #723	58	1.618	.8452	.5345
Female	43	2.426	.6861	.7275
Male #725	135	1.896	.7098	-.7044
Female	159	1.893	.3604	-.4328
Male #730	81	.608	.9886	.1508
Female	56	1.205	.8243	.5662

Item #	Angle	Vector Length	Sine	Cosine
Male #733	58	1.748	.8451	.5346
Female	45	2,684	.7890	.7052
Male #755	249	1.406	-.9319	-.3628
Female	226	1.424	-.7245	-.6893
Male #736	2	1.338	.0379	.9993
Female	25	2.301	.4210	.9071
Male #737	344	1.783	-.2806	.9598
Female	12	2,471	.2148	.9767
Male #739	1	1.065	.0189	.9998
Female	16	1.891	.2744	.9615
Male #740	69	.263	.9363	.3511
Female	15	.559	.2554	.9668
Male #741	67	.739	.9163	.4006
Female	57	1.057	.8393	.5436
Male #742	343	1.126	-.2947	.9556
Female	0	1.538	.0065	1.0000
Male #743	239	1.935	-,8611	-.5084
Female	226	1.503	-.7268	-.6869
Male #753	75	1.045	.9661	.2582
Female	53	1.943	.7981	.6025
Male #759	210	1.124	-.5000	-.8660
Female	192	1.729	-.2151	-.9766
Male #760	208	1.120	-.4684	-.8835
Female	199	1.507	-.3262	-.9453
Male #764	284	1.758	-.9720	.2348
Female	330	1.335	-.4978	.8673
Male #765	286	1.447	-.9628	.2701
Female	252	1.089	-.9523	-.3051
Male #767	286	1.442	-.9570	.2900
Female	259	.694	-.9819	-.1896

Item #	Angle	Vector Length	Sine	Cosine
Male #768	313	1.058	-.7352	.6779
Female	351	.873	-.1493	.9888
Male #769	64	1.583	.8977	.4406
Female	53	1.910	.7994	.6008
Male #770	49	1.412	.7517	.6595
Female	35	2.459	.5773	.8165
Male #774	50	.847	.7719	.6358
Female	41	1.203	.6556	.7551
Male #777	247	1.590	-.9236	-.3833
Female	218	1.625	-.6088	-.7933
Male #778	304	1.573	-.8285	.5600
Female	0	1.052	.0000	1.0000
Male #779	229	.827	-.7569	-.6536
Female	199	1.063	-.3304	-.9439
Male #784	45	.479	.7107	.7035
Female	18	.435	.3022	.9532
Male #785	220	.911	-.6445	-.7646
Female	220	1.337	=.6402	-.7686
Male #786	107	1.992	.9564	-.2920
Female	99	1.859	.9868	-.1618
Male #787	57	1.071	.8387	.5446
Female	50	2.053	.7715	.6363
Male #788	351	1.852	-.1512	.9885
Female	359	1.875	-.0610	.9999
Male #792	10	1.796	.1735	.9848
Female	17	2.116	.2934	.9560
Male #793	233	.379	-.7967	-.6044
Female	62	.136	.8799	.4752
Male #796	0	1.753	.0057	.9999
Female	17	2.486	.2859	.9583
Male #797	338	2.212	-.3714	.9285
Female	2	2.433	.0411	.9992

Item #	Angle	Vector Length	Sine	Cosine
Male #803	24	.923	.4121	.9111
Female	26	1.614	.4447	.8957
Male #806	139	1.807	.6467	-.7627
Female	134	2.359	.7198	-.6942
Male #811	107	1.460	.9559	-.2936
Female	116	1.814	.8977	-.4406
Male #814	359	1.522	-.0132	.9999
Female	21	1.801	.3608	.9326
Male #815	182	.226	-.0459	-.9989
Female	144	.879	.5889	-.8082
Male #819	190	.512	-.1772	-.9842
Female	136	1.120	.6939	-.7203
Male #821	30	.713	.5045	.8634
Female	18	1.891	.3115	.9501
Male #823	228	1.271	-.7452	-.6668
Female	210	2.045	-.5087	-.8609
Male #825	133	.758	.7304	-.6830
Female	105	.842	.9650	-.2621
Male #827	202	.852	-.3787	-.9255
Female	178	1.328	.0378	-.9993
Male #833	343	.394	-.2850	.9585
Female	357	.401	-.4099	.9989
Male #834	56	.893	.8320	.5549
Female	30	1.994	.5064	.8623
Male #835	252	1.736	-.9544	-.2986
Female	215	1.349	-.5735	-.8192
Male #839	57	1.366	.8354	.5496
Female	40	2.460	.6434	.7655
Male #843	350	1.896	-.1798	.9887
Female	7	2.279	.1255	.9924

Item #	Angle	Vector Length	Sine	Cosine
Male #850	9	2.112	.1613	.9869
Female	12	2.684	.2161	.9764
Male #855	54	1.563	.8129	.5824
Female	45	2.748	.7053	.7089
Male #857	278	2.087	-.9909	.1346
Female	249	1.510	-.9339	-.3577
Male #860	115	.921	.9015	-.4253
Female	100	.774	.9835	-.1812
Male #861	311	.741	-.7526	.6385
Female	352	.977	-.1443	.9895
Male #862	237	.727	-.8384	-.5450
Female	158	1.017	.3748	-.9271
Male #864	75	1.601	.9667	.2557
Female	46	1.411	.7211	.6928
Male #865	169	1.629	.1914	-.9815
Female	168	1.723	.2028	-.9792
Male #866	20	.761	.3439	.9390
Female	14	1.573	.2485	.9686
Male #867	241	1.249	-.8742	-.4856
Female	206	.910	-.4384	-.8988
Male #868	126	.864	.8042	-.5944
Female	151	1.402	.4784	-.8782
Male #871	106	1.333	.9593	-.2817
Female	108	1.397	.9413	-.3377
Male #872	45	1.347	.7034	.7108
Female	32	2.702	.5359	.8455
Male #874	38	1.567	.6153	.7883
Female	43	2.638	.6800	.7332
Male #878	328	1.563	-.5248	.8512
Female	355	2.001	-.0851	.9964

Item #	Angle	Vector Length	Sine	Cosine
Male #880	39	1.215	.6366	.7712
Female	34	1.866	.5533	.8329
Male #881	354	1.525	-.1119	.2758
Female	15	2.264	.2612	.9653
Male #884	47	.919	.7305	.6829
Female	38	1.844	.6087	.7934
Male #886	2	1.331	.0375	.9993
Female	32	2,167	.5267	.8501
Male #887	42	1.093	.6695	.7428
Female	41	2.628	.6536	.7568
Male #889	212	.926	-.5241	-.8517
Female	210	1.119	-.4971	-.8677
Male #892	19	.809	.3237	.9462
Female	29	1.393	.6963	.7178
Male #896	221	1.484	-.6614	-.7500
Female	215	2.008	-.5708	-.8211
Male #901	45	1.837	.7044	.7098
Female	40	2.819	.6423	.7665
Male #902	28	1.897	.4662	.8847
Female	38	2.734	.6220	.7830
Male #906	123	1.453	.8352	-.5499
Female	135	2.061	.7047	-.7095
Male #907	72	1.268	.9503	.3114
Female	62	1.645	.8793	.4763
Male #915	68	2.223	.9291	.3698
Female	50	2.531	.7676	.6410
Male #916	145	1.651	.5136	-.8580
Female	143	2.138	.6045	-.7966
Male #919	335	1.828	-.4229	.9062
Female	3	2.139	.0516	.9986

Item #	Angle	Vector Length	Sine	Cosine
Male #920	319	2.152	-.6615	.7499
Female	352	1.905	-.1473	.9891
Male #925	69	1.351	.9345	.3560
Female	43	2.024	.6871	.7266
Male #927	131	1.489	.7559	-.6547
Female	136	2.165	.6884	-.7253
Male #928	127	1.401	.7971	-.6039
Female	118	1.549	.8839	-.4679
Male #931	296	1.005	-.9021	.4315
Female	316	.498	-.6968	.7173
Male #932	346	1.844	-.2336	.9723
Female	8	2.220	.1395	.9902
Male #936	148	.785	.5369	-.8437
Female	167	1.696	.2314	-.9729
Male #939	153	1.574	.4472	-.8944
Female	150	1.827	.5032	-.8642
Male #946	47	1.132	.7341	,6790
Female	33	2.073	.5502	.8350
Male #947	50	1.486	.7621	.6474
Female	42	2.245	.6635	.7482
Male #949	92	1.426	.9996	-.0282
Female	99	1.378	.9881	-.1537
Male #951	79	.886	.9804	.1972
Female	124	.923	.8253	-.5647
Male #954	69	2.111	.9346	.3558
Female	56	2.400	.8295	.5585
Male #955	117	1.661	.8896	-.4568
Female	117	1.82	.8889	-.4581
Male #958	270	2.637	-1.0000	-.0038
Female	242	2.224	-.8862	-.4633

Item #	Angle	Vector Length	Sine	Cosine
Male #959	251	1.062	-.9468	-.3219
Female	220	1.459	-.6422	-.7665
Male #962	330	1.444	-.4939	.8695
Female	7	1.870	.1227	.9924
Male #965	319	2.935	-.6618	.7497
Female	354	2.148	-.1074	.9942
Male #969	61	1.269	.8745	.4850
Female	53	1.513	.8024	.5968
Male #971	163	.716	.2822	-.9594
Female	129	1.240	.7761	-.6306
Male #973	200	.441	.3436	-.9391
Female	157	1.022	.3865	-.9223
Male #976	217	.752	-.998	.0213
Female	276	1.202	-.9941	.1084
Male #977	334	1.189	-.4234	.9060
Female	1	1.372	.0221	.9998
Male #978	207	.759	-.4525	-.8918
Female	158	.621	.3718	-.9283
Male #979	112	1.801	.9262	-.3771
Female	99	1.723	.9867	-.1628
Male #980	357	1.899	-.0529	.9986
Female	9	1.087	.1503	.9886
Male #984	50	.161	.7682	.6402
Female	97	.233	.9918	-.1281
Male #986	285	.749	-.9660	.2585
Female	298	1.202	-.8808	.4734
Male #989	0	1.803	.0056	1.0000
Female	9	2.148	.1552	.9879
Male #990	180	.640	.0000	-1.0000
Female	177	1.384	.0439	-.9990
Male #996	205	.959	-.4217	-.9076
Female	204	1.552	-.4104	-.9119

Item #	Angle	Vector Length	Sine	Cosine
Male #1000	210	1.293	-.5054	-.8629
Female	206	1.353	-.4430	-.8965
Male #1003	210	2.310	-.6996	-.7145
Female	148	2.374	.5239	-.8518
Male #1006	2	1.885	.0266	.9996
Female	13	2.150	.2250	.9744
Male #1009	6	1.040	.1064	.9943
Female	26	1.733	.4483	.8961
Male #1010	235	1.808	-.8172	-.5763
Female	211	2.606	-.5099	-.8602
Male #1014	35	1.128	.5812	.8137
Female	38	2.476	.6122	.7907
Male #1017	244	1.046	-.8961	-.4438
Female	206	.495	-.4317	-.9025
Male 1019	61	.477	.8721	.4893
Female	8	.413	.1448	.9895

APPROVAL SHEET

The dissertation submitted by Steven P. Nestler has been read and approved by the following committee:

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Dec. 4, 1984
Date

Jack A. Kavanagh
Director's Signature