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MMPI PERFORMANCE OF A GENERAL AND SEVERAL
CLIENT POPULATIONS OF CANADIAN COLLEGE STUDENTS

By
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B.A.(Hons.), Lewis College, 1969

A Thesis
Submitted to the Faculty of Graduate Studies through the
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of the Requirements for the Degree of
Master of Arts at the
University of Windsor

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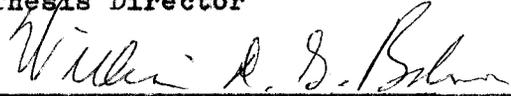
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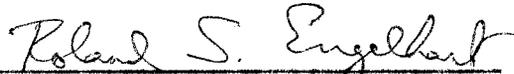
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ABSTRACT

Although the MMPI has been used extensively, limited information is available on its discriminating power between general and client groups of Canadians. An abbreviated version of the MMPI (373 items) was administered to 170 students of the general population (males and females) and 225 students of a client population (males and females). The client population consisted of males and females receiving vocational counseling, personal resources assessment etc., and males and females receiving psychotherapy. For the most part MMPI's were obtained in group sessions. The following results were obtained: (1) Male and female general students scored significantly lower than male and female students receiving therapy. (2) The female non-therapy sample scored significantly lower than the female general sample, but similar scores for males were not significantly different for most scales. (3) Male and female students receiving non-therapeutic services scored significantly lower than male and females who received therapy. (4) Male and female general Canadian students obtained higher mean MMPI scores than male and female general U.S. students, and this difference was more notable for males. Implications of the present study for the differences between male and female non-therapy students, and for the possible misleading use of U.S. norms for Canadians were discussed.

PREFACE

I would like to extend my appreciation to Dr. W. G. Bringmann who proposed the idea of the thesis and who served as thesis director during the course of the research. I am thankful for the suggestions and patience of Mrs. Merilee Trott for her assistance in conducting the study, in working on the files, and in revising the manuscript. Other members of my thesis committee - Dr. W. Balance, Dr. R. Engelhart and Dr. R. Helling were helpful in their comments. The co-operation of Dr. O'Farrell and Miss McCrane of the History Department, Dr. Helling of the Sociology Department, and teaching assistants Mr. Jeff Price, Mr. John Berek, Mr. Frank Green and Mr. Dennis Mills, is appreciated for making their classes available to me in the gathering of my data. The services of Mr. Bill Krane and Dr. Martin Morf are acknowledged for their assistance in the writing of computer programs and other help in the computer analysis of the data. I am grateful to Miss Maureen Joyce and Mr. Thomas Boniferro for their assistance in the sorting of computer cards and to Miss Jill Copeland who freely helped in the typing of the manuscript.

TABLE OF CONTENTS

	Page
ABSTRACT	iii
PREFACE	iv
LIST OF TABLES	vi
LIST OF FIGURES	viii
CHAPTER	
I Introduction and Background	1
MMPI Research in the General College Population	3
MMPI Research with Clinical College Populations	7
MMPI Research with a General and Clinical College Populations	9
MMPI Research in Canadian Populations	17
A Review of Relevant MMPI Research	17
II Statement of Problem	20
Significance of Problem Area	22
III Method	23
Subjects	23
Apparatus	25
Procedure	25
IV Results	26
V Discussion	53
APPENDIX A Services Received by Therapy Clients	56
APPENDIX B Services Received by Non-Therapy Clients	57
APPENDIX C Instructions Given to Normal Sample	58
REFERENCES	69
VITA AUCTORIS	62

LIST OF TABLES

Table		Page
1A	A Summary of a Number of Studies Using the MMPI to Compare a General and Client Populations of College Students	11
	A Summary of a Number of Studies Using the MMPI to Compare a General and Client Populations of College Students	12
2	Description of General and Several Clinical Student Populations	24
3	Mean K - Corrected MMPI Scores for General and Therapy Males	27
4	Scale Score Differences and t-scores Between Therapy and General Males	28
5	Mean K - Corrected MMPI Scores for General and Therapy Females	31
6	Scale Score Differences and t-scores Between Therapy and General Females	32
7	Mean K- Corrected MMPI Scores for General and Non-Therapy Males	34
8	Scale Score Differences and t-scores Between Non-therapy and General Males	35
9	Mean K - Corrected MMPI Scores for General and Non-therapy Females	38
10	Scale Score Differences and t-scores Between Non-therapy and General Females	39
11	Mean K - Corrected MMPI Scores for Non-therapy and Therapy Males	41
12	Scale Score Differences and t-scores Between Therapy and Non-therapy Males	42
13	Mean K - Corrected MMPI Scores for Non-therapy and Therapy Females.....	45
14	Scale Score Differences and t-scores Between Therapy and Non-therapy Females	46

LIST OF TABLES (cont'd)

Table		Page
15	Comparison of K - Corrected Mean Scores Between U.S. and Canadian Male College Students in the General Population	48
16	Comparison of K - Corrected Mean Scores Between U.S. and Canadian Female College Students in the General Population	50

LIST OF FIGURES

Figure		Page
1	A comparison between mean K-corrected scale scores of general and therapy groups for male college students (scale 0 omitted)	29
2	A comparison between mean K-corrected scale scores of general and therapy groups for female college students (scale 0 omitted)	33
3	A comparison between mean K-corrected scale scores of general and non-therapy males (scale 0 omitted)	36
4	A comparison between mean K-corrected scale scores of general and non-therapy females (scale 0 omitted) ...	40
5	A comparison between mean K-corrected scale scores of therapy and non-therapy males (scale 0 omitted)	43
6	A comparison between mean K-corrected scale scores of therapy and non-therapy females (scale 0 omitted) ...	47
7	A comparison between mean K-corrected scale scores of U.S. and Canadian general groups for male college students (scale 0 omitted)	49
8	A comparison between mean K-corrected scale scores of U.S. and Canadian general groups for female college students (scale 0 omitted)	51

Chapter I

Introduction and Background

Psychological tests have been defined as "systematic procedures for comparing the behavior of two or more persons (Cronbach, 1960, p. 21)." As illustrations of their varied use, reference may be made to the use of achievement and aptitude tests in colleges, to the selection and classification of industrial personnel in industry (Anastasi, 1968), and to private and public clinics where close to a million individuals are tested each year (Sundberg, 1961).

A specific area of psychological testing, is concerned with the affective and non-intellectual aspects of behavior, (Anastasi, 1968). One type of personality test is the self-report inventory which essentially is a standardized interview composed of a number of items (Kleinmuntz, 1967). The self-report inventory is distinguished from the clinical interview by the equivalence of items for all subjects, and the uniformity and standardization of the administration of the scoring procedures (Kleinmuntz, 1967).

The most widely-used personality inventory, which has stimulated an extremely extensive volume of research in the literature is the Minnesota Multiphasic Personality Inventory (MMPI) (Anastasi, 1968). This test was originally developed to "assay those traits that are commonly characteristic of disabling psychological abnormality (Hathaway & McKinley, 1967, p. 1)."

In the analysis of test data, Hathaway and McKinley (Sundberg and Tyler, 1962) retained only those items which empirically discriminated between normal and patient populations. Beginning with their original pool of 1000 test items which was administered to selected populations, these researchers retained 550 items which significantly discriminated neuropsychiatric patients from normal people on the basis of the frequency of item endorsement. Sources of these items were descriptions of psychiatric and neurological examination procedures, text-books of psychiatry, psychiatric examination forms, and from earlier published scales of personal and social attitudes (Kleinmuntz, 1967).

In its present form, the MMPI consists of 550 affirmative statements to which the examinee gives the response "True," "False", or "Cannot Say". The task for each subject on the MMPI is

to describe himself by placing each of the statements in one of three categories of response: True or mostly true; False or not usually true; and Cannot Say. He is asked to admit or deny various sections, ascribe to various beliefs, and social values. He is not free to change the wording or emphasise in any of the statements nor can he modify, his endorsement by any qualification concerning intensity or frequency. He is to take the items as they stand and decide how they apply to himself (Dahlstrom & Walsh, 1960, p. 35).

This inventory was designed for adults from about 16 years of age upwards and is available in an individual and a group form (Hathaway & McKinley, 1967). The group form presents the statements in a test booklet and the responses are recorded on an answer sheet.

Typically, the MMPI is scored on the following nine "clinical" scales: Hs (hypochondriasis), D (depression), Hy (hysteria), Pd (psychopathic deviancy), Mf (masculinity-femininity), Pa (paranoia), Pt (psychasthenia), Sc (schizophrenia), and Ma (hypomania), and three validity scales: L (lie), F (validity), and K (correction).

In addition to being one of the most frequently employed test instrument in the U.S. (Heilbrun, 1963) with out-patient psychiatric populations, this instrument is also extensively used in the assessment of college students with and without emotional problems (Drake, 1953; Gallagher, 1953; Gibson, Snyder & Ray, 1955; Heilbrun, 1963; Kleinmuntz, 1961; Kokesh, 1969; McAree, Steffenhagen & Zheutlin, 1969; Mello & Guthrie, 1958; Simono, 1968).

MMPI Research in the General College Population

Research with the MMPI in college populations has dealt primarily with four areas of concern: (1) Normative studies (Fowler and Coyle, 1969; Goodstein, 1954; Kleinmuntz, 1961). (2) Validity (Anderson, 1956; Chance, 1960; Chylinski and Wright, 1967; Clark, 1953; Cooke, 1967; Drake, 1953; Gallagher, 1953; Gibson et al., 1955; Grater, 1960; Greenfield, 1958; Greenfield and Fey, 1956; Harder, 1959; Kleinmuntz, 1960, 1961; Kokesh, 1969; Laver, 1960; Mello and Guthrie, 1958; Parker, 1961; Simono, 1968). (3) The development of new scales (Drake, 1953; Fowler, Stevens, Coyle and Marlowe, 1968; Gibson et al., 1955; Heilbrun, 1963; Kleinmuntz, 1960; Terwilliger and Fiedler, 1958) and (4) Response set studies (Heilbrun, 1961; Nakamura, 1960).

A review of the literature indicates that a variety of studies have utilized the MMPI with a general college population. In the prediction of academic achievement, Bendig and Klugh (1956) found that scores on Gough's Hr scale, devised from items of the MMPI, and high school rank were positively correlated with quality point averages in college students with Hr showing a median correlation of about .32.

The extent to which personality characteristics are measurably related to curricular choice of college students has been investigated, and such studies appear to offer contrasting results. Clark (1953) compared the mean scores on the clinical subscales of the MMPI for male and female college students grouped by college major subject with mean scores obtained from a total male college population and a total female college population. Results indicated that while profiles for each major do frequently show statistically significant differences from the norms established for the general population, they do not show significant differences from the average college population. Similarly, in comparing the mean scores of three curricular groups on the nine clinical scales of the MMPI, Harder (1959) found no differences useful in describing these groups in terms of personality characteristics.

Simono (1968) administered a modified form of the MMPI to 538 male and female undergraduate students who were divided according to their undergraduate major four years' later at the time of graduation. A comparison of the 13 undergraduate majors among males yielded a significant difference between curricular groups on the Mf scale. On the other hand, a comparison of 12 undergraduate majors among females,

indicated a significant difference between curricular groups on the At scale of the MMPI. The investigator concluded that the MMPI did appear to be valid in distinguishing personality characteristics of various undergraduate majors.

In a recent study, Kokesh (1969) compared physical and social science students on the basis of their responses on the MMPI. The test was administered to 291 subjects comprised of physics, zoology, sociology, and history majors at three levels - graduate students, and upper and lower four-year graduates (a division based upon grade point average). Results demonstrated that physical science majors were higher on Si than social science majors, and that the upper B.A. students were higher on Mf than lower B.A. The modal two-point MMPI code profiles obtained in the sociology sample was 34-43 and history was 49-94. Physical science students also scored higher on MSAT, Eng. z, and GPA than social science majors, thus displaying differences in both cognitive and achievement variables.

Investigators have also studied differential sex responses (Drake, 1953) and level of aspiration (Chance, 1960), as reflected by the responses of students in a general college population, to items of the MMPI.

Drake (1953) administered the MMPI to a large sample of undergraduates, and extracted 43 items that 50 percent or more of the females responded to in a direction in which less than 50 percent of the males responded. On a new sample, the male and female response overlap on the 43-item key was extremely small. Drake concluded that sex was an important variable in establishing criterion groups.

Chance (1960) compared the performance of college students, classified as "sensitizers" and "repressors" by means of the Welsh A and R scales (MMPI), on a group level of aspiration measure. He found that the sensitizers as a group tended to shift their aspiration levels downwards to a more marked degree than did the repressors or an equal tendency control group.

Furthermore, the lack of concern for regional norms in interpreting MMPI's of college students have received emphatic support in a study conducted by Fowler and Coyle(1969). In their administration of the MMPI to 1538 male and 1173 female freshman at the University of Alabama, these investigators have provided the largest single samplings to date of college students tested on the MMPI. The results of this study indicated a less frequent elevation on scales 5 and 3 for college males than that reported for this population by Dahlstrom and Welsh (1960). A less frequent elevation was also found on scale 5 for females. As an explanation for this change, these investigators posited that a wider socioeconomic spectrum is attending University today than in 1960, and that this would serve to lower the scale 5 values. They further indicated that the basic MMPI profile obtained from entering freshmen in the Southeastern United States was no different from that seen in other geographical areas. This view concurs with the earlier conclusions of Goodstein (1954) that the development of regional norms is unnecessary.

Thus, MMPI studies dealing with the general population of college students have concentrated their efforts on measurable relationships between personality characteristics and curricular choice (Clark, 1953;

Harder, 1959; Kokesh, 1969; Simono, 1968), with the question of regional norms (Fowler and Coyle, 1969; Goodstein, 1954), with differential sex responses (Drake, 1953), and level of aspiration (Chance, 1960) as obtained by responses to items of the MMPI.

MMPI Research with Clinical College Populations

MMPI research which has been conducted in client college populations has been concerned with its validity in the prediction of adjustment (Kleinmuntz, 1961; Mello and Guthrie, 1958), with change over occasions (Gallagher, 1953; Gibson, Snyder and Ray, 1955; Greenfield and Fey, 1956; Greenfield, 1958), and with the validity of the test in discriminating between groups (Anderson, 1956).

Kleinmuntz (1961) utilized orientation MMPI's of students who had showed up at a counselling center, and who were classified by counsellors as seeking either "vocational-academic" counselling or "emotional" counselling. He found that his maladjustment (Mt) scale, developed from items of the MMPI, consistently identified and discriminated between these two client groups. The investigator concluded that the Mt scale is of value for screening purposes in that it could be used to call attention to persons who may be in need of counselling.

Mello and Guthrie (1958) administered MMPI's to clients seen for personal adjustment counselling, and concluded that there are counselling behavior differences which are predictable from MMPI profiles. For example, when scale 2 was the highest scale on the coded profile, it depicted a picture of situational depression, with immediate termination of therapy as soon as the external conditions were improved. In

therapy, 45 percent of such clients remained for only 1 to 3 interviews. Attempts by the therapist to get beyond superficial data were met with intellectualization and discontinuation of therapy.

In studies of change over occasions, Gallagher (1953) compared the pre-therapy MMPI's of college students with their post-therapy scores, and his results indicated that the post-therapy mean T scores remained higher than random college test scores. Furthermore, all scales, except K and Ma, were lower on the post-therapy tests, and the discomfort scales D, Pt and Hs showed the greatest changes while Hy, Pd and Ma showed the least tendency to change.

Using the change scores of 42 clients who had undergone client-centered therapy, Gibson, Snyder and Ray (1955) examined 20 indices of change as measured by the interview, Rorschach and the MMPI in a factor-analytic study. Results indicated a significant correlation with MMPI scale 2 values and the self-ratings of change by clients. Independent judgments of the change in the counselees (based on interview material) was also correlated with scale 2 values.

On the other hand, Greenfield (1958) obtained only chance differences in comparing college admission MMPI's and ones obtained at the time of contact with the health service. Greenfield and Fey (1956) studied a group of counselees who had sought psychiatric help at some time during their college career. These investigators evaluated the relationship between selected MMPI indices and length of time between testing and appearance at the student health service. No dependable relationship was found.

In examining group differences, Anderson (1956) compared two groups of college students who were classified under the following categories from the counselor's case notes: underachiever, non-achiever, difficulty with parents, physical inadequacy, failure to return, and refusal to accept reality. Both groups of students had received at least one client contact, and all students in the experimental group had made Pa scores on the MMPI below a T score of 40. Checking the data for interrelationships between characteristics revealed that the low Pa group displayed significantly more academic difficulty and more conflicts with their parents. The investigator ventured the hypothesis that a student achieving a low Pa score, and beset by academic difficulties, very likely has conflicts with his parents. A low Pa score was suggestive of repressed or denied hostility.

This review of MMPI research carried out on a client college population has attempted to substantiate the significance of certain clinical scales (Anderson, 1956), to provide measurable indices of therapeutic change (Gallagher, 1953; Gebson et al., 1955), and has focused on predictive validity of the test in identifying students in need of counseling (Kleinmuntz, 1961), and in differentiating clients sufficiently to permit the prediction of behavior in therapy (Mello and Guthrie, 1958).

MMPI Research with a General and Clinical College Populations

The present paper proposed to utilize the MMPI in comparing college students in general with college students from several client populations. Presently, there exists a dearth of research in the literature

which compares these two groups. Studies which have dealt with these comparisons are surveyed in Table 1.

Thus, Terwilliger and Fiedler (1958) contrasted a group of students seeking help for personal and adjustment problems and a group of students not seeking help at the Counseling Service. The MMPI measure utilized was the At scale of Taylor. Results demonstrated that students seeking therapeutic help had significantly higher scores on the Taylor Anxiety Scale than those who had not consulted a therapist.

Parker (1961) administered the MMPI Maladjustment (Mt) scale (Kleinmuntz, 1960) to five selected samples of university students. They were tested upon entrance to school and had subsequently either presented themselves for emotional or vocational counseling or were randomly chosen from a "no counseling" sample. A cutting score of 15 (out of a possible 43) on the Mt scale yielded hit percentages of 76, 65, 46, and 79 for an "Adjusted", "Vocational Counseling", "Emotional Counseling", and "No Counseling" sample of engineering students respectively. Parker further reported a hit percentage of 74 for a new group of "Emotional Counseling" students who were tested at the time they approached the counseling center.

Kleinmuntz (1960) attempted to discriminate adjusted college students (no counseling contacts) from maladjusted college students (personal counseling contacts) on the basis of their scores on the Ego Strength scale of the MMPI. Results demonstrated that the mean Es scale score for a group of adjusted college students was significantly higher than that of maladjusted students.

TABLE 1A

A SUMMARY OF A NUMBER OF STUDIES USING THE MMPI TO COMPARE A
GENERAL AND CLIENT POPULATIONS OF COLLEGE STUDENTS

Investigator	Year	Type of Ss Used	MMPI Measure Available	Results
Terwilliger & Fiedler	1958	Personality and adjustment problem cases compared to a general group.	At scale of Taylor	Maladjusted group score significantly higher than general group.
Kleinmuntz	1960	Students receiving personal counseling compared to those not seeking.	Ego Strength (Es) scale	Uncounseled score significantly higher than counseled students on Es..
Grater	1960	Depressive, hysterical Hypochondriacal and Non-neurotic groups from MMPI	Complete MMPI	No significant constriction in behavior apparent in neurotic groups
Parker	1961	No counseling, Emotional counseling, Vocational counseling and Adjusted groups.	Maladjustment (Mt)scale	A different hit percentage obtained for each group.
Heilbrun	1961	Adjusted compared with counseling service maladjusted group.	K scale of MMPI	Adjusted students scored higher on K scale.
Heilbrun	1963	Personal adjustment problem cases compared with those not seeking counseling	Complete MMPI	Revised K weightings maximize discrimination between 2 groups.

TABLE 1B

A SUMMARY OF A NUMBER OF STUDIES USING THE MMPI TO COMPARE A
GENERAL AND CLIENT POPULATIONS OF COLLEGE STUDENTS

Investigator	Year	Type of Ss Used	MMPI Measure Available	Results
Cooke	1967	Non-psychiatric, campus-psychiatric and Hospital psychiatric groups.	Complete MMPI	Hit rates of actuarial formula and clinicians differed between groups.
Fowler, Stevens Coyle & Marlow	1968	Adjusted, maladjusted, counselor-maladjusted and clinic-maladjusted groups	Maladjustment (Mt) scale	Validity of both Mt scale and computer program was confirmed
McAree, Steffenhagen & Zheutlin	1969	Marijuana only, marijuana and other, gross multiple, and no-drug use groups.	Complete MMPI	Drug usage associated with personality characteristics (MMPI).

Grater (1960) chose the MMPI as the measurement of emotional adjustment in college females. These students were divided into depressive, hysterical, hypochondriacal, and non-neurotic groups on the basis of their scores on the neurotic triad of the MMPI. When these groups were compared on scores received on a scale of behavior standards called the Moral Ethical Value Scale, results did not support a constriction in behavior expected from the neurotic groups, e.g., the neurotic subjects did not tend to adhere more closely to their own standards or their perceived maternal standards than did the non-neurotic subjects.

McAree, Steffenhagen and Sheutlin (1969) examined personality characteristics of drug-users and non-drug users as measured by the MMPI. These investigators administered the MMPI to the following four groups of college students: A "marijuana only" drug group, a "marijuana and other" (e.g. amphetamines) drug group, a "gross multiple" drug group, and a "no drug" group. The "gross multiple" drug use group comprised of students who reported varied and extensive use of all types of drugs as well as the use of psychedelic substances. Results revealed measurable differences between the gross-multiple drug user and the non-drug user both in terms of abnormal profiles and specific scale differences. The gross-multiple group had 70.0 percent scale scores over 75, and the controls had 16.7 percent. Specific scales F, Mf, Hy, Pd, Sc, Ma Si differed at .05, and Mf and Sc differed at .01. In contrast, the "marijuana only" group did not differ significantly from controls in profile analysis, although there was a significant difference on the Mf scale (.01). These experimenters concluded that drug usage follows different patterns and is associated with personality characteristics as measured by the MMPI.

Research evidence on a general and client populations of college students has been presented to substantiate the hypotheses that the K factor on the MMPI is positively related to psychological strengths in normal populations. In testing the hypothesis that K is a measure of psychological health in a grossly normal population, Heilbrun (1961) found that an adjusted group of college females scored higher on the K scale than a counseling service maladjusted group. Results further indicated that the K scale was more highly correlated with test-taking defensiveness for the maladjusted students within a normal college population than for their adjusted counterparts.

Nakamura (1960) utilized a client population of college students, comprising of maladjusted disciplinary cases, on a test-retest comparison with college non-disciplinary controls. He found that the client group scored significantly higher on K when retested as part of an evaluation which might result in their probation or suspension from school.

Heilbrun (1963) demonstrated that a revised system for applying K weights to the MMPI clinical scales may maximize their usefulness in discriminating adjusted from maladjusted persons in a college population e.g. negative weighting on Hy and deletion of weights from Hs, Pd, and Ma appear to enhance the usefulness of these scales as measures of adjustment level.

In interpreting the MMPI's of college students, recent studies (Cooke, 1967; Fowler, Stevens and Coyle, 1968) have addressed themselves to the question whether more accurate predictions could be made by the use of a formula or by more subjective methods. Cooke (1967) compared

actuarial prediction and the performance of clinicians in the interpretation of MMPI's of three groups of college students. These groups consisted of the following subjects: (1) "Campus-psychiatric"-students who had admitted recent psychiatric difficulty or had been seen in the student infirmary for psychiatric reasons; (2) "Hospital-psychiatric"-students seen at a Hospital for psychiatric reasons; and (3) "Non-psychiatric"-students taking the MMPI as part of a General Psychology course. The investigator compared pooled ratings of six experienced MMPI clinicians with actuarial prediction on the obtained MMPI's. The psychometric formula had the highest hit rate (85%) for the "non-psychiatric" group, whereas the judges had the highest hit rate (74% and 84% respectively) for the "campus-psychiatric" and "hospital-psychiatric" groups. The experimenter noted that the psychometric formula, therefore, had the highest hit rate for the greater proportion of the college population.

The study previously mentioned (Fowler et al., 1968) compared two methods of identifying maladjusted college students. These investigators compared results obtained by the use of the Mt scale and by the application of a set of decision rules (Kleinmuntz, 1963) devised for interpreting profile patterns of the MMPI of adjusted and maladjusted college students. Subjects, partaking in this study, were divided into four matched groups as follows: (1) "Maladjusted"-students who contacted the clinic for emotional or emotional-vocational counseling and remained in counseling for one or more sessions; (2) An "Adjusted" group; (3) A "Counselor-Maladjusted" group-students considered by counselors and Deans' officials to be maladjusted in at least one of these areas:

academic success, interpersonal relationships, and personality traits; and (4) A "Clinic-Maladjusted" group-This category of students was chosen by utilizing freshman MMPI scores, and was included in order to investigate the predictive validity of the two procedures. Analysis of the data confirmed the validity of both methods. With a cutting score of 15, the Mt scale produced correct identification of 86 percent of the subjects; the computer program correctly identified 70.5 percent. These results did not evidence any advantage of the computer program.

Thus it appears that research efforts which have attempted the comparison of general and client college populations have been concerned primarily with single scales of the MMPI (Terwilliger and Fiedler, 1958; Kleinmuntz, 1960; Parker, 1961; Heilbrun, 1961), with the use of the MMPI in the measurement of emotional adjustment (Grater, 1960; McAree et al., 1969) and with the clinical versus actuarial controversy (Cooke, 1967; Fowler et al., 1968).

Research cited in this section thus appears to substantiate the conclusion that the complete version of the MMPI (utilizing the three validity scales and the nine clinical scales) has not been used extensively in comparing college students from a general and several client populations. While some studies (Grater, 1960; McAree et al., 1969) have utilized MMPI scale values as providing indices of emotional stability, other studies in this area have focused on the significance of the At scale (Terwilliger & Fiedler, 1958), the Es scale (Kleinmuntz, 1960), the Mt scale (Parker, 1961), and the K scale (Heilbrun, 1961, 1963).

MMPI Research in Canadian Populations

Studies (Laver, 1960; Chylinski and Wright, 1967) which have utilized Canadian populations have suggested that the use of existing U.S. MMPI norms for Canadians gives misleading results. Laver (1960) administered the MMPI to a random sample of English-speaking applicants for the Canadian army, and his findings indicate that

Because of the differences between Canadian raw score distribution shapes, Hathaway and McKinley T scores of equal size from different scales were not comparable in terms of frequency of occurrence (p. 31).

Chylinski and Wright (1967) employed a representative sample of Canadian male civil servant employees and compared their mean raw scores on the MMPI and the Edwards Personal Preference Schedule (EPPS) with those of the U.S. normative populations. Differences on the MMPI between mean scores of the Canadians and the U.S. normative group were significant for all variables except the Lie score. Thus, existing norms would give a spuriously high effect on the D, Hy, Pd, Mf, Pa and Ma scales for Canadians and a spuriously low effect on the Hs, Pt, Sc and Si scales.

A Review of Relevant MMPI Research

A review of MMPI research among college students reveals that this test has achieved a wide variety of applications within the college setting. Such studies, which are pertinent to this paper, can be classified in one of the following three categories: (1) MMPI research in the general college population; (2) MMPI research in clinical college populations and (3) MMPI research with a general and clinical populations.

Within the general population, some studies, which have investigated the relationship between personality characteristics and curricular choice, have yielded contrasting results. Clark (1953) and Harder (1959) found no significant relationship, whereas Simono (1968) and Kokesh (1969) have both concluded that the MMPI appears to be valid in distinguishing personality characteristics of various undergraduate majors. Goodstein (1954) has suggested that the development of regional norms are unnecessary, and Fowler and Coyle (1969) have provided emphatic support for this finding. Studies concerned with differential sex responses (Drake, 1953) and level of aspiration (Chance, 1960) have also utilized the MMPI within the general college population.

MMPI research conducted on a client college population has differentiated students into groups such as underachievers and nonachievers (Anderson, 1956), as needing "vocational-academic" or "emotional" counseling (Kleinmuntz, 1961) and has then attempted to evaluate the significance of this test in discriminating between these groups. Other studies in this area have utilized the MMPI in providing measurable indices of therapeutic change (Gallagher, 1953; Gibson et al., 1955), and in differentiating clients sufficiently to permit the prediction of behavior in therapy (Mello & Guthrie, 1958).

Studies comparing a general and clinical populations of college students have been primarily concerned with the significance of single scales of the MMPI. Such studies have addressed themselves to the significance of the At scale (Terwilliger & Fiedler, 1958), the Es scale (Kleinmuntz, 1960), the Mt scale (Parker, 1961), and the K scale

(Heilbrun, 1961, 1963). In comparing these groups, studies have also employed the MMPI in examining personality characteristics of drug-users and non-drug users (McAree et al., 1969), and in evaluating college students on a scale of behavior standards (Grater, 1960).

Research conducted on Canadian populations, but not in Canadian colleges, have concluded that the use of existing U.S. MMPI norms for Canadians gives misleading results (Laver, 1960; Chylinski & Wright, 1967). Laver (1960) indicates that the original T scores are not applicable to this population, and Chylinski and Wright (1967) assert that existing U.S. MMPI norms produce spuriously high and low values for Canadians.

Results obtained from these Canadian studies, and the absence of reported research on the MMPI in Canadian college populations, would seem to indicate that a study utilizing such a population would furnish further information on the applicability of the MMPI in Canadian colleges and universities.

Chapter II

Statement of Problem

Specific Aims

The research thus far has indicated that the MMPI can discriminate between college students from general and client populations in terms of their level of anxiety (Terwilliger and Fiedler, 1953), their level of adjustment (Parker, 1961), ego strength (Kleinmuntz, 1960), and psychological strength as indicated by the K factor of the MMPI (Nakamura, 1960; Heilbrun, 1961). However, such studies have focused on comparisons of single scales of the MMPI.

Furthermore, studies in which the MMPI has been administered to a Canadian population (Laver, 1960; Chylinski and Wright, 1967) appear to question the appropriateness of applying U.S. normative data to Canadian samples.

It is the purpose of this study, therefore, to assess the ability of the MMPI to discriminate between a general and several client populations of Canadian college students. A form of the MMPI utilizing the three validity scales and nine clinical scales may enhance its potential in discriminating between these populations of college students. Secondly, the performance of the sample from the general population of college students will determine whether U.S. norms are applicable to University of Windsor students.

It is predicted that significant differences will exist between the general and client population of students. Based upon clinical experience,

it is further predicted that, within the client population, there will be significant differences between a therapy and a non-therapy group comprising of students who have received either vocational counseling or personal resources assessment.

Hypotheses in the present study are as follows:

Hypothesis I: College students enrolled in a general arts and science program will have significantly lower mean MMPI scores on clinical scales than college students who requested and received therapeutic services from a college counseling center. This difference is predicted for both males and females.

Hypothesis II: Male and female college students in the general college population would obtain significantly lower MMPI scores on clinical scales than males and females who received non-therapeutic services such as vocational and personal resources assessment at a University Psychological Center. It is predicted that these differences between general and non-therapy groups would be less than that obtained between general and therapy groups.

Hypothesis III: Males and females receiving non-clinical services such as vocational and personal resources assessment, from a University Psychological Center, would obtain significantly lower MMPI scores on clinical scales than students receiving therapeutic services such as individual or group psychotherapy.

Additionally, since Chylinski and Wright (1967) concluded that the use of existing U.S. norms would give misleading results for Canadian males, this study also investigated the appropriateness or inappropriateness of existing U.S. college norms for a Canadian college population.

Significance of the Problem Area

By utilizing the complete version of the MMPI for the comparison of these two groups, it is hoped that this study will give some indication of the suitability of this test in evaluating students who have come, or have been referred to the Psychological Center at the University of Windsor.

In addition to this consideration, there is the fact that the MMPI is currently being used broadly in Canada, in a college setting such as at the University of Windsor, and that this study will shed some light on how these results compare with those of an American college population. Furthermore, a sample of the Canadian population, college students, was employed in this study, and there are relatively few research projects which have considered the use of the MMPI for Canadians. The outcome of these findings will support or call into question the applicability of U.S. norms for a Canadian college population.

Some limitations of which the author is aware exist in the proposed research. Firstly, students of the general population, partaking in the study were comprised of a systematically-defined sample rather than a random sample of students from the University of Windsor. In choosing students enrolled in courses offered by different departments, an attempt was made to obtain a representative sample of the general undergraduate population.

The volunteer bias also existed in that students were given the option of leaving if they were unwilling to participate in the present research, and only those so inclined were asked to take the test. Furthermore, generalizability of results were limited to English-speaking students, since the small proportion of French-speaking Canadians tested were not representative of French-Canadian college students.

Chapter III

Method

Subjects:

Subjects for the present study were 170 undergraduates comprising the normal population and 225 students comprising the client sample, and were enrolled in courses at the University of Windsor during the 1968-1971 academic years.

Normal sample: Table 2 indicates the distribution of subjects, the size of the groups and the mean age of students comprising the general and client populations. The investigator selected freshman undergraduate courses having large enrollments, i.e. Psychology, Sociology and History and then obtained permission from instructors to use their classes for testing purposes. There was a favourable distribution by sex except in the History group.

Client sample: A total of 225 male and female undergraduates constituted the client sample. This sample was composed of students who had taken the MMPI during the 1970-71 academic year, as a part of the regular assessment battery administered to Psychological Center clients. It also included a random selection of student MMPI's for the 1968-1970 academic years. It consisted of two subgroups: psychotherapy versus vocational and personal resources assessment. (a) The psychotherapy sample consisted of 63 males and 62 females who referred themselves voluntarily during the 1969-1971 academic years to receive any of the various services offered by the Psychological Center (See Appendix A).

TABLE 2

DESCRIPTION OF GENERAL AND SEVERAL CLINICAL STUDENT POPULATIONS				
Subjects	Sex		Mean Age	Age Range
	Males	Females		
Psychology students	35	46	23.38	18-50
Sociology students	24	30	20.54	18-43
History students	<u>26</u>	<u>9</u>	22.90	18-28
TOTAL	<u>85</u>	<u>85</u>		
Therapy Clients	63	62		
Non-therapy Clients	<u>50</u>	<u>50</u>		
TOTAL	<u>113</u>	<u>112</u>		

(b) The non-therapy client sample were comprised of 50 males and 50 females who, like group (a), received services from the Center but for whom psychotherapy or counseling was not recommended. These persons frequently received a summary of their test findings and/or participated in study skills programs or similar vocational-type instruction as described in Appendix B.

Apparatus

The booklet form of the MMPI (Hathaway & McKinley, 1951); Roche answer sheets; Roche reports; and standard answer sheets. An abbreviated version of the MMPI (373 items) was administered to all subjects of the general population.

Procedure

The booklet form of the MMPI was administered to undergraduate students who were enrolled in the following undergraduate courses: Psychology, Sociology and History. On a testing day, the experimenter came into the class, and briefly explained the purpose of testing and the significance of the present research. A standard format of instructions was followed in explaining the present study to these students comprising the normal population (See Appendix C). Students were given the option of taking the test or not. Those students who decided to partake in the study were asked to note their age, sex, grade in the course to date, and their citizenship status on the answer forms.

The client sample had taken the test as a part of the assessment battery routinely administered to applicants for services at the Psychological Center.

Chapter IV

Results

The data from each of the three groups (General, Therapy, and Non-Therapy) were separated according to sex, and comparisons were made between males and females from each group. The two-tailed t-test (Winer, 1962) was employed in analysing the difference between the 12 comparable scale scores of the MMPI, for any two groups.

The Social Introversion (Si) scale (scale 10) was omitted because the investigator utilized Form R of the MMPI which does not include the Si scale. The Si scale is not a clinical scale, whereas the Mf scale, though not clinical, offers meaningful information (Fowler and Coyle, 1969).

Hypothesis I predicted that college students enrolled in a general arts and science program would have significantly lower mean MMPI scores on clinical scales than college students who requested and received therapeutic services from a college counseling center. This difference is predicted for both male and female students. The two-tailed t-test (Winer, 1962) was employed in evaluating the significance of the differences between comparable scale scores of the MMPI for the following groups: General male vs. Therapy male and General female vs. Therapy female. The comparison of general vs. therapy male is shown in Tables 3 and 4 and graphically depicted in Figure 1.

Table 3 indicates the K-corrected mean scores obtained for the general male (N = 85) and therapy male (N = 63) groups. Table 4 shows the differences between these means, as well as the t-scores obtained in analysing

TABLE 3

MEAN K - CORRECTED MMPI SCORES FOR GENERAL AND THERAPY MALES

MMPI SCALES		General Means (N = 85)	Therapy Means (N = 63)
Lie	(L)	3.32	3.19
Infrequency	(F)	6.38	10.82
Correction	(K)	12.96	11.76
Hypochondriasis	(Hs)	12.49	14.69
Depression	(D)	19.55	27.39
Hysteria	(Hy)	20.15	24.41
Psychopathic Deviancy	(Pd)	22.42	27.97
Masculinity - Femininity	(Mf)	28.02	32.01
Paranoia	(Pa)	10.14	13.26
Psychastenia	(Pt)	28.29	35.46
Schizophrenia	(Sc)	28.80	37.31
Mania	(Ma)	22.13	26.26

TABLE 4

SCALE SCORE DIFFERENCES AND T-SCORES BETWEEN THERAPY AND GENERAL MALES

(df = 146)

MMPI SCALES	Mean Score Differences	t-score
L	-0.13	-0.38
F	4.44	4.60 **
K	-1.20	-1.52
Hs	2.20	3.36 **
D	7.84	8.41 **
Hy	4.26	5.11 **
Pd	5.55	6.79 **
Mf	3.99	4.76 **
Pa	3.12	5.07 **
Pt	7.17	7.50 **
Sc	8.51	6.16 **
Ma	4.13	0.48

** p > .01

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

Scorer's Initials _____

Name _____

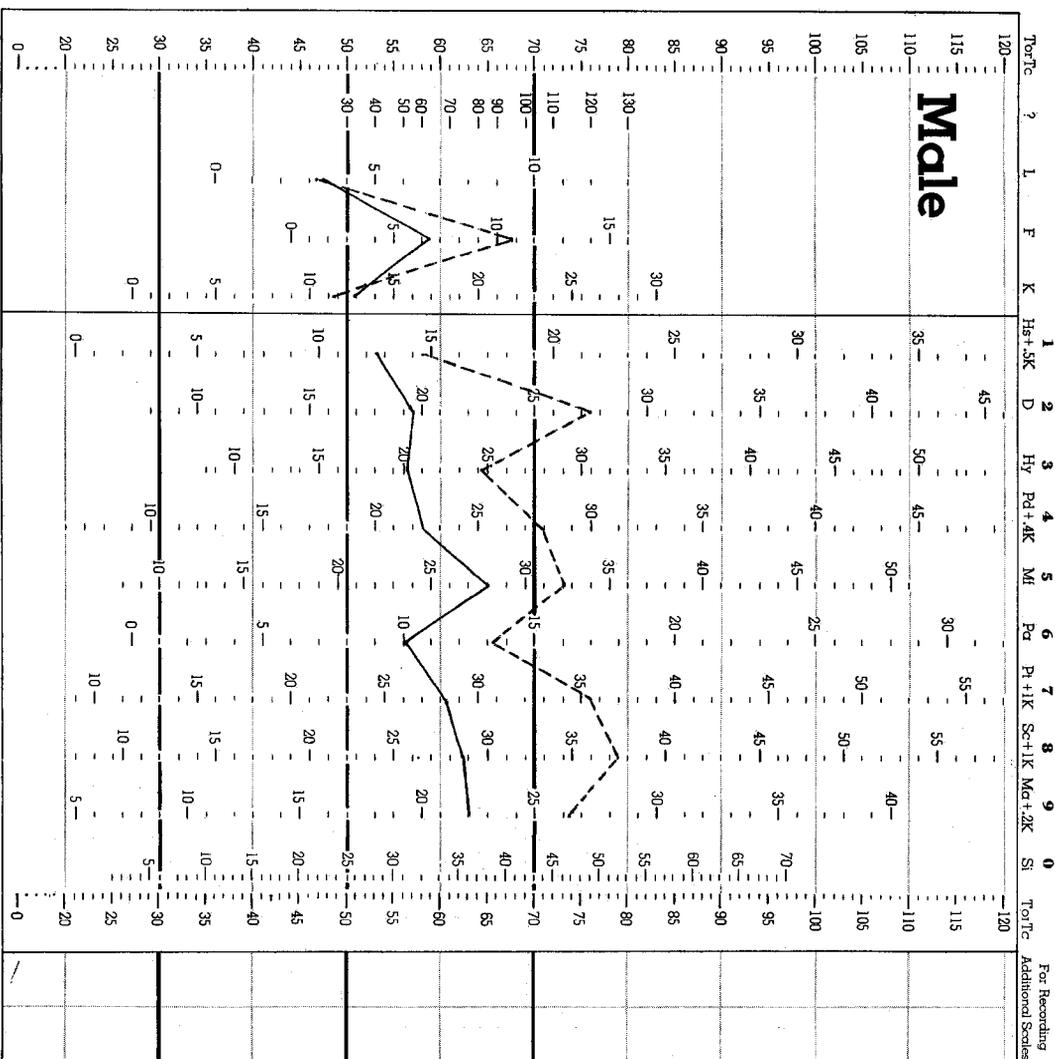
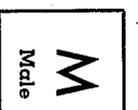
Address _____

Occupation _____ Date Tested _____

Education _____ Age _____

Marital Status _____ Referred by _____

NOTES



— General Males
 --- Therapy Males

Figure 1. A comparison between mean K-corrected scale scores of general and therapy groups for male college students (scale 0 omitted).

Raw Score _____
 K to be added _____
 Raw Score with K _____

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Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

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Name _____

Address _____

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Education _____

Age _____

Marital Status _____

Referred by _____

NOTES

F
Female

TorTc	?	L	F	K	1	2	3	4	5	6	7	8	9	0	TorTc	For Recording Additional Scales
					Has+Sk	D	Hy	Pd+AK	Mf	Pa	Pt+Ik	Sc+Ik	Ma+2K	Si		
120																
115																
110																
105																
100																
95																
90																
85																
80																
75																
70																
65																
60																
55																
50																
45																
40																
35																
30																
25																
20																
15																
10																
5																
0																

K	Percentages of K		
	5	4	3
30	15	12	6
29	15	12	6
28	14	11	6
27	14	11	5
26	13	10	5
25	13	10	5
24	12	10	5
23	12	9	5
22	11	9	4
21	11	8	4
20	10	8	4
19	10	8	4
18	9	7	4
17	9	7	3
16	8	6	3
15	8	6	3
14	7	6	3
13	7	5	3
12	6	5	2
11	6	4	2
10	5	4	2
9	5	4	2
8	4	3	2
7	4	3	2
6	3	2	1
5	3	2	1
4	2	2	1
3	2	2	1
2	1	1	0
1	1	1	0
0	0	0	0

Raw Score _____

K to be added _____

Raw Score with K _____



the differences between means. These results obtained are shown graphically in Figure 1.

It can readily be seen that the general males are significantly different from the therapy males on all scales with the exception of the K, L and Ma scales. The remaining scale differences are significant beyond the .01 level.

Tables 5 and 6 summarize the MMPI data relevant to Hypothesis I for the female sample of college students, and the same results are depicted graphically in Figure 2.

An inspection of Table 6 indicates that significant differences emerged between the general and therapy females across all of the validity and clinical scales of the MMPI. Differences on the Mf scale were significant but not in the predicted direction. These differences were significant beyond the .01 level.

On the basis of these results for both male and female samples, it was concluded that Hypothesis I was confirmed, with some exceptions. Thus, male and female students in the general college population obtained significantly lower scale scores on most clinical scales of the MMPI in comparison to students receiving therapy.

The second hypothesis predicted that male and female college students in the general college population would obtain significantly lower MMPI scores on clinical scales than males and females who received services other than therapy, e.g. vocational, personal resources assessment, at a University Psychological Center. It is predicted that the differences between the general and non-therapy groups would be less than that obtained between the general and therapy groups.

TABLE 5

MEAN K - CORRECTED MMPI SCORES FOR GENERAL AND THERAPY FEMALES

MMPI Scales	General Means (N = 85)	Therapy Means (N = 62)
L	3.62	3.69
F	5.29	11.43
K	13.24	15.78
Hs	13.24	25.54
D	21.77	30.87
Hy	21.21	28.24
Pd	20.85	31.52
Mf	38.50	32.32
Pa	9.57	16.58
Pt	29.20	34.90
Sc	27.54	49.45
Ma	20.53	25.78

TABLE 6

SCALE SCORE DIFFERENCES AND T-SCORES BETWEEN THERAPY AND GENERAL FEMALES
(df = 145)

MMPI Scales	Mean Score Differences	t-score
L	0.07	12.49 **
F	6.14	21.83 **
K	2.54	4.55 **
Hs	12.30	16.74 **
D	9.10	11.80 **
Hy	7.03	7.99 **
Pd	10.67	15.04 **
Mf	-6.18	-7.96 **
Pa	7.01	12.83 **
Pt	5.70	5.83 **
Sc	21.91	19.04 **
Ma	5.25	8.51 **

** p > .01

The Minnesota Multiphasic Personality Inventory

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Scorer's Initials _____

F
Female

Name _____

Address _____

Occupation _____ Date Tested _____

Education _____ Age _____

Marital Status _____ Referred by _____

NOTES

General Females

Therapy Females

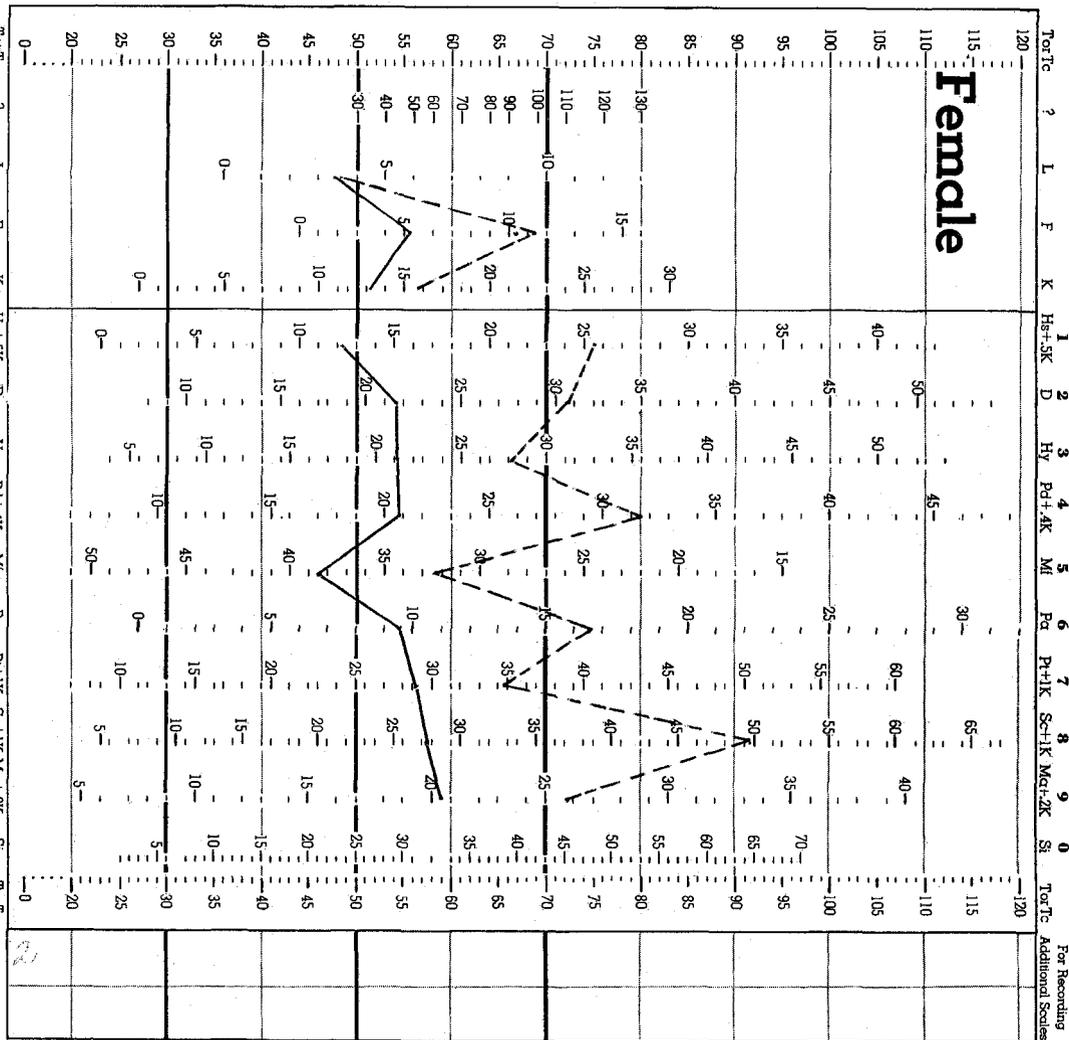


Figure 2. A comparison between mean K-corrected scale scores of general and Therapy groups for female college students (scale 0 omitted).

K	Percentile of K	
	5	2
30	15	12
29	15	12
28	14	11
27	14	11
26	13	10
25	13	10
24	12	10
23	12	9
22	11	9
21	11	8
20	10	8
19	10	8
18	9	7
17	9	7
16	8	6
15	8	6
14	7	5
13	7	5
12	6	5
11	6	4
10	5	4
9	5	4
8	4	3
7	4	3
6	3	2
5	3	2
4	2	1
3	2	1
2	1	0
1	1	0
0	0	0

Raw Score _____

K to be added _____

Raw Score with K _____



Analysis of the data acquired from the general male as compared to the non-therapy male samples are reported in Tables 7 and 8 and graphically illustrated in Figure 3. These results reveal significant differences across the F, K and Pa scales of the MMPI ($p > .05$), but the differences across the remaining scales were not significant. Differences on the Pa scale were significant, though not in the predicted direction.

Tables 9 and 10 demonstrate results achieved from a comparison between female students in a general college sample and a non-therapy female sample, and these results are depicted graphically in Figure 4.

These results reveal significant differences beyond the .01 level for all scales of the MMPI with the exception of the Mf scale. Hypothesis II was therefore supported in part. A comparison of the female samples yielded results in the predicted direction, but this hypothesis was not confirmed for the male samples. These results showed that the female non-therapy sample scored significantly lower on comparable clinical scales of the MMPI than the general female sample, but that similar scores between male non-therapy and male general samples were not significantly different. Furthermore, with the exception of the L and K scales for males, and the L and F scales for females, the mean differences in scale scores between general and non-therapy groups were less than that obtained between general and therapy groups.

Hypothesis III predicted that male and female students receiving non-clinical services, such as vocational and personal resources assessment, from a University Psychological Center would obtain significantly lower MMPI scores on clinical scales than students receiving therapeutic services such as individual or group psychotherapy. Tables 11 and 12

TABLE 7

MEAN K - CORRECTED MMPI SCORES FOR GENERAL AND NON-THERAPY MALES

MMPI Scales	General Means (N = 85)	Non Therapy Means (N = 50)
L	3.32	2.82
F	6.38	4.96
K	12.96	14.56
Hs	12.49	12.24
D	19.55	20.52
Hy	20.15	21.32
Pd	22.42	23.44
Mf	28.02	27.92
Pa	10.14	9.24
Pt	28.29	29.20
Sc	28.80	28.60
Ma	22.13	21.54

TABLE 8

SCALE SCORE DIFFERENCES AND T-SCORES BETWEEN NON-THERAPY AND GENERAL MALES
(df = 133)

MMPI Scales	Mean Score Differences	t-score
L	-0.50	-1.41
F	-1.42	-2.06 *
K	1.60	1.88 *
Hs	-0.25	-0.45
D	0.97	1.07
Hy	1.17	1.56
Pd	1.02	0.77
Mf	-0.10	-0.11
Pa	-0.90	-1.69 *
Pt	0.91	0.91
Sc	-0.20	-0.18
Ma	-0.79	-0.82

* p > .05

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

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Name _____
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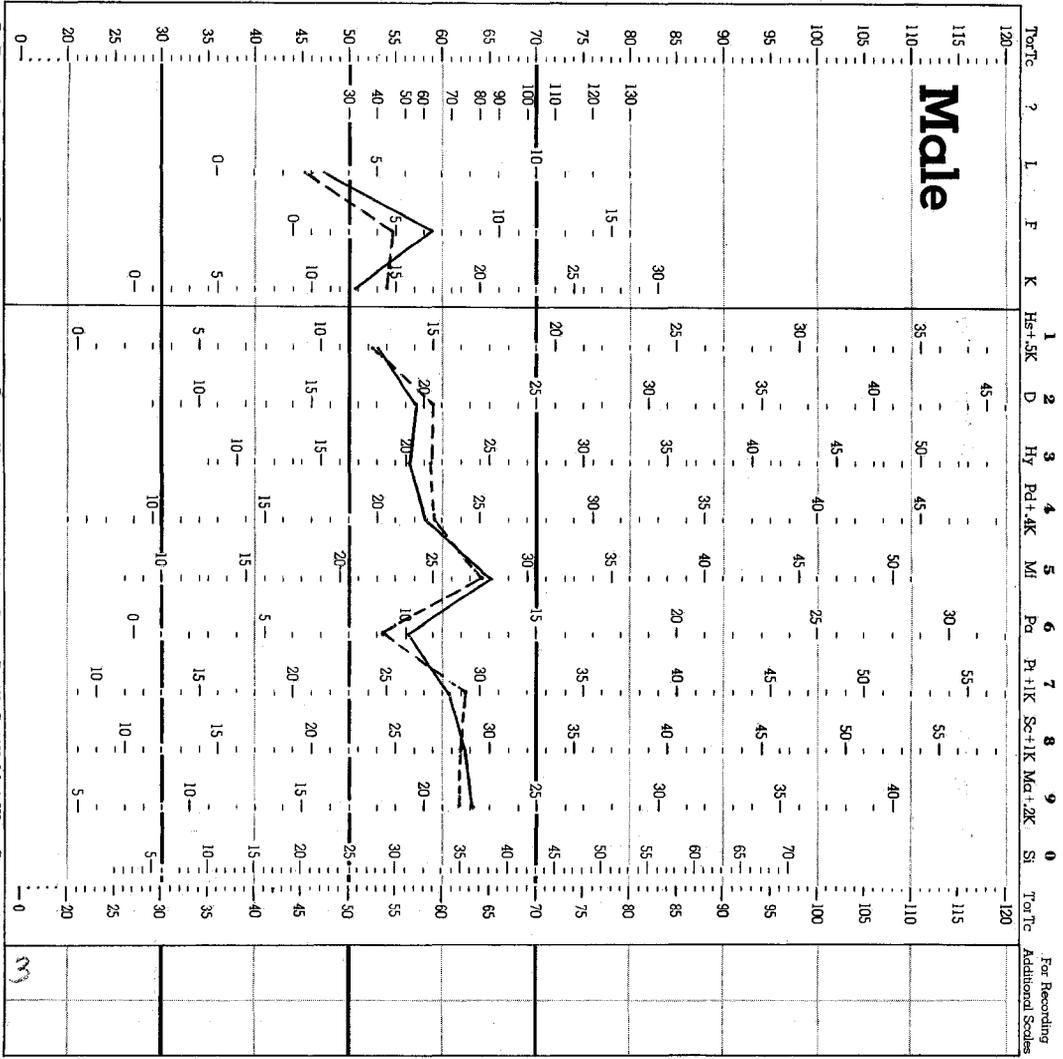
M
 Male

Education _____ Referred by _____

Marital Status _____

NOTES

_____ General Males
 ----- Non-Therapy Males



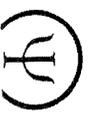
Frequency of K	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 3. A comparison between mean K-corrected scale scores of general and non-therapy males (scale 0 omitted).

Raw Score _____

K to be added _____

Raw Score with K _____



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Name _____

Address _____

Occupation _____ Date Tested _____

Education _____ Age _____

Marital Status _____ Referred by _____

NOTES

F
Female

Test	1	2	3	4	5	6	7	8	9	0	Test	For Reporting
120	115	110	105	100	95	90	85	80	75	70	65	Additional Scales
Female												
115	50	45	40	35	30	25	20	15	10	5	0	115
110	40	35	30	25	20	15	10	5	0	5	10	110
105	30	25	20	15	10	5	0	5	10	15	20	105
100	20	15	10	5	0	5	10	15	20	25	30	100
95	10	5	0	5	10	15	20	25	30	35	40	95
90	0	5	10	15	20	25	30	35	40	45	50	90
85	10	15	20	25	30	35	40	45	50	55	60	85
80	20	25	30	35	40	45	50	55	60	65	70	80
75	30	35	40	45	50	55	60	65	70	75	80	75
70	40	45	50	55	60	65	70	75	80	85	90	70
65	50	55	60	65	70	75	80	85	90	95	100	65
60	60	65	70	75	80	85	90	95	100	105	110	60
55	70	75	80	85	90	95	100	105	110	115	120	55
50	80	85	90	95	100	105	110	115	120	125	130	50
45	90	95	100	105	110	115	120	125	130	135	140	45
40	100	105	110	115	120	125	130	135	140	145	150	40
35	110	115	120	125	130	135	140	145	150	155	160	35
30	120	125	130	135	140	145	150	155	160	165	170	30
25	130	135	140	145	150	155	160	165	170	175	180	25
20	140	145	150	155	160	165	170	175	180	185	190	20
15	150	155	160	165	170	175	180	185	190	195	200	15
10	160	165	170	175	180	185	190	195	200	205	210	10
5	170	175	180	185	190	195	200	205	210	215	220	5
0	180	185	190	195	200	205	210	215	220	225	230	0

K	Percentages of T			
	5	4	2	1
30	15	12	6	6
29	15	12	6	6
28	14	11	6	6
27	14	11	5	5
26	13	10	5	5
25	13	10	5	5
24	12	10	5	5
23	12	9	5	5
22	11	9	4	4
21	11	8	4	4
20	10	8	4	4
19	10	8	4	4
18	9	7	4	4
17	9	7	3	3
16	8	6	3	3
15	8	6	3	3
14	7	6	3	3
13	7	5	3	3
12	6	5	2	2
11	6	4	2	2
10	5	4	2	2
9	5	4	2	2
8	4	3	2	2
7	4	3	1	1
6	3	3	2	1
5	3	2	1	1
4	2	2	1	1
3	2	2	1	1
2	1	1	0	0
1	1	1	0	0
0	0	0	0	0

Raw Score _____

K to be added _____

Raw Score with K _____



TABLE 9

MEAN K - CORRECTED MMPI SCORES FOR GENERAL AND NON-THERAPY FEMALES

MMPI Scales	General Means (N = 85)	Non-Therapy Means (N = 50)
L	3.62	5.30
F	5.29	12.28
K	13.24	15.56
Hs	13.24	16.36
D	21.77	25.22
Hy	21.21	24.80
Pd	20.85	24.24
Mf	38.50	37.82
Pa	9.57	12.82
Pt	29.20	33.12
Sc	27.54	35.94
Ma	20.53	23.09

TABLE 10

SCALE SCORE DIFFERENCES AND T-SCORES BETWEEN NON-THERAPY AND GENERAL FEMALES
(df = 133)

MMPI Scales	Mean Score Differences	t-score
L	1.68	3.68 **
F	6.99	5.33 **
K	2.32	3.57 **
Hs	3.12	3.32 **
D	3.45	3.13 **
Hy	3.59	3.26 **
Pd	3.39	3.88 **
Mf	-0.68	-0.85
Pa	3.25	4.76 **
Pt	3.92	3.26 **
Sc	8.50	4.84 **
Ma	2.56	3.66 **

** p > .01

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

F
Female

Scorer's Initials _____

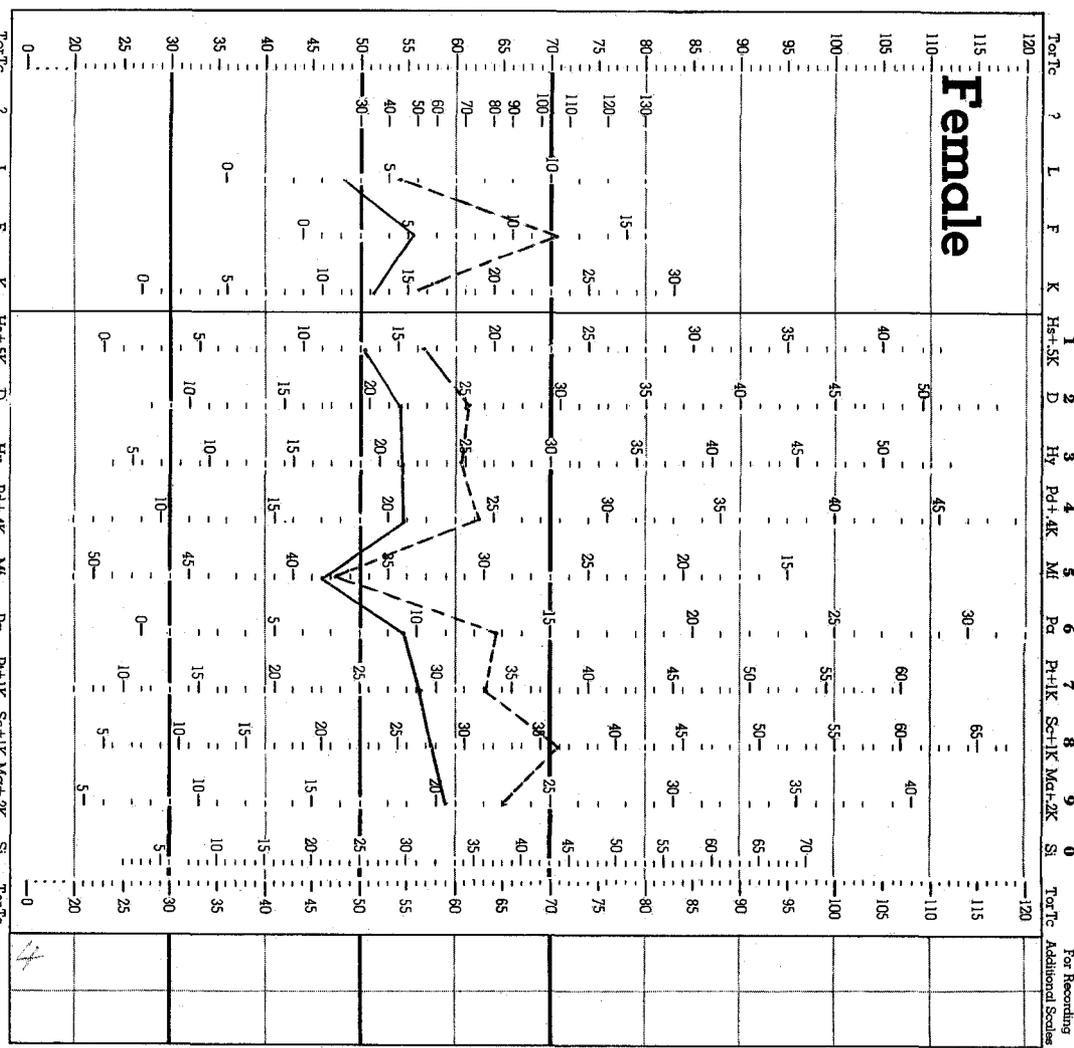
Name _____
 Address _____
 Occupation _____ Date Tested _____
 Age _____

Education _____ Referred by _____

Marital Status _____

NOTES

_____ General Females
 _____ Non-therapy Females



Subject	L	F	K	D	Hy	Pd+K	Mf	Pa	Pt+K	Sc+K
1	10	10	5	10	15	15	40	20	10	10
2	10	10	5	10	15	15	40	20	10	10
3	10	10	5	10	15	15	40	20	10	10
4	10	10	5	10	15	15	40	20	10	10
5	10	10	5	10	15	15	40	20	10	10
6	10	10	5	10	15	15	40	20	10	10
7	10	10	5	10	15	15	40	20	10	10
8	10	10	5	10	15	15	40	20	10	10
9	10	10	5	10	15	15	40	20	10	10
10	10	10	5	10	15	15	40	20	10	10
11	10	10	5	10	15	15	40	20	10	10
12	10	10	5	10	15	15	40	20	10	10
13	10	10	5	10	15	15	40	20	10	10
14	10	10	5	10	15	15	40	20	10	10
15	10	10	5	10	15	15	40	20	10	10
16	10	10	5	10	15	15	40	20	10	10
17	10	10	5	10	15	15	40	20	10	10
18	10	10	5	10	15	15	40	20	10	10
19	10	10	5	10	15	15	40	20	10	10
20	10	10	5	10	15	15	40	20	10	10

Figure 4. A comparison between mean K - corrected scale scores of general and non-therapy females (scale 0 omitted).

Raw Score _____

K to be added _____
 Raw Score with K _____



Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charney McKinley

Scorer's Initials _____

Name _____

Address _____

Occupation _____ Date Tested _____

Education _____ Age _____

Marital Status _____ Referred by _____

NOTES

M
Male

Test	1	2	3	4	5	6	7	8	9	0	Test	For Recording				
?	L	F	K	Hy+5K	D	Hy	Pd+4K	Mf	Pc	P+1K	Sc+1K	Ma+2K	Si	0	Test	Additional Scores
115				45											115	
110				35						55					110	
105				40						50					105	
100				45						50					100	
95				30						45					95	
90				35						40					90	
85				25						30					85	
80				30						40					80	
75				20						30					75	
70				10						20					70	
65				5						15					65	
60				5						10					60	
55				5						5					55	
50				5						5					50	
45				0						0					45	
40				0						0					40	
35				0						0					35	
30				0						0					30	
25				0						0					25	
20				0						0					20	
0				0						0					0	

Function of K	5	4	3
1	0	0	0
2	1	1	0
3	2	1	0
4	3	2	1
5	4	3	2
6	5	4	3
7	6	5	4
8	7	6	5
9	8	7	6
10	9	8	7
11	10	9	8
12	11	10	9
13	12	11	10
14	13	12	11
15	14	13	12
16	15	14	13
17	16	15	14
18	17	16	15
19	18	17	16
20	19	18	17
21	20	19	18
22	21	20	19
23	22	21	20
24	23	22	21
25	24	23	22
26	25	24	23
27	26	25	24
28	27	26	25
29	28	27	26
30	29	28	27
31	30	29	28
32	31	30	29
33	32	31	30
34	33	32	31
35	34	33	32
36	35	34	33
37	36	35	34
38	37	36	35
39	38	37	36
40	39	38	37
41	40	39	38
42	41	40	39
43	42	41	40
44	43	42	41
45	44	43	42
46	45	44	43
47	46	45	44
48	47	46	45
49	48	47	46
50	49	48	47
51	50	49	48
52	51	50	49
53	52	51	50
54	53	52	51
55	54	53	52
56	55	54	53
57	56	55	54
58	57	56	55
59	58	57	56
60	59	58	57
61	60	59	58
62	61	60	59
63	62	61	60
64	63	62	61
65	64	63	62
66	65	64	63
67	66	65	64
68	67	66	65
69	68	67	66
70	69	68	67
71	70	69	68
72	71	70	69
73	72	71	70
74	73	72	71
75	74	73	72
76	75	74	73
77	76	75	74
78	77	76	75
79	78	77	76
80	79	78	77
81	80	79	78
82	81	80	79
83	82	81	80
84	83	82	81
85	84	83	82
86	85	84	83
87	86	85	84
88	87	86	85
89	88	87	86
90	89	88	87
91	90	89	88
92	91	90	89
93	92	91	90
94	93	92	91
95	94	93	92
96	95	94	93
97	96	95	94
98	97	96	95
99	98	97	96
100	99	98	97
101	100	99	98
102	101	100	99
103	102	101	100
104	103	102	101
105	104	103	102
106	105	104	103
107	106	105	104
108	107	106	105
109	108	107	106
110	109	108	107
111	110	109	108
112	111	110	109
113	112	111	110
114	113	112	111
115	114	113	112

Raw Score _____

K to be added _____

Raw Score with K _____



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TABLE 11

MEAN K - CORRECTED MMPI SCORES FOR NON-THERAPY AND THERAPY MALES

MMPI Scales	Non-therapy Means	Therapy Means
L	2.82	3.19
F	4.96	10.82
K	14.56	11.76
Hs	12.24	14.69
D	20.52	27.39
Hy	21.32	24.41
Pd	23.44	27.97
Mf	27.92	32.01
Pa	9.24	13.26
Pt	29.20	35.46
Sc	28.60	37.31
Ma	21.54	26.26

TABLE 12

SCALE SCORE DIFFERENCES AND T-SCORES BETWEEN THERAPY AND NON-THERAPY MALES
(df = 111)

MMPI Scales	Mean Score Differences	t-scores
L	0.37	1.08
F	5.86	5.35 **
K	-2.80	-3.16 **
Hs	2.45	3.22 **
D	6.87	5.78 **
Hy	3.09	3.28 **
Pd	4.53	5.34 **
Mf	4.09	4.16 **
Pa	4.02	5.64 **
Pt	6.26	5.51 **
Sc	8.71	5.42 **
Ma	4.72	1.13

** p > .01

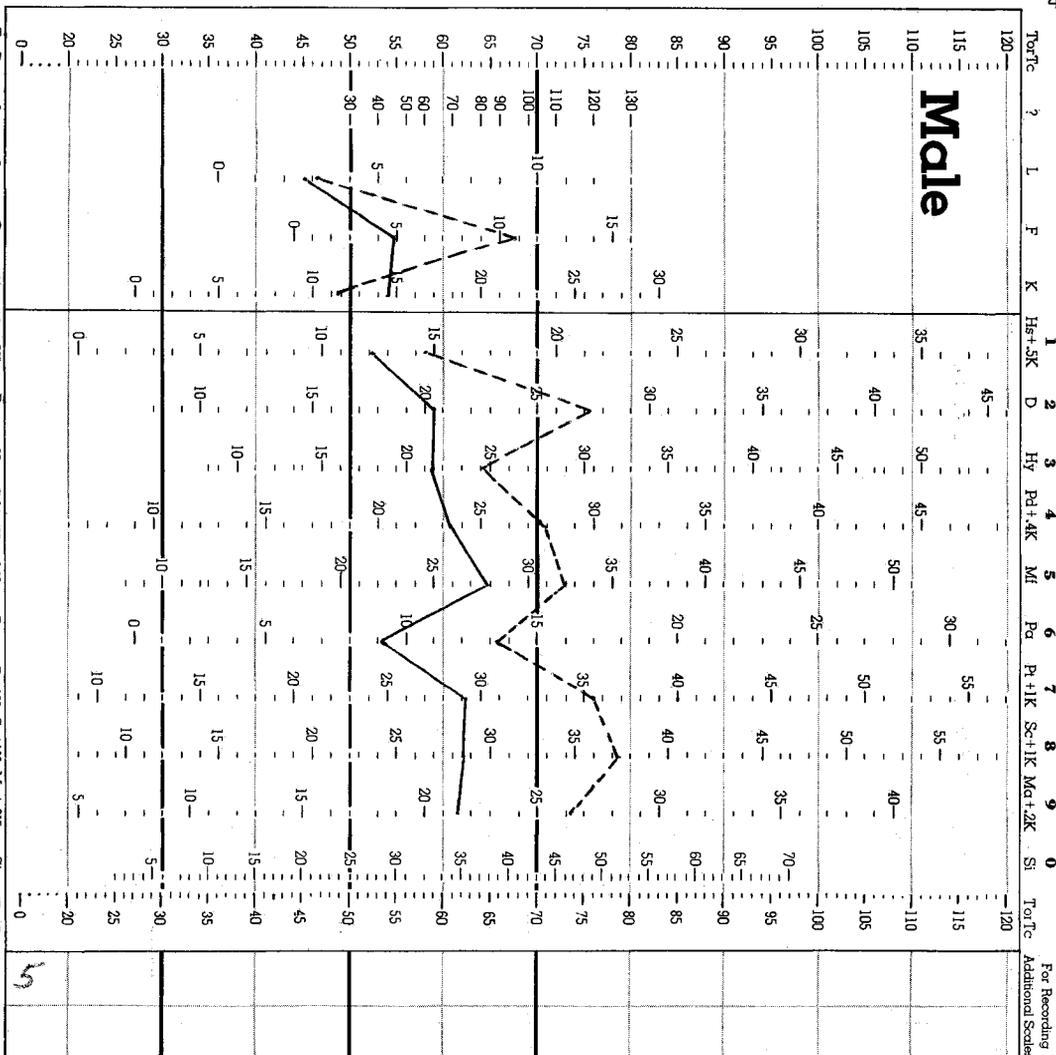
The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

Scorer's Initials _____

Name _____
 Address _____
 Occupation _____ Date Tested _____
 Education _____ Age _____

M
Male



Scale	1	2	3	4	5	6	7	8	9	10
1	5	4	2	3	2	1	1	1	1	0
2	3	2	1	2	1	1	1	1	1	0
3	4	3	2	3	2	1	1	1	1	0
4	5	4	3	4	3	2	2	2	2	1
5	6	5	4	5	4	3	3	3	3	2
6	7	6	5	6	5	4	4	4	4	3
7	8	7	6	7	6	5	5	5	5	4
8	9	8	7	8	7	6	6	6	6	5
9	10	9	8	9	8	7	7	7	7	6
10	11	10	9	10	9	8	8	8	8	7

Figure 5. A comparison between mean K-corrected scale scores of therapy and non-therapy males (scale 0 omitted).

Marital Status _____ Referred by _____
 NOTES _____
 ----- Therapy Males

Raw Score _____
 K to be added _____
 Raw Score with K _____



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Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Chanley McKinley

Scorer's Initials _____

Name _____
 Address _____
 Occupation _____ Date Tested _____
 Age _____

F
Female

Education _____ Referred by _____

Marital Status _____

NOTES

TorTc	?	L	F	K	For Recording Additional Scores										
					1	2	3	4	5	6	7	8	9	0	
					Ha+SK	D	Hy	Pd+Kk	Mf	Pa	Pt+Ik	Sc+Ik	Ma+2K	Si	TorTc
Female															
120															
115															
110															
105															
100															
95															
90															
85															
80															
75															
70															
65															
60															
55															
50															
45															
40															
35															
30															
25															
20															
15															
10															
5															
0															

K	Frequency of K	
	5	4
30	15	12
29	15	12
28	14	11
27	14	11
26	13	10
25	13	10
24	12	10
23	12	9
22	11	9
21	11	8
20	10	8
19	10	8
18	9	7
17	9	7
16	8	6
15	8	6
14	7	6
13	7	5
12	6	5
11	6	4
10	5	4
9	5	4
8	4	3
7	4	3
6	3	2
5	3	2
4	2	1
3	2	1
2	1	1
1	1	1
0	0	0

Raw Score _____

K to be added _____

Raw Score with K _____



presents the results obtained by comparing these two groups for male college students, and this data is presented graphically in Figure 5.

An examination of Table 12 reveals that, with the exception of the L and Ma scales, scores on all other scales were significantly different beyond the .01 level, although this difference was not in the predicted direction for the K scale.

The MMPI data also relevant to Hypothesis III for female students are summarized in Tables 13 and 14, and the same results are depicted graphically in Figure 6. These results show significant differences at the .05 and .01 levels or beyond across all scales of the MMPI, with the exception of the K scale. This difference was not in the predicted direction for the Mf scale. Thus, male and female college students who received non-therapeutic services from a University Psychological Center obtained significantly lower scores across all scales of the MMPI, with some exceptions, than male and female students who received therapy.

On the basis of these results for both male and female samples, it was therefore concluded that Hypothesis III was confirmed with some exceptions.

Since Chylinski and Wright (1967) concluded that the use of existing U.S. norms would give misleading results for Canadian males, this study also investigated the appropriateness or inappropriateness of existing American college norms for a Canadian college population.

To evaluate the applicability of U.S. norms to Canadian students, the means obtained from Fowler and Coyle's previous research with U.S. college students (1969) were compared with those in the present study.

TABLE 13

MEAN K - CORRECTED MMPI SCORES FOR NON-THERAPY AND THERAPY FEMALES

MMPI Scales	Non Therapy Means	Therapy Means
L	5.30	3.69
F	12.28	11.43
K	15.56	15.78
Hs	16.36	25.54
D	25.22	30.87
Hy	24.80	28.24
Pd	24.24	31.52
Mf	37.82	32.32
Pa	12.82	16.58
Pt	33.12	34.90
Sc	35.94	49.45
Ma	23.09	25.78

TABLE 14

SCALE SCORE DIFFERENCES AND T-SCORES BETWEEN THERAPY AND NON-THERAPY FEMALES

(df = 110)

MMPI Scales	Mean Score Differences	t-scores
L	-1.61	5.62 **
F	-0.85	7.79 **
K	0.22	0.32
Hs	9.18	8.34 **
D	5.65	5.33 **
Hy	3.44	2.92 **
Pd	7.28	8.15 **
Mf	-5.50	-7.30 **
Pa	3.76	5.26 **
Pt	1.78	1.68 *
Sc	13.51	6.92 **
Ma	2.69	3.46 **

* p > .05
 ** p > .01

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

F
Female

Scorer's Initials _____

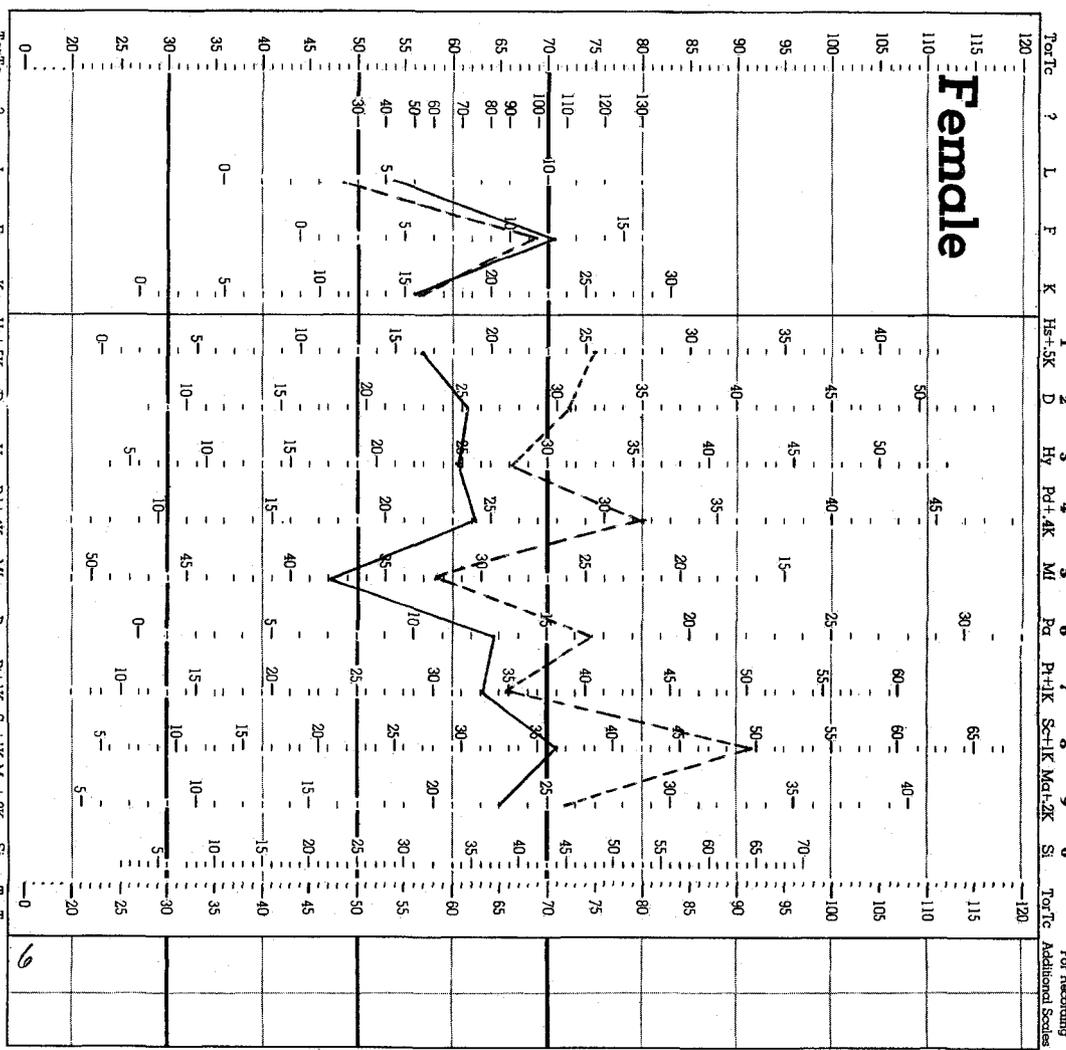
Name _____
Address _____
Occupation _____ Date Tested _____

Education _____ Age _____

Marital Status _____ Referred by _____

NOTES

_____ Non-therapy Females
----- Therapy Females



Fractions of K	
K	100
30	15
29	14
28	14
27	13
26	13
25	12
24	12
23	11
22	11
21	10
20	10
19	9
18	9
17	8
16	8
15	7
14	7
13	6
12	6
11	5
10	5
9	4
8	4
7	3
6	3
5	2
4	2
3	1
2	1
1	0
0	0

Figure 6. A comparison between mean K-corrected scale scores of therapy and non-therapy females (scale 0 omitted).

Raw Score _____

K to be added _____

Raw Score with K _____



This comparison is presented for males in Table 15 and for females in Table 16. It is depicted graphically for males in Figure 7 and for females in Figure 8.

An inspection of Table 15 reveals that means obtained by the Canadian male population are higher than those obtained by the U.S. sample in all scales, with the notable exception of the K scale.

A comparison of means obtained by Canadian and U.S. female college populations depicts a greater similarity than those between male college students from Canada and the United States. In the female sample, Canadian students scored higher on all scales with the exception of the K and L scales and the Hysteria and paranoia (Scales 3 and 6) scales.

TABLE 15

COMPARISON OF K-CORRECTED MEAN SCORES BETWEEN U.S. AND CANADIAN MALE
COLLEGE STUDENTS IN THE GENERAL POPULATION

MMPI Scales	Fowler & Coyle N = 1538	Beharry N = 85
L	3.38	3.32
F	4.13	6.38
K	15.17	12.96
Hs	12.28	12.49
D	17.55	19.55
Hy	19.64	20.15
Pd	22.80	22.42
Mf	23.65	28.02
Pa	9.56	10.14
Pt	26.61	28.29
Sc	26.32	28.80
Ma	20.60	22.13

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

50

Score's Initials _____

Name _____
 Address _____
 Occupation _____ Date Tested _____
 Age _____

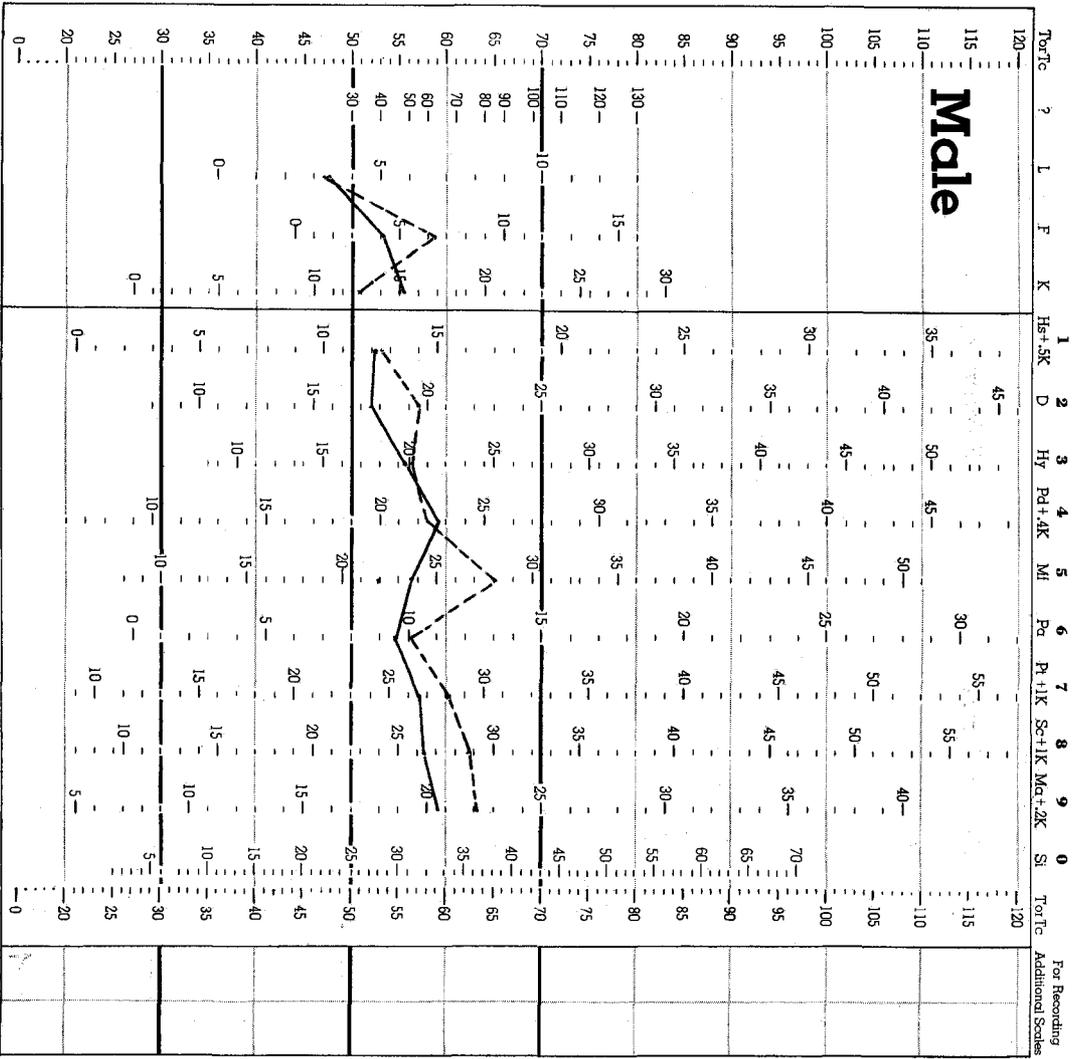
M
Male

Education _____ Referred by _____
 Age _____

Marital Status _____

NOTES

_____ U.S. General Males (Fowler & Coyle)
 ----- Canadian General Males (Beharry)



K	5	4	3
1	30	15	12
2	29	15	12
3	28	14	11
4	27	14	11
5	26	13	10
6	25	13	10
7	24	12	10
8	23	12	9
9	22	11	9
10	21	11	8
11	20	10	8
12	19	10	8
13	18	9	7
14	17	9	7
15	16	8	6
16	15	8	6
17	14	7	5
18	13	7	5
19	12	6	5
20	11	6	4
21	10	5	4
22	9	4	3
23	8	4	3
24	7	3	3
25	6	3	2
26	5	2	2
27	4	2	1
28	3	2	1
29	2	1	1
30	1	1	0
31	0	0	0

Figure 7. A comparison between mean K-corrected scale scores of U.S. and Canadian general groups for male college students (scale 0 omitted).

Raw Score _____

K to be added _____

Raw Score with K _____



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Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

F
Female

Scorer's Initials _____

Name _____

Address _____

Occupation _____ Date Tested _____

Education _____ Age _____

Marital Status _____ Referred by _____

NOTES

Tc	L	F	K	For Recording											
				Hs+Sk	D	Hy	Pd+Ak	Mf	Pt	Pt+Ik	Sc+Ik	Mq+K	Si	Tc	
1	2	3	4	5	6	7	8	9	0	0	0	0	0	0	0
120															
115															
110															
105															
100															
95															
90															
85															
80															
75															
70															
65															
60															
55															
50															
45															
40															
35															
30															
25															
20															
15															
10															
5															
0															

K	Frequency of K			
	5	4	3	2
30	15	12	6	
28	15	12	6	
26	14	11	6	
27	14	11	5	
26	13	10	5	
25	13	10	5	
24	12	10	5	
23	12	9	5	
22	11	9	4	
21	11	8	4	
20	10	8	4	
19	10	8	4	
18	9	7	4	
17	9	7	3	
16	8	6	3	
15	8	6	3	
14	7	6	3	
13	7	5	3	
12	6	5	2	
11	6	4	2	
10	5	4	2	
9	5	4	2	
8	4	3	2	
7	4	3	1	
6	3	2	1	
5	3	2	1	
4	2	2	1	
3	2	2	1	
2	1	1	0	
1	1	1	0	
0	0	0	0	

Raw Score _____

K to be added _____

Raw Score with K _____



TABLE 16

COMPARISON OF K - CORRECTED MEAN SCORES BETWEEN U.S. AND CANADIAN FEMALE
COLLEGE STUDENTS IN THE GENERAL POPULATION

MMPI Scales	Fowler & Coyle N = 1538	Beharry N = 85
L	3.69	3.69
F	3.51	5.29
K	15.31	15.78
Hs	12.94	13.24
D	19.05	21.77
Hy	21.48	21.21
Pd	21.65	20.85
Mf	37.17	38.50
Pa	9.82	9.57
Pt	28.04	29.20
Sc	25.72	27.54
Ma	19.62	20.53

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

Scorer's Initials _____

52

F
Female

Name _____

Address _____

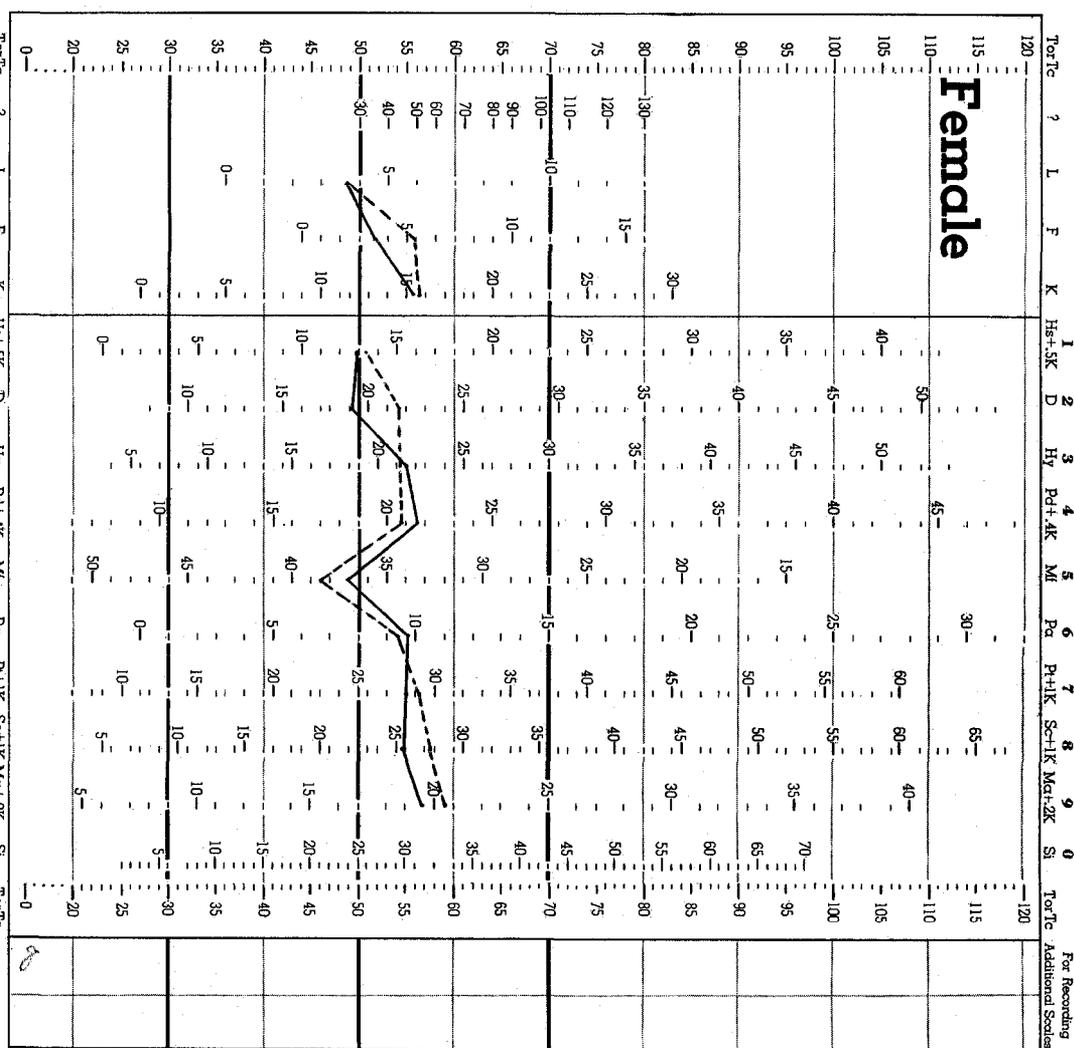
Occupation _____ Date Tested _____

Education _____ Age _____

Marital Status _____ Referred by _____

NOTES

- _____ U.S. General Females (Fowler & Coyle)
- _____ Canadian General Females (Beharry)



Frequency of K	1	2	3	4	5	6	7	8	9	10
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0

Figure 8. A comparison between mean K-corrected scale scores of U.S. and Canadian general groups for female college students (scale 0 omitted).

Raw Score _____
K to be added _____
Raw Score with K _____



Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hahnway and J. Chamley McKinley

Scorer's Initials _____

Name _____
 Address _____
 Occupation _____ Date Tested _____
 Age _____

M
 Male

Education _____ Referred by _____

Marital Status _____

NOTES

To/Tc	?	L	F	K	1	2	3	4	5	6	7	8	9	0	To/Tc	For Reporting Additional Scales
					Ha+5K	D	Hy	Pd+4K	Mf	Pc	R+1K	Sc+1K	Ma+2K	Si		
120															120	
115						45-									115	
110						35-	50-	45-			30-	55-	55-		110	
105							40-				50-				105	
100							45-			40-	25-				100	
95											45-	45-			95	
90													35-		90	
85											20-	40-	40-		85	
80											30-			55-	80	
75												30-	35-		75	
70														45-	70	
65														25-	65	
60														30-	60	
55														35-	55	
50														40-	50	
45														45-	45	
40														50-	40	
35														55-	35	
30														60-	30	
25														65-	25	
20														70-	20	
15														75-	15	
10														80-	10	
5														85-	5	
0														90-	0	

Functions of K	
K	2
30	15
29	15
28	14
27	14
26	13
25	13
24	12
23	12
22	11
21	11
20	10
19	10
18	9
17	9
16	8
15	8
14	7
13	7
12	6
11	6
10	5
9	5
8	4
7	4
6	3
5	3
4	2
3	2
2	1
1	1
0	0

Raw Score _____

K to be added _____

Raw Score with K _____



Chapter V

Discussion

The purpose of the present study was to investigate the utility of employing Form R (373 items) of the MMPI in comparing the performance of a general and several client populations of Canadian college students.

Results indicated that male and female students of a general college population when compared with male and female students comprising therapy and non-therapy subgroups of a client population yielded significant differences across MMPI clinical subscales, with the exceptions noted.

Additionally, the ordering of the mean scales from highest to lowest indicated the highest scores were obtained by the therapy group, followed by the non-therapy group, with the general sample obtaining the lowest scores.

Confirmation of Hypothesis I indicated that male and female students in the general college population acquired significantly lower scale scores on most clinical scales of the MMPI in comparison to students receiving therapy. This finding supports research evidence provided by previous studies (Heilbrun, 1963; Cooke, 1967) which affirmed the usefulness of the MMPI in discriminating between general and therapy groups of college students.

Within the client group itself, support of Hypothesis III indicated that male and female non-therapy groups obtained significantly lower scores than therapy groups across all clinical subscales of the MMPI, with some exceptions. This finding is in agreement with some previous

studies (Anderson, 1956; Kleinmuntz, 1961), but in disagreement with Lingo (1965) who views this inventory as one which is inadequate in discriminating within the client group itself. Lingo (1965) regards the MMPI as

an instrument which can differentiate quite well between those who do and do not have emotional and adjustment problems in a wide variety of settings and can thus serve as an excellent screening device. While there is no gain-saying the value of the MMPI in differentiating among individuals coming from normal and abnormal populations, there is much conflicting evidence as to the test's sensitivity in discriminating within the abnormal group itself (p. 144).

With reference to Hypothesis II, the predictions are partially supported in that significant differences were found across all scales of the MMPI, except the Mf scale, between female general and non-therapy groups, but a comparison of similar groups for males only yielded significant differences on the F, K and Pa scales.

Results attained by the female samples are in confirmation of previous research evidence (Parker, 1961; Fowler, Stevens, Coyle and Marlow, 1968) that the MMPI does discriminate between general and non-therapy groups of students. However, a comparable lack of substantial differences between similar groups of male students presents a new finding. A comparison of profile patterns (Figures 3 and 4) illustrate more clinically significant differences between female general and non-therapy groups than between male general and non-therapy groups.

These differences are probably explainable by the fact that

female college students are confronted with fewer vocational openings, and may suffer more emotional problems during such time. Male college students have been prepared for such vocational decisions from the time of High School and, as results demonstrate, may not be as emotionally upset (as measured by the MMPI) when confronted with such vocational decisions.

A comparison of means between Canadian and U.S. college students in the general sample indicates that Canadian students obtained higher mean scores than U.S. students, with the exception of the K scale for males, and the L and K scales, and scales 3 and 6 for females.

Such differences render support to previous studies (Laver, 1960; Chylinski and Wright, 1967) which have demonstrated that existing U.S. norms may give misleading results for Canadians. Results of this research tend to support this conclusion with respect to Canadian college students although it must be noted that the present sample is relatively small. These results obtained would appear to be statistically but not clinically significant.

These differences, however, do appear to support the gradual accumulation of evidence (Laver, 1960; Chylinski and Wright, 1967) that the MMPI may furnish incorrect results when existing U.S. norms are applied to Canadians. Future research should be addressed to the utilization of a larger number of college students, and to the development of MMPI norms for Canadians in both college and general populations.

Appendix A¹Services received by
Therapy Clients

Students in the therapy subgroup of the client sample received one of the following services offered by the Psychological Centre at the University of Windsor. These services have been described in the Psychological Centre Brochure as follows:

COUNSELING - Individual and group counseling sessions are offered to help in the solution of educational, vocational, social and personal problems faced by many college students. Some of the problems students have discussed are: dissatisfaction with University, educational and career plans, the need for a personal code of values, differences with family members, and social problems of dormitory life, dating, sex, and marriage.

PSYCHOTHERAPY - Individual and group psychotherapy are offered to students who experience serious adjustment problems in the university setting. Some common problems for which psychotherapy is appropriate are difficulties in adjusting to university life, withdrawal from social activities, fits of temper or uncontrollable behavior, depression, and excessive anxiety. Through a series of interviews the student is guided in the pursuit of a solution to his difficulties, with an objective of helping him regain a meaningful purpose in his life.

Appendix B

Services received by
Non-Therapy Clients

Students in the non-therapy sample were afforded one of the following services which have been noted in the Brochure of the Psychological Centre:

READING PROGRAM - Because the reading load at university is usually heavy, individuals may wish to improve their reading speed and comprehension. Standard tests are available to assess these abilities and a variety of programs are offered to anyone wishing to sharpen his reading skills at his own pace.

STUDY SKILLS PROGRAM - Students who are always behind in their assignments or have little success studying for tests may have poor study habits. They can learn how to study more effectively by participation in a study skills group which meets once a week. Others, who prefer a less formal approach, can borrow special materials written to help them plan and carry out their own improvement program.

PERSONAL RESOURCE ASSESSMENT - This service involves the administrations of interest, aptitude intelligence, personality, and other psychological tests which are helpful in deciding a person's academic and vocational future. The individual receives a complete summary of his academic and occupational potential and his personal resources and limitations. With this information he can make academic and vocational decisions which are more satisfying to him.

Appendix C

Instructions given to
Normal Sample

Several tests which were constructed in the United States are presently being used in Canada. One of these tests is the MMPI. The MMPI is a personality inventory which is frequently used in Canada, although the norms for this test is based on an American population. Some studies which have been done would seem to indicate that the use of the American norms may give misleading results for Canadians.

I would therefore like to take a sample of Canadian college students from the University of Windsor, administer the MMPI to them, and analyze the results of these students as a group. The results obtained would give some indication if the norms which we now have are appropriate for a Canadian college population.

I would like your co-operation in this project which I am carrying out as part of the requirements for my Master's Degree. Your co-operation in completing the test is voluntary, but I would appreciate your help in gathering this data. The way in which you answer the Inventory is kept anonymous since you do not write your name on the answer sheet, and only write the information which is requested.

1. A copy of the raw scores for all three groups may be obtained upon request from either the author or Dr. W. G. Bringmann, Department of Psychology, University of Windsor, Windsor 11, Ontario, Canada.

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