The MMPI-2 Profiles of Lakehead University Students

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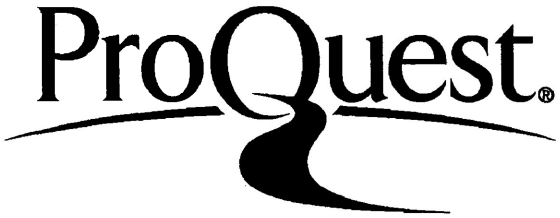

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Abstract

Until most recently university students were considered to score significantly higher on the MMPI clinical and validity scales, in terms of their mean profiles, than the original normative non-psychiatric sample. According to the only study by Butcher, Graham, Dahlstrom and Bowman (1990) on this subject, this does not seem to be the case on the MMPI-2. The present research was a study of the same type as the Butcher, Graham, et al. (1990) study but with a Canadian sample of university students, at Lakehead University in Thunder Bay. The results obtained from the present study showed significant elevations in terms of the mean profiles for both male and female students on several of the validity and clinical scales of the MMPI-2 in comparison to the normative sample. The obtained differences may reflect the younger age, as well as the socio-economic differences of the Lakehead University sample compared to the MMPI-2 normative group. Results also revealed that the L.U. student sample responded, as a group, in a manner similar to the Butcher, Graham, et al. (1990) university student sample. Similar mean scores were obtained with only very few significant differences. The group profiles were also compared between these two student samples and displayed a considerable degree of similarity. It is unclear whether the apparent

contradictions between the results of the present study and the Butcher, Graham, et al. (1990) study reflect real differences of statistical and clinical significance, or whether they are the result of too small samples, or the different statistical methods and criteria. However, if these results reflect real differences and not statistical errors, this would suggest that, contrary to the Butcher, Graham, et al. (1990) conclusion, the MMPI-2 norms might not be appropriate for use with college students.

Introduction

The Minnesota Multiphasic Personality Inventory (MMPI) is the most widely used objective personality assessment instrument (Anastasi, 1976; Colligan, Osborne, Swenson & Offord, 1983; Colligan, 1985; Graham & McCord, 1985; Miller & Streiner, 1986). This test is a paper-and-pencil self-report questionnaire currently composed of 567 different true-false statements that characterize a variety of thoughts, feelings, attitudes, and prior life experiences, as well as emotional and physical symptoms. People taking the test answer each statement either true as applied to them, false as applied to them, or not applying to them. After administration of the test, a person's answers are scored objectively either by hand or with automated scoring equipment. The scoring procedures provide scores for three validity scales and 10 basic clinical scales. The profile form for the basic scales provides a direct means of converting the raw scores on the standard validity and clinical scales into the appropriate T-scores (Green, 1991). The obtained profile acts as the basis for drawing conclusions about the person who was tested (Graham, 1987).

The test was developed in the late 1930s by a psychologist, Starke Hathaway, and a neurologist and psychiatrist, John McKinley, at the University of Minnesota

Hospitals with a sample of patients and non-patients. These non-patients were representative of the adult population of the State of Minnesota at that time (Butcher, Dahlstrom, Graham, Tellegen & Kaemmer, 1989).

Because of the profound changes in American society in the last 50 years, the test needed to be revised (Colligan et al., 1983; Ben-Porath & Butcher, 1989a; Butcher et al., 1989; Butcher, Graham, et al., 1990). Therefore, an updated and restandardized version of the MMPI was developed in 1989, entitled the MMPI-2 (Butcher et al., 1989). Most of the traditional characteristics of the original MMPI continued unaltered and the most important change in the test involved the implementation of new norms that are, presumably, more representative of the American population of our time (Butcher et al., 1989). The raw scores from the standard validity and clinical scales are transformed to T-scores using the appropriate profile forms or conversion tables provided in the Manual for Administration and Scoring of the MMPI-2 (Butcher et al., 1989).

Regarding the usefulness of K-corrected versus non-K-corrected scores, it is important to remember that the K scale was developed to assist in identifying the attempts of subjects answering the MMPI to deny psychopathology and to present themselves in a favourable light or, conversely, to exaggerate psychopathology and try to appear in a very unfavourable light (Meehl & Hathaway, 1946). It was adopted in

the 1940s for two reasons. First, evidence suggested that K-corrected scales discriminated better than did corresponding non-K-corrected scales between normal and pathological groups (McKinley, Hathaway & Meehl, 1948). Second, uncertainty arising from the use of these two types of scales made it desirable that one of the two systems be used routinely (Dahlstrom et al., 1972).

Since the publication of the papers that provided the major justification for the use of the K-corrected scales (McKinley et al., 1948; Meehl & Hathaway, 1946), there has been a small number of studies concerned with the relative validity of K-corrected versus non-K-corrected scales (Dahlstrom et al., 1972; Greene, 1991; Wooten, 1984). The K-correction procedure was not examined in the restandardization of the MMPI (Butcher et al., 1989). It might be noted that in the majority of the studies about K-corrections, questions were addressed that the original developers of the MMPI would probably not consider relevant to the relative validities of the two types of scales (Dahlstrom et al., 1972; Hsu, 1986). Specifically, Meehl and Hathaway (1946) noted that "since the K scale was derived as a correction scale or suppressor variable . . . for improving the discrimination yielded on the already existing personality scales, it was not assumed to be measuring anything which in itself is of psychiatric significance. . . . The real function of K is intended to be the correction of other scores" (Dahlstrom & Dahlstrom, 1980,

p.103). Thus, the K scale was not meant to be a diagnostic scale per se. Yet most researchers have assessed the usefulness of K scores in terms of this criterion.

Butcher and Tellegen (1978) suggested that, in research computations, more understandable results would be obtained if one did not use the K correction, but used K as a separate indicator, instead. This means that K's validity as a "suppressor" is not assumed by these authors.

In spite of so many different recommendations about using K-corrected or non-K-corrected scores (or maybe because of it), the present study considered it to be more useful to contemplate both types of scores.

The MMPI was originally developed for use with a psychiatric population; however, researchers have found it to be of important value in assessing personality functioning in educational, occupational, and counselling applications (Butcher, 1972, 1979; Butcher et al., 1989; Colligan et al., 1983; Dahlstrom, Welsh & Dahlstrom, 1975; Davis & Widseth, 1978; Lachar, 1974; Kokosh, 1978; Strupp & Bloxom, 1975).

Approximately 37% of the studies with the MMPI focus on its use for research in non-psychiatric populations, including university students (Butcher & Owen, 1978; Dahlstrom et al., 1975). The MMPI has been used in university settings for research (Ben-Porath & Butcher, 1989b; Butcher, Graham, et al., 1990; Graham & McCord, 1985; McAnulty, Rappaport & McAnulty, 1985), at counselling centres (Parker, 1961; Schwarz

& Green, 1983), to predict academic achievement (Drake & Oetting, 1959; Kokosh, 1978) and to predict psychological problems among students (Davis & Widseth, 1978; Lachar, 1974; Strupp & Bloxom, 1975). University students tend to have higher scale scores on the MMPI than the normative non-psychiatric population (Applezweig, 1953; Brown, 1948; Drasgow & McKenzie, 1958; Goodstein, 1954; Kunce & Anderson, 1976; Loper, Robertson & Swanson, 1968; Norman & Redlo, 1952). Butcher, Graham, et al. (1990) maintained that such consistent results -- showing that college students' mean profiles fall in the range of about 1 to 1 1/2 standard deviations above the normative non-psychiatric sample mean -- required attention. The 'mean profile', in this case, is that which results from the average scores obtained by a particular group across each sub-scale, thus forming the average configuration of this group. With such consistent differences above the normative non-psychiatric mean, it is reasonable to question the relevance of the general population norms for college subjects.

Normative Samples of the MMPI and the MMPI-2

The normative groups of patients composing the psychiatric samples of the original MMPI were selected from inpatients at the University of Minnesota Hospitals. The responses from these groups were compared with responses from a normative group of normal subjects. This sample of normal subjects was composed of three subgroups described as corresponding to the census data for Minnesota in 1930. The first of these subgroups was characterized by Hathaway and McKinley (cited in Colligan, 1985) as

> a normal group from the University Hospital and outpatient department (724 cases). These are individuals who themselves are not ill but are bringing relatives or friends to the clinic. They constitute the bulk of our so-called normal cases. The assumption is made, of course, that these people are in good health, which may not always be the case. To help establish them as real normals we ask them whether or not they are receiving treatment for any illness. Only those who say they are not under a physician's care are accepted in this group. (p.532)

The second sample was described as " a normal group from the University Testing Bureau (265 cases). These are mainly pre-college high school graduates who came to the Testing

Bureau for pre-college guidance but there are a number of representatives from various college classes as well" (p.532).

The third sample was "a group of normals whom we were able to contact through the courtesy of the local WPA Administration (265 cases). These are all skilled workers from local projects" (p.533).

These three normal control subgroups included 1,254 married and single men and women ranging in age from 16 to 65 years. In the first normal subgroup there were 107 men and 98 women ages 16-25, 233 men and 149 women ages 26-43, 69 men and 43 women ages 44-54, and 16 men and 9 women ages 55-65. Of this group, 66% of the women and 74% of the men were married. The subjects from the second normal subgroup (113 women; 152 men) obtained from the Testing Bureau were ages 16-25; all were unmarried. No information regarding age or marital status was reported for the local WPA Administration group (Colligan, 1985). According to Dahlstrom and Welsh (1960), the subjects in the WPA sample were all white-collar workers who were used as controls for urban background and socioeconomic level.

The general nature of this standardization sample can be summarized as a Minnesota normal adult population about 35 years old, mostly married, living in a small town or rural area, with an eighth-grade level of education, and working at a skilled or semiskilled trade (or married to a man with such an occupational level) during the 1930s (Colligan, 1985; Colligan & Offord, 1985; Dahlstrom, Welsh & Dahlstrom, 1972;

Pancoast & Archer, 1989).

More than 50 years have passed since those norms were established and American society has experienced many changes in this period: an improved standard of living; a higher educational level; the impact of the feminist movement; the questioning, discussion, and liberalization of moral, religious, and ethical views; the changes in family structures; and the shift from a rural, agrarian economic base to present-day technology (Dahlstrom & Dahlstrom, 1980). As society changed over those years, concerns were also being expressed about sexist wording, old-fashioned idiomatic expressions, and references to unfamiliar literary material and recreational activities in some of the test items (Butcher et al., 1989). The increased use of the test as well as social changes made necessary the editing of some of the MMPI items (Butcher et al., 1989). The need for a restandardization with contemporary norms also became apparent because of evidence that people were responding to some of the original MMPI items in different ways (Anastasi, 1976; Butcher et al., 1989; Colligan et al., 1983).

As a result, in 1989 a revision committee composed of James N. Butcher, W. Grant Dahlstrom, John R. Graham, Auke Tellegen and Beverly Kaemmer of the University of Minnesota updated and restandardized the MMPI; hence, the MMPI-2. The new normative data were based on an American census-matched sample of 1,138 men and 1,462 women, a total of 2,600

individuals (Ben-Porath and Butcher, 1989a; Butcher et al., 1989). Subjects between the ages of 18 and 90 were contacted through a variety of methods, mostly by direct mail from directories and advertising lists (Butcher et al., 1989). The sample was drawn from communities in seven states of the United States: California, Minnesota, North Carolina, Ohio, Pennsylvania, Virginia, and Washington, as well as from a federal Indian reservation and several military bases.

A large complement of the standardization sample of the new MMPI-2 can be summarized as an American normal adult population, of about 35 years old, mostly married, white, with a college education, working in a professional occupation and from an upper socioeconomic level. According to Butcher et al. (1989), this seems to represent the typical subjects currently being asked to take the MMPI in various settings around the United States.

The new MMPI-2 norms are comparable to the original MMPI norms, although a given raw score for a scale will result in a slightly lower T-score according to the contemporary norms (Butcher et al., 1989; Butcher, Graham, et al., 1990; Munley & Zarantonello, 1989). The relative consistency of the MMPI's scores between the original MMPI and the MMPI-2 permits the use of previous empirical research in interpreting scores based on the new norms (Butcher, Graham, et al., 1990; Munley & Zarantonello, 1990).

The MMPI and MMPI-2 on University Students

In research applications, the MMPI characteristics of a special group under study are often compared with the MMPI responses of the general population (Pancoast & Archer, 1989). These comparisons reveal that configurations differing from the standard MMPI norms can be found.

MMPI profiles of university students have been similar across college settings since the earliest studies. They are alike in terms of configuration and levels of clinical scale elevation, with mean raw score values above the mean raw scores of the normative groups on **F**, **K**, **D**, **Hy**, **Pd**, **Mf**, **Pa**, **Pt**, **Sc**, and **Ma** for males; **K**, **D**, **Hy**, **Pd**, **Pa**, **Pt**, **Sc**, and **Si** for females; and mean raw score values below the mean raw scores of the normative group on scale **Mf** for females (Applezweig, 1953; Brown, 1948; Butcher, Ball & Ray, 1964; Colligan et al., 1983; Drasgow & McKenzie, 1958; Goodstein, 1954; Kunce & Anderson, 1976; Loper et al., 1968; Norman & Redlo, 1952; Pancoast & Archer, 1988). The proposed reasons for the elevations of university students' MMPI profiles were the younger age of these samples (Applezweig, 1953; Ben-Porath & Butcher, 1989b; Butcher, Graham, et al., 1990; Butcher, Jeffrey, et al., 1990), cultural and environmental factors (Brown,1948; Goodstein, 1954), level of intelligence and education (Applezweig, 1953; Drasgow & McKenzie, 1958) and

differences regarding test instructions and item endorsement (Butcher, Graham, et al., 1990).

The meaning of these elevated scores with university students and adolescents is not clear in the literature. These elevated scores could be indicative of the turmoil and instability that some believe even normal adolescents experience. They could be suggestive of more frequent psychopathology in adolescents, although this may be unlikely, given the results of studies that have found only a slightly higher prevalence rate of psychiatric disorders in adolescents compared with pre-adolescents (Graham, 1987; Rutter, Graham, Chadwick & Yule, 1976). They could result from experiences that are unique to younger subjects but which are neither particularly disturbing nor pathological, but part of normal adolescent development (Graham, 1987).

Most of the studies investigating the use of the MMPI with university students have, as subjects, individuals in their first year of academic studies. This implies that a large part of these samples is composed of individuals 18 or 19 years old, which also means that these individuals are in an intermediate group between adolescence and adulthood. The original MMPI indicated 16 as the youngest age for which the test was appropriate. However, it seems that the test authors were primarily considering the reading abilities of the individuals answering the questionnaire (at least six years of schooling) rather than age (Graham, 1987).

The authors of the revised version of the MMPI take into account mainly the reading level and age as conditions for the applicability of the inventory, and point to the possible influence of culture. The MMPI-2, as currently published, is not intended for use with anyone under 18 years of age, and requires at least an eight-grade reading level for a person to respond to the questionnaire appropriately. The MMPI-2 normative group averaged nearly 15 years of education (Greene, 1991).

The demographic variables of education, intelligence, and social class -- which were also reported to have influenced elevations among university students' profiles -- are usually reported in the MMPI literature as if they are interchangeable despite their different referents. There is not a simple, direct relationship between any of these variables and scores on a given scale (Greene, 1991). It is likely that these factors are intercorrelated to such a degree that it becomes quite impossible to distinguish the separate influence of each single factor. Nevertheless, these demographic variables affect, to a certain degree, all MMPI scales.

Differences regarding test instructions and item endorsement could also have influenced the elevations among university students' MMPI profiles. The subjects answering the questionnaire for the standardization sample of Hathaway and McKinley (1940) were allowed to omit items on the MMPI (on average 14 items for men and 15 items for women were omitted).

It is known that subsequent users of the MMPI encouraged groups, such as university students, to answer all items (Butcher et al., 1989; Pancoast & Archer,1989). The effect of these omitted items would have been to elevate slightly the mean scores of anyone taking the test after its original standardization. Another possible reason for higher elevations on mean profiles is that normal subjects of more recent years, including university students, were answering to MMPI items differently than normal subjects of the 1930s and 1940s (Butcher, Graham, et al., 1990).

In 1990, Butcher, Graham, et al. reported a study in which they compared university students with the new MMPI-2 normative non-psychiatric sample. The university students (515 males and 797 females) were representative of four universities in the United States: Kent State University (113 men and 489 women); University of Minnesota (139 men and 163 women); University of North Carolina (99 men and 128 women); and the U.S. Naval Academy (164 men and 8 women). Excluding the subjects from the Naval Academy, most of the students were from introductory psychology classes.

The investigators in this recent study statistically compared the non-K-corrected raw score means of combined college samples of male and female students with the normative non-psychiatric group of the MMPI-2. They also visually examined T-score frequency distributions of K-corrected MMPI-2 profiles for both the college samples and normative group.

In contrast to other previously mentioned studies, these authors concluded that college students responded "to the MMPI-2 in a highly similar manner to the MMPI-2 normative sample" (Butcher, Graham et al., 1990, p.1). The results of this study indicated that college students scored within half of a standard deviation on the MMPI-2 norms on all of the scales. According to the same authors, the "slight differences obtained on the **Pt**, **Sc**, and **Ma** scales [for male and female students] may reflect the younger age of the college groups compared to the MMPI-2 normative groups" (p.1). The statistical significance of the obtained differences was not discussed in this article.

The goal of the present study was to compare the MMPI-2 scores of a sample of students from Lakehead University, Thunder Bay, Ontario, with the normative non-psychiatric sample, as well as with the Butcher, Graham, et al. (1990) student sample. The present study was, therefore, a replication of the Butcher, Graham, et al. (1990) research using a Canadian sample of university students.

Based on the results obtained by Butcher et al. (1989) and Butcher, Graham, et al. (1990), the following null-hypotheses were formulated:

1) The mean MMPI-2 raw score profile of the sample of Canadian university students does not differ significantly from that of the general normative sample of the MMPI-2 (Butcher et al., 1989).

2) The mean MMPI-2 raw score profile of the sample of Canadian university students does not differ significantly from that of the student sample obtained by Butcher, Graham, et al. (1990).

The results will contribute to the empirical basis of the MMPI-2 in research and clinical application with college students.

Methods

Subjects

The subjects recruited for this study were 116 undergraduate students from Lakehead University, Thunder Bay, composed of 74 students in an Introductory Psychology class (who received one extra credit for their participation), 32 students in forestry and 20 students in engineering. This sample, drawn from different faculties, was intended to be more representative of university students than students only from introductory psychology classes -- a sample frequently used with studies based on university students. This effort was not successful. Twenty-one subjects failed to return the test material and twenty-five returned the material without responding to any of the test items. Of the 70 remaining subjects, one produced a raw score of 32 on the **F** (Infrequency) scale and was not included in this study (as recommended by Beck et al., 1989; Ben-Porath & Butcher, 1989b). The final sample consisted of a total of 55 women and 14 men. Subjects' ages ranged from 18 to 40 years, with a mean of 22.18 years, standard deviation of 4.53 and mode of 19 years (see Table 1). The distribution of major areas of studies among the subjects is shown in Table 2.

TABLE 1

Age Distribution of the Sample of Lakehead University Students

	Females	Males	Total
N	55	14	69
age mean	21.23	23.14	22.18
age mode	19	20	19
age median	20	20	20
age SD	4.35	5.16	4.53

TABLE 2

Distribution of Major Areas of Studies among the Sample of Lakehead University Students

	Females	Males	Total
N	55	14	69
Business*	1	1	2
Engineering		1	1
English*	2	1	3
Forestry	3	4	7
History*	3		3
Nursing*	3		3
Physical Education*	2		2
Psychology*	14	2	16
Social Work*	6	3	9
Sociology*	1		1
Teaching Program*	1		1
Undecided*	19	2	21

* Students from the Introductory Psychology class.

The subjects were volunteers, and their anonymity was safeguarded through the use of coded answer sheets, an approach commonly used in psychological research with university students (Butcher, Graham, et al., 1990). The only personal information obtained from the subjects was age, gender and major area of studies.

Procedures

The subjects were contacted in their classrooms, where the test procedures were explained, and the material of the research distributed to interested individuals (see Appendix C, p.54). The participants were allowed to complete the test at home. The subjects of the MMPI-2 normative sample were contacted mostly by direct mail. Although it is not advised in a clinical situation to allow subjects to complete the MMPI in another environment than a controlled one (quiet surroundings free from intrusions and distractions), it is also recognized that it is often not possible to provide an ideal testing environment (Butcher et al., 1989).

The lack of additional explanations and supervision of the subjects while answering the test did not seem to affect the completion of the test in the present study, since only one person left one item unanswered. According to Greene (1991), more than 90% of the persons taking the MMPI-2 will

not need any explanation of the instructions, and will complete the test in 60 to 90 minutes.

Statistical Methods

Butcher, Graham, et al. (1990) chose the t-test for the statistical comparison of the mean MMPI-2 scores of a student sample with those of the normative group.

Essentially the same hypothesis testing process is followed for the t-test and the z-test. The main difference is that with the t-test the standard deviation is not known and must be estimated from the sample. Since estimating introduces additional variability, one compensates by using larger critical values for the t-test than for the z-test.

The z-test can be used when comparing one sample with a population, and when the population standard deviation is known. Normality for the population does not have to be assumed unless the sample size is small ($N < 25$). If N is greater than or equal to 25, the sampling distribution will be normal even if the population distribution is not, so the z-test can be employed without assuming population normality. However, one only has to be concerned about N being smaller than 25 when it is known or believed that the population distribution is skewed (Runyon & Haber, 1988).

For the comparison of the average raw scores of the Lakehead University sample with those of the MMPI-2 normative

group, a two-tailed z-test was performed for each raw score mean of the 3 validity and 10 clinical scales, with and without K-correction, using the conversion tables provided in the Manual for Administration and Scoring of the MMPI-2 (Butcher et al., 1989). As different norms apply for each gender, male and female subjects were compared separately. The same statistical procedure was used for comparing non-K-corrected profiles of the American and Canadian samples of university students. However, as Butcher, Graham, et al. (1990) did not supply the raw score means and standard deviations of the K-corrected scores of female or male subjects, a statistical comparison of these scores was not possible.

In order to avoid Type I error, due to multiple significance tests with (likely) correlated dependent variables, Bonferroni's correction (Bartko, Carpenter & McGlashan, 1988) was conducted, namely, dividing alpha (.05) by the total number of comparisons (13) conducted.

Results

The individual raw scores for each subject of the present study are presented in Appendix B (p. 47). Several raw score means of the Lakehead University student group were found to be significantly different from those of the standardization sample of the MMPI-2: for females, scales **Mf** and **Ma** with **K**-correction; and **Mf**, **Sc** and **Ma** without **K**-correction; and for males, scales **Sc** and **Ma** with **K**-correction; and **Hs**, **Pt**, **Sc** and **Ma** without **K**-correction (see Tables 3, 4, 5 and 6).

Interested readers may wish to visually examine these differences, as they apply to clinical profiles, in the figures presented in Appendix A (p.42).

TABLE 3

K-Corrected Raw Score Means and Standard Deviations of the Lakehead University Sample Versus the MMPI-2 Normative Non-Psychiatric Sample of Females

	Normative[1] (n=1462)		Lakehead U. (n=55)		
Scale	M	SD	M	SD	z
L	3.56	2.08	3.01	1.63	-1.936
F	3.66	2.91	4.70	3.32	2.690
K	15.03	4.58	13.34	4.56	-2.731
Hs	13.69	4.05	13.32	3.50	-.665
D	20.14	4.97	19.65	4.40	-.725
Hy	22.08	4.72	21.94	4.43	-.212
Pd	22.21	4.53	22.60	3.91	.638
Mf	35.94	4.08	33.67	4.96	-4.124*
Pa	10.23	2.97	10.89	3.24	1.650
Pt	27.70	5.10	28.54	4.83	1.230
Sc	26.25	5.97	28.16	5.87	2.376
Ma	19.09	4.26	21.65	3.76	4.467*
Si	27.98	9.18	25.82	9.31	-1.748

[1] Butcher et al.(1989)
* $p<.0038$

TABLE 4

Non-K-Corrected Raw Score Means and Standard Deviations of the Lakehead University Sample Versus the MMPI-2 Normative Non-Psychiatric Sample of Females

	Normative[1] (n=1462)		Lakehead U. (n=55)		
Scale	M	SD	M	SD	z
L	3.56	2.08	3.01	1.63	-1.936
F	3.66	2.91	4.71	3.32	2.690
K	15.03	4.58	13.34	4.56	-2.731
Hs	5.93	4.51	6.40	3.52	.773
D	20.14	4.97	19.65	4.41	-.725
Hy	22.08	4.72	21.94	4.43	-.212
Pd	16.21	4.65	17.27	4.47	1.694
Mf	35.94	4.08	33.67	4.96	-4.124*
Pa	10.23	2.97	10.89	3.24	1.650
Pt	12.69	7.19	15.20	7.82	2.590
Sc	11.24	7.57	14.82	8.41	3.508*
Ma	16.07	4.50	18.82	3.99	4.535*
Si	27.98	9.18	25.82	9.31	-1.748

[1] Butcher et al.(1989)
* $p<.0038$

TABLE 5

K-Corrected Raw Score Means and Standard Deviations of the Lakehead University Sample Versus the MMPI-2 Normative Non-Psychiatric Sample of Males

	Normative[1] (n=1138)		Lakehead U. (n=14)		
Scale	M	SD	M	SD	z
L	3.53	2.28	2.43	1.63	-1.807
F	4.53	3.24	6.78	3.91	2.604
K	15.30	4.76	12.14	4.75	-2.481
Hs	12.78	3.86	14.50	5.21	1.667
D	18.32	4.59	17.86	4.80	-.377
Hy	20.87	4.73	22.35	4.43	1.175
Pd	22.65	4.67	25.00	4.63	1.882
Mf	26.01	5.08	25.28	3.47	-.543
Pa	10.10	2.87	12.21	4.58	2.756
Pt	26.43	5.00	29.64	3.81	2.402
Sc	26.40	5.92	31.50	6.78	3.222*
Ma	19.93	4.29	24.57	3.98	4.046*
Si	25.86	8.57	24.07	9.33	-.781

[1] Butcher et al. (1989)
* $p<.0038$

TABLE 6

Non-K-Corrected Raw Score Means and Standard Deviations of the Lakehead University Sample Versus the MMPI-2 Normative Non-Psychiatric Sample of Males

	Normative[1] (n=1138)		Lakehead U. (n=14)		
Scale	M	SD	M	SD	z
L	3.53	2.28	2.43	1.63	-1.807
F	4.53	3.24	6.78	3.91	2.604
K	15.30	4.76	12.14	4.75	-2.418
Hs	4.92	3.87	8.36	6.61	3.321*
D	18.32	4.59	17.86	4.81	-.377
Hy	20.87	4.73	22.36	4.43	1.175
Pd	16.57	4.60	20.07	5.60	2.846
Mf	26.01	5.08	25.28	3.47	-.534
Pa	10.10	2.87	12.21	4.58	2.756
Pt	11.24	6.61	17.57	6.97	3.583*
Sc	11.20	7.12	19.36	9.29	4.284*
Ma	16.88	4.51	21.86	4.58	4.127*
Si	25.86	8.57	24.07	9.33	-.781

[1] Butcher et al. (1989)
* $p<.0038$

The comparison of the Lakehead University students' MMPI-2 mean raw scores (without **K**-correction) with the Butcher, Graham, et al. (1990) university students sample scores, revealed that both student groups produced very similar results on the test (see Tables 7 and 8). The only significant difference in mean raw scores was found on scale **Hs** for the Lakehead University male students, who scored significantly higher on this scale than the Butcher, Graham, et al. (1990) students.

Interested readers may wish to visually examine these differences, as they apply to clinical profiles, in the figures presented in Appendix A (p.42).

TABLE 7

Non-K-Corrected Raw Score Means and Standard Deviations of the Lakehead University Sample Versus the Butcher, Graham et al. (1990) Student Sample of Females

	Butcher, Graham et al. (n=797)		Lakehead U. (n=55)		
Scale	M	SD	M	SD	z[a]
L	2.8	1.9	3.02	1.63	.851
F	4.9	3.6	4.71	3.32	-.393
K	13.8	4.6	13.34	4.56	.733
Hs	6.9	4.5	6.40	3.52	-.825
D	19.6	5.0	19.65	4.41	.080
Hy	22.2	4.8	21.94	4.43	-.394
Pd	17.8	5.0	17.27	4.47	-.783
Mf	34.9	4.2	33.67	4.96	-2.169
Pa	11.1	3.3	10.89	3.24	-.472
Pt	16.5	7.7	15.20	7.82	-1.252
Sc	15.5	8.7	14.82	8.41	-.581
Ma	18.8	4.5	18.82	3.99	.029
Si	26.7	8.7	25.82	9.31	-.751

[a] All zs are not statistically significant.

TABLE 8

Non-K-Corrected Raw Score Means and Standard Deviations of the Lakehead University Sample Versus the Butcher, Graham et al. (1990) Student Sample of Males

	Butcher, Graham et al. (n=515)		Lakehead U. (n=14)		
Scale	M	SD	M	SD	z
L	3.3	2.2	2.43	1.63	-1.485
F	5.3	3.9	6.78	3.91	1.425
K	14.4	4.7	12.14	4.75	-1.797
Hs	5.1	4.0	8.36	6.61	3.049*
D	17.0	4.7	17.86	4.81	.682
Hy	20.4	4.6	22.36	4.43	1.592
Pd	17.8	4.8	20.07	5.60	1.847
Mf	25.4	5.0	25.28	3.47	-.086
Pa	10.9	3.3	12.21	4.58	1.491
Pt	14.1	7.7	17.57	6.97	1.687
Sc	15.0	9.1	19.36	9.29	1.792
Ma	20.4	4.5	21.86	4.58	1.212
Si	23.7	8.6	24.07	9.33	1.616

* $p<.0038$

Discussion

This study explored the responses of a group of Canadian university students to the items of the MMPI-2. The study's aim was to contribute to the empirical base in research and clinical applications of the MMPI-2 with university students. The data were statistically analyzed in order to obtain information about how a group of Canadian university students compared, on the MMPI-2 clinical and validity scales, with the new MMPI-2 normative sample, as well as with the Butcher, Graham et al. (1990) American university student sample.

The results indicated that, for the Lakehead University sample, some means showed statistically significant differences from those of the non-psychiatric normative group of the MMPI-2. The significant differences of Lakehead University students' K-corrected raw scores for males occurred on the Sc and Ma clinical scales and for females on the Mf and Ma clinical scales. The significant differences of Lakehead University student's non-K-corrected raw scores for males occurred on the Hs, Pt, Sc, and Ma clinical scales and for females on the Mf, Sc, and Ma clinical scales.

The Lakehead University female students' sample exhibited, on the non-K-corrected scores, an elevation above the normative group's raw score mean on Sc scale, as most of the earlier studies of the MMPI of female university students reported. The female student sample of Lakehead University,

however, did not display elevations like previous findings on scales Hy, D, Pa, Pt, and Si. An additional difference between the female student sample and the normative non-psychiatric population of the MMPI, which appeared in the present study but was not reported before, occurred on scales Mf and Ma (for both K-corrected and non-K-corrected scores).

These differences stipulate that female students are now endorsing the MMPI items in a different manner than the female students from as early as 30 years ago. One of the possible reasons could be the drastic social, educational, cultural, professional, and economic changes females underwent in the American society during this period of time.

The Lakehead University male students' sample displayed, on the non-K-corrected scores, elevations above the normative group's raw score means on scales Pt , Sc and Ma, as had been previously reported; however, no elevations above the normative group's mean raw scores were found on scales D, Hy, Pd, Mf, and Pa, as had been the case in most of the earlier studies with male university students. An additional difference between the male student sample and the normative non-psychiatric population of the MMPI, which appeared in the present study but was not reported before, occurred on scale Hs (for non-K-corrected scores). For K-corrected scores the only differences found were on scales Sc and Ma. The only elevation above the normative group's raw score mean, which apparently was not reported in any of the previous findings of

male university students, occurred on scale Hs (non-K-corrected).

These differences indicate that, nowadays, also the male students respond to the items of the MMPI in a different manner than decades ago. Possibly, the radical changes in American society affected males as intensely as they affected females.

The results of the present study demonstrated that the university students, as a group, tend to score different, on a number of scales, than the normative non-psychiatric sample of the MMPI-2, as had been reported in several earlier studies on the original MMPI.

Apart from some of the commonly suggested reasons for elevations of MMPI profiles among university students, the demographic characteristics of the MMPI-2 normative group have to be taken carefully into account. The characteristics of such demographic variables might even explain to some degree the elevations among university students nowadays. In the standardization sample of the new MMPI-2, there is an excess of adult men and women with post-college education and an under-representation of those who completed high-school only or have part under-graduation education (Butcher et al., 1989). Occupational and income data reflect the same skew toward upper socio-economic levels in the normative group (Greene, 1991). Also, the predominant marital status of the normative group is married. Although this type of information

was not systematically collected in the present study, it can quite reasonably be expected that the socio-economic and educational status of the normative group is significantly different from that of the students. It is particularly important in this context to remember that the MMPI is highly sensitive to education and socio-economic status.

The demographic characteristic age is another factor to be taken into account when analyzing factors which might explain the elevations on the MMPI-2 profiles of the Lakehead University sample. The present sample was composed of 49.1% females and 57.2% males within the age range of 20-29 years old, and 43.6% females and 21.4% males, 19 years old. The standardization sample of the MMPI-2 was composed of 25.5% females and 23.6% males within the age range of 20-29 years old, and 2.1% females and 1.8% males within the age range of 18-19 years old.

In a study of active duty military personnel with the MMPI-2, reported by Butcher, Jeffrey et al. (1990), male subjects who were at or below age 19 produced more clinical scale elevations on the MMPI-2 than older subjects, especially in the Pd, Pt, Sc and Ma scales. Older subjects seemed to produce lower MMPI-2 clinical scale scores that were quite comparable to scores produced by the adult sample of the MMPI-2 normative group. The scale elevations reported in this military personnel sample for subjects of 19 years old and below appear to be closer to those of adolescent subjects for

the MMPI (Hathaway & Monachesi, 1963) and the MMPI-2 (Williams, Graham & Butcher, 1986). These differences, according to the authors, have more to do with the subjects' young ages than with their military careers. This same study suggested that clinicians testing military subjects of 19 years and below might use a version of the MMPI-2 that is designed for younger subjects, the MMPI-A (Butcher & Pope, 1992).

The reasons why younger age might affect the MMPI scores is not clear in the literature. The experiences that are unique to younger subjects but which are neither disturbing nor pathological, the lack of other experiences, or the turmoil and instability that some believe even normal adolescents experience could be responsible for these differences.

Results from previous research indicate quite consistently that younger subjects tend to produce higher scale elevations. Despite the fact that 75% of the normative group were older than 30 years, the MMPI-2 is recommended for individuals over 18. It might, therefore, be that the adolescent version of the test would be more appropriate for the use with subjects 19 years old and below. In any case, age appears to be an important factor influencing the results obtained on the MMPI-2, and should be taken carefully into consideration.

In the comparison of the MMPI-2 mean scores of the

Lakehead University students sample and the Butcher, Graham et al. (1990) sample of American students, only one significant difference was found on the **Hs** scale (non-K-corrected) for male students. This suggests a relatively consistent response pattern for students in both countries.

Butcher, Graham et al. (1990) considered the score distributions for the college and normative groups "highly similar" (p.1) and their differences "probably not meaningful" (p.14), except that they may reflect the younger age of the college sample.

However, as the comparison between students and the normative group indicated, students tend to score significantly different on some of the MMPI-2 clinical scales. In this context, it is important to note that differences of, for example, half of a standard deviation between two individuals may not be clinically interpretable, but if the mean of a group is half of a standard deviation higher than the mean of another group, this implies that a certain portion of this group will score within the pathological inclusion range (i.e. above 65 T-score points).

Therefore, contrary to the Butcher, Graham et al.'s (1990) conclusion, the obtained differences might actually be meaningful and would have to be taken into consideration. According to Butcher, Graham et al. (1990), students' MMPI-2 scores would have to be interpreted in the same manner as those of the normative group, using the same norms. However,

the present study implies that, if this were done, at least a certain number of students would thus receive pathological attributes which, in reality, might not exist but only reflect normal characteristics of this particular group.

The size of the student sample of the present study was, unfortunately, small, especially for male students. This certainly increased the probability for statistical error and reduced the reliability of the obtained results. It was very difficult to obtain the cooperation of the university students; perhaps, because they were already too busy with other academic activities, or because only the Introductory Psychology class received credits for their participation, etc. The major difficulties were encountered with students who were not involved in any psychology course. For them, research in psychology appeared to be a very obscure matter, involving "solely rats or unethical procedures with human beings", as one of the professors of engineering phrased it. This, perhaps, explains why most research with university students is accomplished with students from psychology classes.

The results of the present study suggest that caution should be applied in the clinical interpretation of university students' MMPI results. Scores that differ from the means of the general population might reflect inherent characteristics of this particular group and might, therefore, not be clinically interpretable. Further research on this topic is certainly needed.

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Appendix A.

MMPI-2 Profiles

Figure 1: K-Corrected MMPI-2 Profile of the Sample of Female L.U. Students (n= 55).

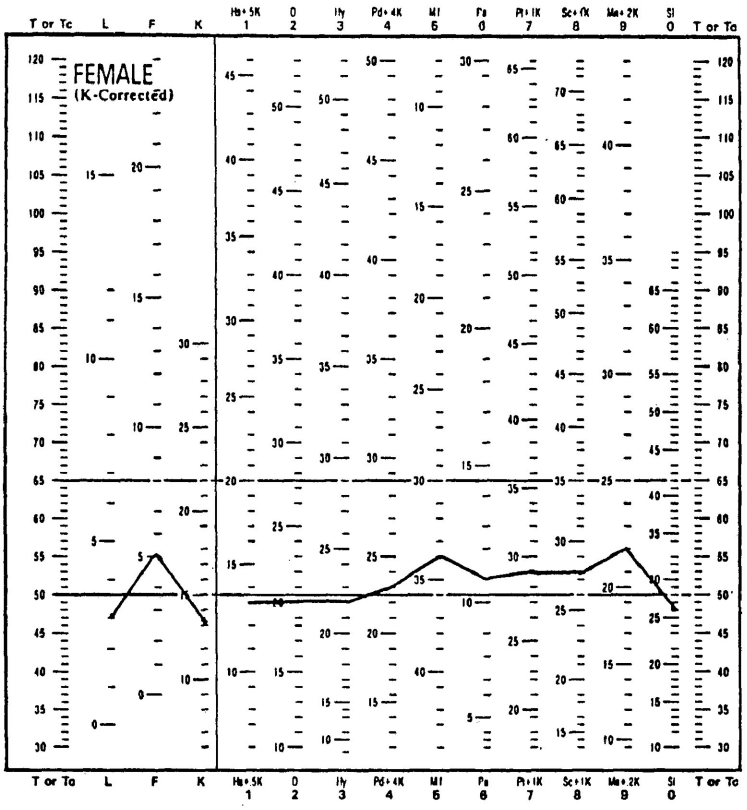


Figure 2: K-Corrected MMPI-2 Profile of the Sample of Male L.U. Students (n= 14).

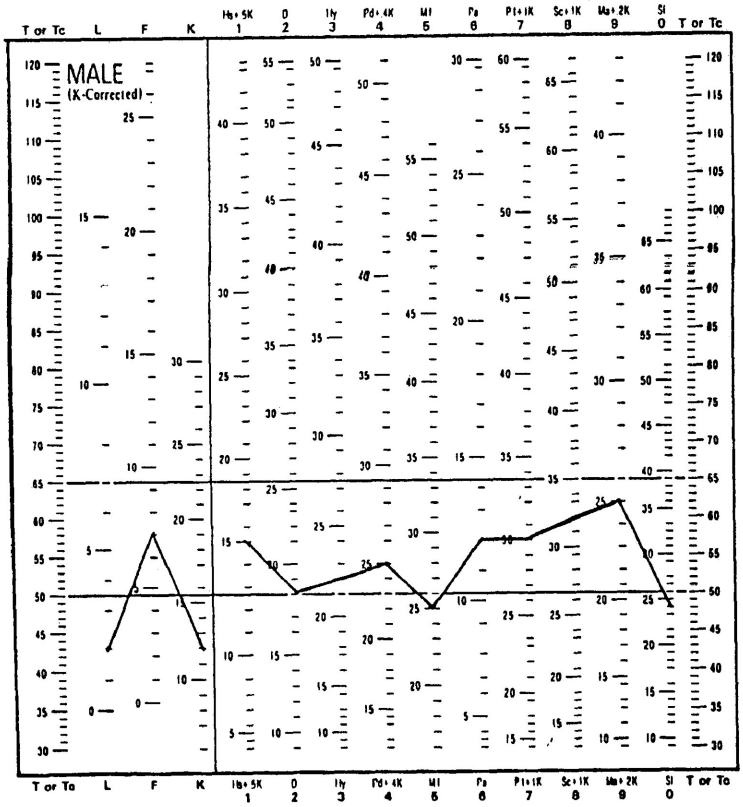


Figure 3: Non-K-Corrected MMPI-2 Profile of the Sample of Female L.U. Students (n= 55).

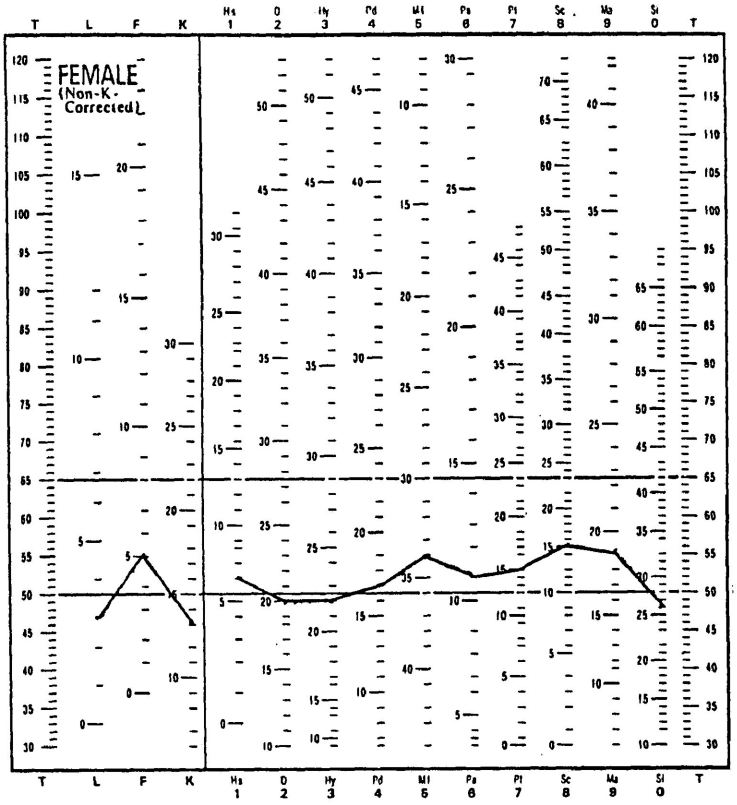


Figure 4: Non-K-Corrected MMPI-2 Profile of the Sample of Male L.U. Students (n= 14).

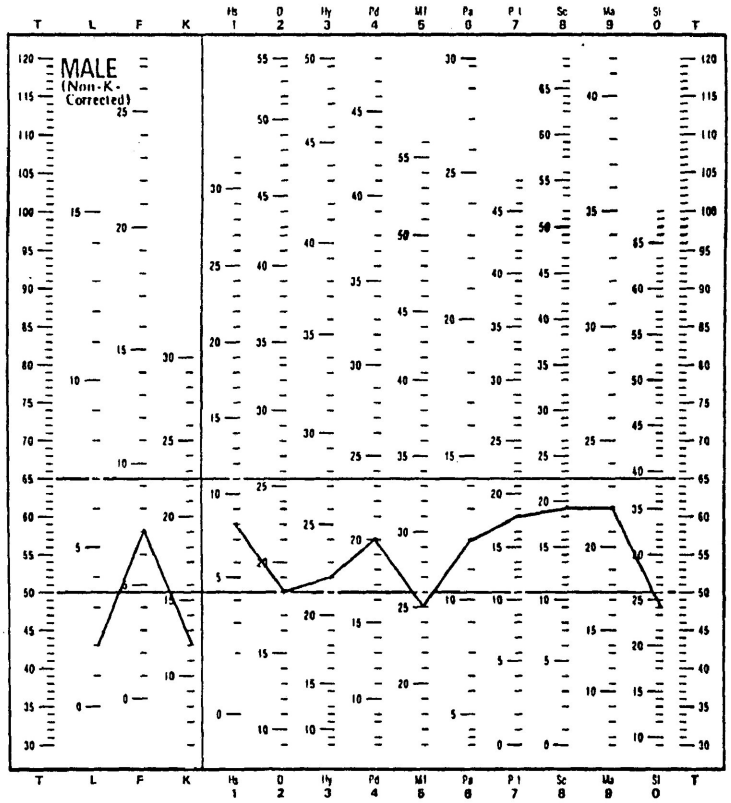


Figure 5: Comparison of Non-K-Corrected MMPI-2 Profiles of the Female L.U. Students Sample and the Butcher, Graham, et al. (1990) Combined College Female Sample.

--- L.U. Sample (n=55)
___ Butcher, Graham, et al. Sample (n=797)

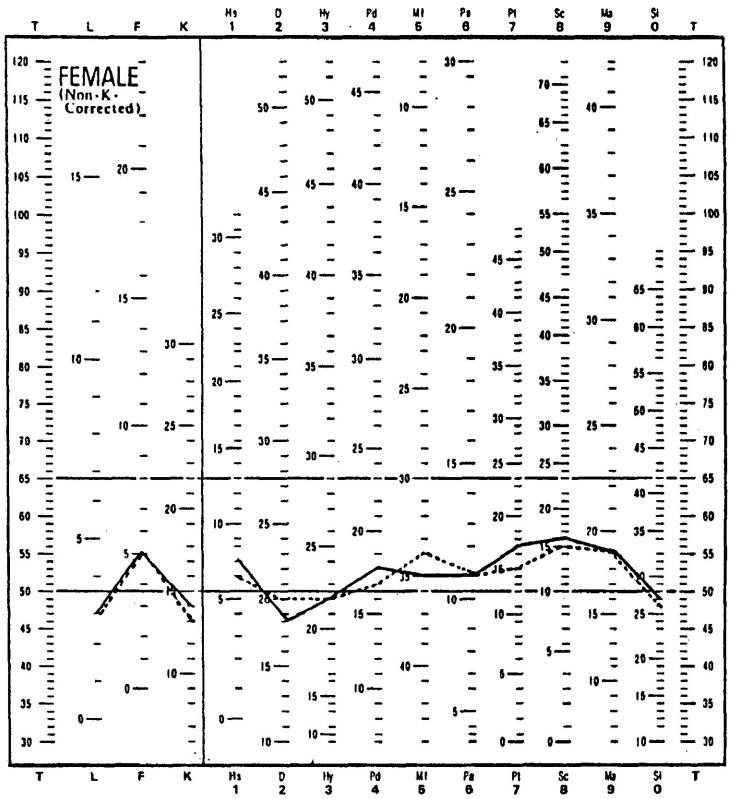


Figure 6: Comparison of Non-K-Corrected MMPI-2 Profiles of the Male L.U. Students Sample and the Butcher, Graham, et al. (1990) Combined College Male Sample.

--- L.U. Sample (n=14)
___ Butcher, Graham, et al. Sample (n=515)

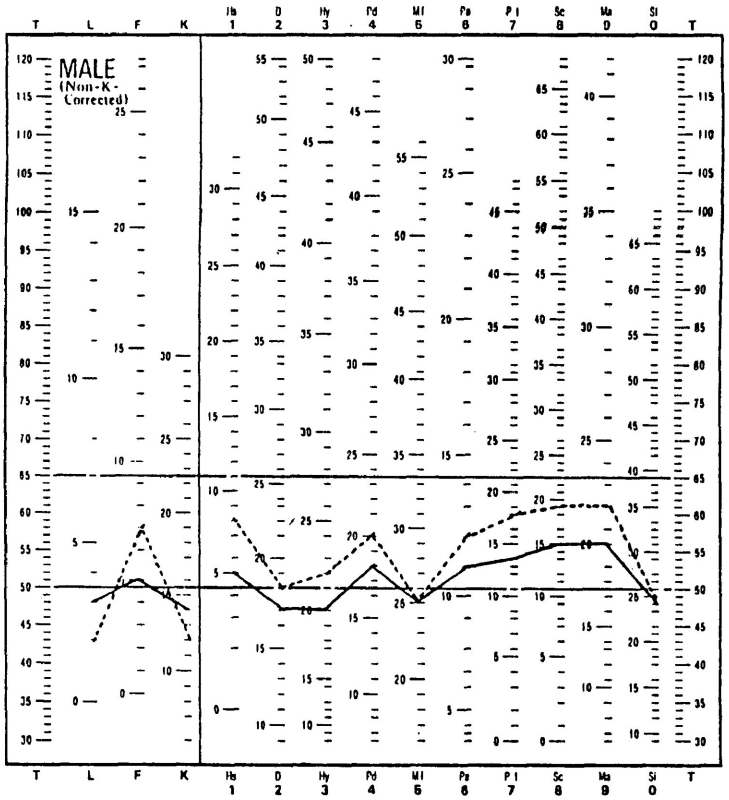


Figure 7: Comparison of K-Corrected MMPI-2 Profiles of the Female L.U. Students Sample and the Butcher, Graham, et al. (1990) Combined College Female Sample.

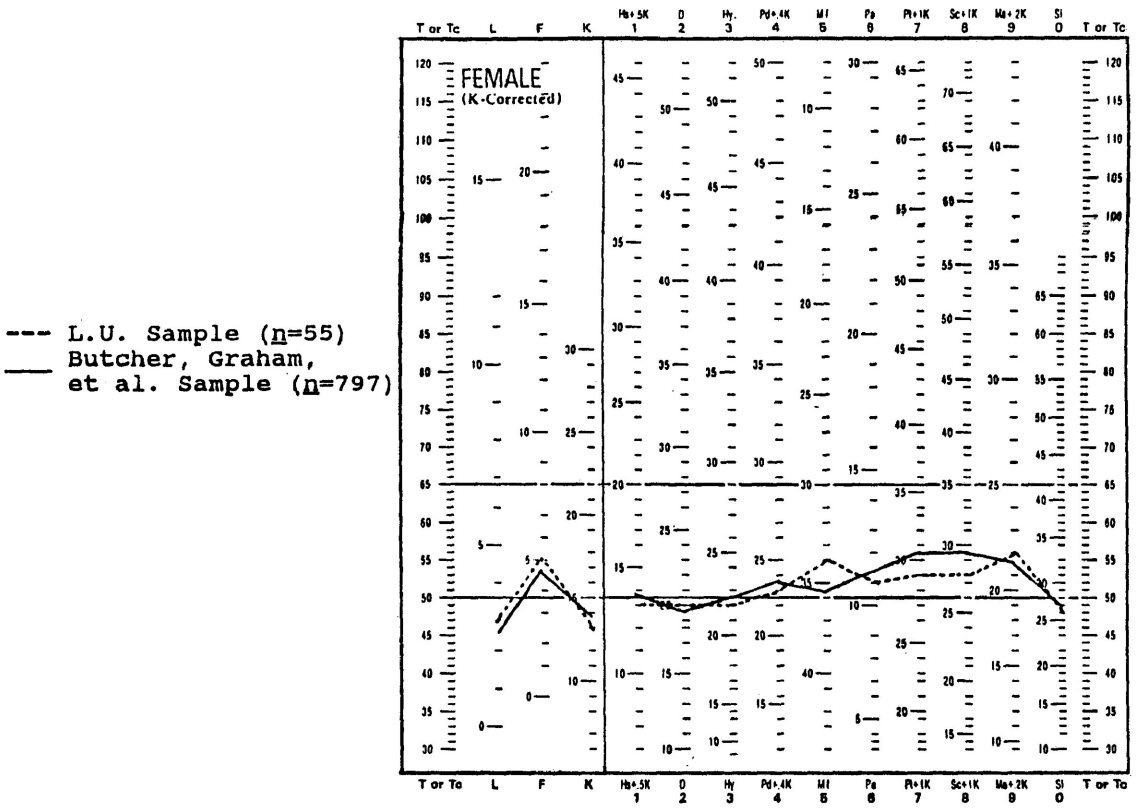
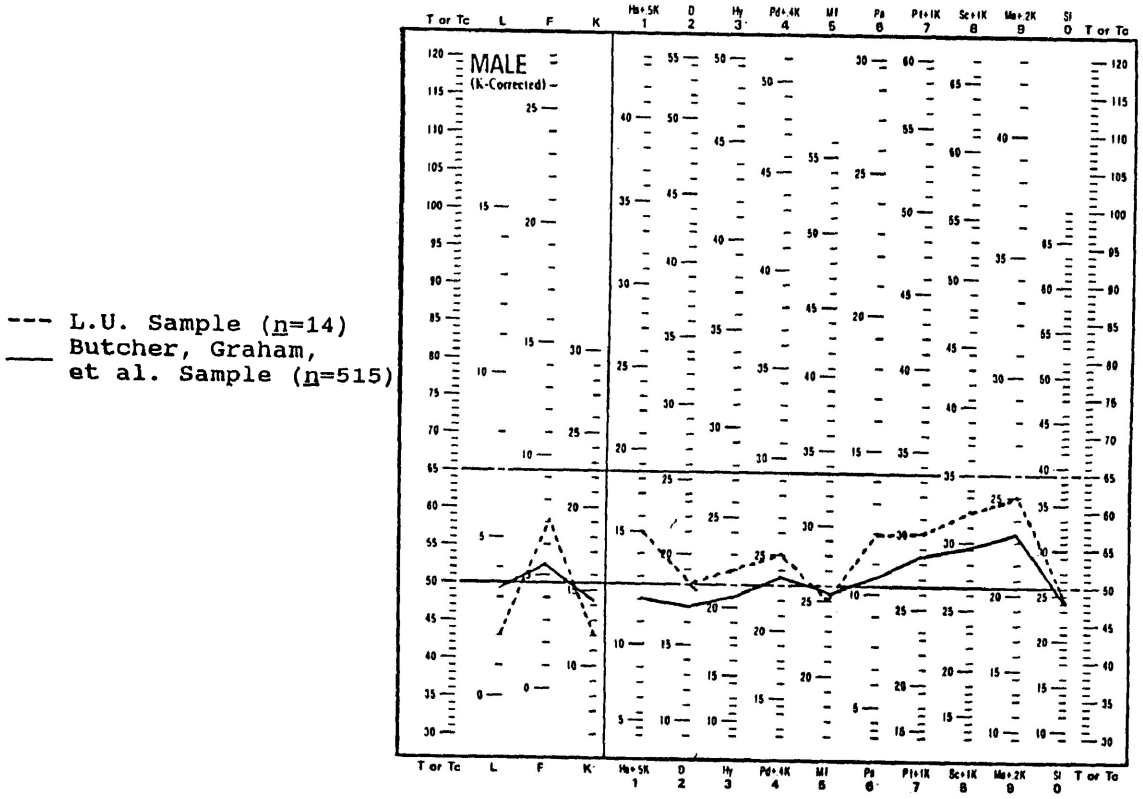


Figure 8: Comparison of K-Corrected MMPI-2 Profiles of the Male L.U. Students Sample and the Butcher, Graham, et al. (1990) Combined College Male Sample.



Appendix B.

Raw Score Tables

TABLE B.1

Non-K-Corrected Raw Scores of Individual Female Subjects of the Lakehead University Sample

S	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
1	3	7	15	7	23	23	22	31	8	9	10	13	20
3	4	8	12	13	19	23	18	30	9	16	17	17	36
4	4	6	19	3	17	23	16	40	15	8	6	16	22
7	4	3	10	7	18	21	21	38	12	8	7	17	25
8	4	5	16	5	20	18	17	31	9	10	12	26	20
10	5	4	15	3	15	20	10	34	8	8	3	16	16
11	3	7	11	8	21	20	21	33	12	21	15	17	34
12	3	1	13	4	31	22	18	41	16	20	10	17	41
13	3	8	9	10	25	27	23	36	12	22	25	22	31
14	4	1	16	4	15	25	9	38	7	5	4	11	14
15	2	7	14	6	13	21	22	18	9	8	12	21	19
16	3	3	16	7	25	26	12	37	13	16	17	10	38
18	3	6	8	4	17	19	10	34	8	16	19	20	38
19	5	2	15	4	24	21	15	35	7	11	8	13	33
20	3	1	12	5	15	25	16	30	12	13	7	18	17
21	1	2	9	4	19	21	14	38	9	18	11	14	38
22	1	4	7	16	28	28	19	35	13	21	16	14	28
23	1	10	6	3	21	8	17	19	12	22	25	21	35
24	1	2	18	2	17	16	14	32	7	10	4	12	26
25	6	3	19	10	22	31	19	35	12	7	12	22	20
26	7	4	22	7	22	31	17	33	8	10	12	13	27
27	3	3	16	12	21	29	17	34	6	16	11	18	24
31	1	9	5	10	23	22	26	28	10	29	25	25	31
32	3	2	7	8	24	16	13	29	10	23	23	16	39
33	5	0	14	7	20	22	16	27	7	7	7	16	17

35	6	2	15	7	20	24	17	39	15	21	17	18	41
36	5	0	22	5	15	24	13	35	10	6	2	19	13
38	2	8	6	8	17	22	25	37	15	21	29	21	26
39	5	2	18	3	18	24	15	37	8	10	7	16	19
41	3	4	19	0	11	19	15	28	5	4	5	22	11
42	2	3	14	4	16	18	18	38	10	16	16	22	18
43	4	4	12	11	27	26	17	43	16	22	21	20	25
44	3	1	18	8	17	28	12	33	12	7	11	17	13
45	2	9	11	18	17	31	23	34	14	20	25	21	18
46	2	2	10	7	18	20	13	37	11	20	9	23	27
47	5	2	18	3	22	24	16	38	11	11	7	16	29
48	1	3	15	8	15	14	17	26	8	14	18	21	19
49	2	7	11	9	22	21	21	36	13	22	26	25	17
50	5	5	11	5	26	17	16	39	8	15	18	17	42
52	2	2	15	4	16	21	11	32	6	8	15	18	8
53	3	3	17	2	13	22	19	35	10	6	14	22	12
54	0	15	8	10	30	23	27	32	19	34	32	20	33
55	5	1	22	3	19	25	12	36	8	8	7	17	25
56	4	4	19	1	14	19	15	37	11	3	4	17	17
57	2	3	19	6	12	25	13	35	13	5	3	16	13
58	1	8	9	4	18	18	28	30	13	28	28	28	28
59	1	2	13	5	18	20	18	39	13	22	23	21	27
60	2	9	6	2	22	19	18	34	12	27	27	26	26
61	0	7	10	8	20	22	22	26	17	24	27	23	39
62	4	3	13	4	15	16	13	38	7	14	9	20	35
63	2	12	12	10	24	24	22	36	13	13	15	19	42
64	1	3	16	9	18	25	14	29	13	15	13	19	26
66	1	12	5	6	26	15	26	34	14	35	35	17	41
67	4	9	11	8	24	26	17	38	17	25	26	23	26
68	5	6	15	5	16	17	15	25	6	6	8	26	15

TABLE B.2

Non-K-Corrected Raw Scores of Individual Male Subjects of the Lakehead University Sample

S	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
2	2	4	15	4	16	18	20	26	11	17	14	21	23
5	5	5	19	2	20	21	22	21	13	14	17	19	21
6	2	3	8	1	23	16	20	29	14	17	14	14	37
9	0	12	7	12	25	20	27	27	21	29	27	20	33
17	3	2	15	4	16	20	13	20	9	10	7	15	21
28	1	7	20	4	11	21	19	22	6	10	18	21	14
29	2	10	13	12	18	22	19	29	16	19	30	26	27
30	3	3	12	0	9	19	15	20	5	11	13	27	12
34	5	2	18	3	13	20	8	23	9	5	7	19	13
37	0	6	14	9	14	22	20	30	16	18	21	25	13
51	5	11	9	22	25	28	21	25	11	19	15	22	25
65	2	5	9	12	22	28	19	30	10	23	27	19	42
69	3	14	6	19	19	33	28	25	20	25	39	31	21
70	1	11	5	13	19	25	30	27	10	29	32	27	35

TABLE B.3

K-Corrected Raw Scores of Individual Female Subjects of the Lakehead University Sample

S	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
1	3	7	15	15	23	23	28	31	8	24	25	16	20
3	4	8	12	19	19	23	23	30	9	28	29	19	36
4	4	6	19	13	17	23	24	40	15	27	25	20	22
7	4	3	10	12	18	21	25	38	12	18	17	19	25
8	4	5	16	13	20	18	23	31	9	26	28	29	20
10	5	4	15	11	15	20	16	34	8	23	18	19	16
11	3	7	11	14	21	20	25	33	12	32	26	19	34
12	3	1	13	11	31	22	23	41	16	33	23	20	41
13	3	8	9	15	25	27	27	36	12	31	34	24	31
14	4	1	16	12	15	25	15	38	7	21	20	14	14
15	2	7	14	13	13	21	28	18	9	22	26	24	19
16	3	3	16	15	25	26	18	37	13	32	33	13	38
18	3	6	8	8	17	19	13	34	8	24	27	22	38
19	5	2	15	12	24	21	21	35	7	26	23	26	33
20	3	1	12	11	15	25	21	30	12	25	19	20	17
21	1	2	9	9	19	21	18	38	9	27	20	17	38
22	1	4	7	20	28	28	22	35	13	28	23	15	28
23	1	10	6	6	21	8	19	19	12	28	31	22	35
24	1	2	18	11	17	16	21	32	7	28	22	16	26
25	6	3	19	20	22	31	27	35	12	26	31	26	20
26	7	4	22	18	22	31	26	33	8	32	34	17	27
27	3	3	16	20	21	29	23	34	6	32	27	21	24
31	1	9	5	13	23	22	28	28	10	34	30	26	31
32	3	2	7	12	24	16	16	29	10	30	30	17	39
33	5	0	14	14	20	22	22	27	7	21	21	19	17

5	6	2	15	15	20	24	23	39	15	36	32	21	41
36	5	0	22	16	15	24	22	35	10	28	24	23	13
38	2	8	6	11	17	22	27	37	15	27	35	22	26
39	5	2	18	12	18	24	22	37	8	28	25	20	19
41	3	4	19	10	11	19	23	28	5	23	24	26	11
42	2	3	14	11	16	18	24	38	10	30	30	25	18
43	4	4	12	17	27	26	22	43	16	34	33	22	25
44	3	1	18	17	17	28	19	33	12	25	29	21	13
45	2	9	11	24	17	31	27	34	14	31	36	23	18
46	2	2	10	12	18	20	17	37	11	30	19	25	27
47	5	2	18	12	22	24	23	38	11	29	25	20	29
48	1	3	15	16	15	14	23	26	8	29	33	24	19
49	2	7	11	15	22	21	25	36	13	33	37	27	17
50	5	5	11	11	26	17	20	39	8	26	29	19	42
52	2	2	15	12	16	21	17	32	6	23	30	21	8
53	3	3	17	11	13	22	26	35	10	23	31	25	12
54	0	15	8	14	30	23	30	32	19	42	40	22	33
55	5	1	22	14	19	25	21	36	8	30	29	21	25
56	4	4	19	11	14	19	23	37	11	22	23	21	17
57	2	3	19	16	12	25	21	35	13	24	22	20	13
58	1	8	9	9	18	18	32	30	13	37	37	30	28
59	1	2	13	12	18	20	23	39	13	35	36	24	27
60	2	9	6	5	22	19	20	34	12	33	33	27	26
61	0	7	10	13	20	22	26	26	17	34	37	25	39
62	4	3	13	11	15	16	18	38	7	27	22	23	35
63	2	12	12	16	24	24	27	36	13	25	27	21	42
64	1	3	16	17	18	25	20	29	13	31	29	21	26
66	1	12	5	9	26	15	28	34	14	40	40	18	41
67	4	9	11	14	24	26	21	38	17	36	37	25	26
68	5	6	15	13	16	17	21	25	6	21	23	29	15

TABLE B.4

K-Corrected Raw Scores of Individual Male Subjects of the Lakehead University Sample

S	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
2	2	4	15	12	16	18	26	26	11	32	29	24	23
5	5	5	19	12	20	21	30	21	13	33	36	26	21
6	2	3	8	5	23	16	23	29	14	25	22	16	37
9	0	12	7	16	25	20	30	27	21	36	34	21	33
17	3	2	15	12	16	20	19	20	9	25	22	18	21
28	1	7	20	14	11	21	27	22	6	30	38	25	14
29	2	10	13	19	18	22	24	29	16	32	33	29	27
30	3	3	12	6	9	19	20	20	5	32	25	29	12
34	5	2	18	12	13	20	15	23	9	23	25	23	13
37	0	6	14	16	14	22	26	30	16	32	35	28	13
51	5	11	9	25	25	28	25	25	11	28	24	24	25
65	2	5	9	17	22	28	23	30	10	32	36	21	42
69	3	14	6	21	19	33	30	25	20	31	45	32	21
70	1	11	5	16	19	25	32	27	10	24	37	28	35

Appendix C.

LAKEHEAD UNIVERSITY

r Road, Thunder Bay, Ontario, Canada P7B 5E1

Department of Psychology
Telephone (807) 343-8441

COVER LETTER

Dear Participant:

Thank you for volunteering to participate in this study entitled "The MMPI-2 profiles of Lakehead University students".

The MMPI-2 (Minnesota Multiphasic Personality Inventory-2) is the most used personality test in North America. It is a paper and pencil self-report questionnaire composed of 567 different true-false statements that describe a variety of personal thoughts, feelings attitudes and prior life experiences as well as emotional and physical symptoms.

Until most recently university students were considered to score higher on the MMPI than the general population. The intent of this research project is to investigate if it still happens with the new version of the test. The information gained from this study will help psychologists and counsellors to interpret the results of the test more accurately in the future.

To accomplish this goal, we would like you to fill out the MMPI-2. The completion of this test may take one hour or more.

All information you provide will be anonymous, since the only information we will have about you will be: major area of study, age (not date of birth) and gender. However, this also means that we will not be able to give you feedback on the results we have obtained on each test as it will be impossible for us to connect specific results with any particular individual.

It is very unlikely that you will find the questions disturbing. There are no right or wrong answers. However, if you do become concerned as a result of your participation in this study, do not hesitate in contacting me for further explanations.

Thank you for your cooperation.

Yours respectfully,

Elizabeth Lettner, M.A. Candidate
Tel.# (807) 767 5704

LAKEHEAD UNIVERSITY

er Road, Thunder Bay, Ontario, Canada P7B 5E1

Department of Psychology
Telephone (807) 343-8441

CONSENT FORM

My signature on this form indicates that I agree to participate in the study by Elizabeth Lettner, M.A. Candidate at the Department of Psychology at the Lakehead University under the supervision of Dr. W.T. Melnyk, entitled "The MMPI-2 profiles of Lakehead University students".

I have received explanations about the nature of the study, its purpose, and procedures.

I understand the following:

1. I am a volunteer and can withdraw at any time from the study.
2. The data I provide will be anonymous.
3. If I have any concerns about my participation I may contact the researcher and/or her supervisor.

_____ _____

Signature of Participant Date