An Investigation of the Maxi-Mult

Thomas Kozlowski

Western Michigan University

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AN INVESTIGATION OF THE MAXI-MULT

by

Thomas Kozlowski

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Master of Arts

Western Michigan University
Kalamazoo, Michigan
August 1974
ACKNOWLEDGEMENTS

Without the insightful guidance of Malcolm Robertson and the statistical wizardry of Michael Stoline I would still be wallowing in a pool of psychometric ignorance.

Thomas Kozlowski
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>METHOD</td>
<td>8</td>
</tr>
<tr>
<td>RESULTS</td>
<td>11</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>27</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>32</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>34</td>
</tr>
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INTRODUCTION

Since its publication in 1948, the Minnesota Multinhasic Personality Inventory (MMPI) has been met with a plethora of publications concerning such topics as validity, reliability, and the inclusion of additional scales. With twenty-five years of exposure to clinicians and researchers behind it, the MMPI has emerged as one of the more commonly used diagnostic instruments. Its success has not been without criticism however, as its rather lengthy protocol (566 true-false items) has proven to be a liability in the assessment of the illiterate, those with poor eyesight, and with individuals unable or unwilling to persevere for one and one half to two hours with pencil in hand. Individuals with these liabilities have been known to take as long as five hours to answer all items resulting in discomfort and delay of treatment for them, as well as clinician inconvenience in awaiting diagnostic information.

The earliest attempt to abbreviate the MMPI was made by Jorgenson (1958) who developed a questionnaire composed of 176 items. By examining the MMPI results of 100 neurotic male patients in a psychiatric hospital Jorgenson selected short form items based on the following criteria: (a) a frequency of greater than 50% for the highest scoring cases for a given scale and (b) ratio of frequency for highest scoring scoring cases to lowest scoring cases not less than 3:1 (reduced for unexplained reasons to 2.5:1 for scales Pd and Ma). Using a rather confusing and
somewhat subjective system of selection, Jorgenson added a number of other items that he felt would be of diagnostic significance, even though they did not satisfy the criteria he had established. He also added a number of other items that were of no diagnostic significance but were added as "buffer items". This system of selection resulted in the omission of five scales from the standard form: scale F because he felt a personal interview concerning deviant items would be more meaningful, scale Mf because he felt this scale was of little utility, scale Pa because he had encountered too many false positives, and scale Sc also because of an unacceptable false positive frequency. Scale Hy was omitted because he felt that scale Pt and his own scale called Central Neurotic Function (CNF) measured the same factors. He then constructed tentative norms for these scales and has used them in subsequent assessments. His paper does not include these results, however, and notes only that they have been encouraging.

Jorgenson's attempt at abbreviating the MMPI left many questions unanswered; yet it was not until 1968 that Kincannon attempted a new modification of the instrument. Noting that his was the first study that provided for the prediction of standard scale scores, Kincannon developed his instrument by clustering the items within each scale. Clusters were defined as aggregates of items, each having a phi coefficient greater than or equal to .30 with reference to the other items in the cluster. A number of items, usually those representing the
greatest number on the clinical and validity scales, were then chosen as representatives of each cluster. This resulted in a final reduction to 71 items and was entitled the Mini-Mult.

Using a population of 100 male and female inpatients in a psychiatric hospital and 50 consecutive admissions to a community mental health center, Mini-Mult scores were obtained by scoring the standard length MMPI results for the 71 selected items. In both instances a median correlation of .87 was obtained. In a more practical application, 30 male and 30 female new admissions to a psychiatric hospital were administered the MMPI, the Mini-Mult, and a repeat administration of the MMPI. The order of presentation was designed so that the MMPI retest and Mini-Mult administration alternated between the second and third position in the sequence. Standard questionnaire and answer sheets were used for this MMPI, while the Mini-Mult was administered orally. While the results indicated a statistical difference between scales F, Hs, and Ma for the MMPI--Mini-Mult comparison, the overall median correlation was considered acceptable at .79. This represented an overall loss in reliability of 9%, far below the 28% predicted by the Spearman-Brown formula. An estimate of the loss in correspondence (i.e. the ability to predict MMPI scores) was made and found to be 14%, also significantly below the 28% predicted. As MMPI scores are typically evaluated in terms of three point scales, a ranked comparison of Mini-Mult and MMPI scale scores revealed a degree of loss of only 8%, also significantly below the predicted estimate.
The development of the Mini-Mult prompted a number of studies that resulted in confirming findings with a variety of subjects (Gayton et al 1972; Hartman and Robertson 1972; Lacks 1970; Lacks and Powell 1970; Percell and Delk 1973; Trybus and Hewitt 1972). The literature reveals only one article (Newton 1971) in which Mini-Mult utility was described as modest. While validating research has for the most part been favorable, the Mini-Mult has not been without its limitations. In response to these shortcomings, investigators have recently attempted to develop new abbreviated forms of the MMPI. Dean (1972) noting that previous investigators (Armentrout 1970; Armentrout and Rouzer 1970; Kincannon 1968; Lacks 1970) had experienced validity problems with scales L, F, and Ma, sought to improve these scales by adding additional items. After examining the MMPI results from 125 non-psychiatric patients at a health evaluation center at an urban hospital, Dean varied combinations of items until correlations of at least .80 on scales L, F, and Ma were obtained. This resulted in an addition of fifteen items, and a new instrument labeled the Midi-Mult.

Another sample of 125 randomly selected MMPI results were obtained from the health center, and these answer sheets were scored using the Midi-Mult scales. The results of this internal Midi-Mult resulted in correlations for scales L, F, and Ma of .83, .88, and .89 respectively, and a median \( r \) of .88 for all scales. A frequency count of position on the Midi-Mult versus MMPI resulted in the highest score on the MMPI appearing in the top three Midi-Mult scales 90% of the
time. The second ranked score was in the top three 70% of the
time, and the third was replicated in 53% of the cases. These
results were compared with obtained Mini-Mult scores with the
same population and caused Dean to conclude that her instrument
was more accurate in predicting MMPI scores. She noted, how­
ever, that research using an external form of the test with dif­
ferent populations still needed to be done.

In answer to this need, Leer (1973) administered the MMPI
and the Midi-Mult to a population of psychiatric patients at a
Veterans Hospital. Using 200 male inpatients, Leer extracted
the Mini-Mult and Midi-Mult scales from their full scale MMPI
answer sheets. The extracted Midi-Mult scales resulted in a
range of correlations from .63 to .92 with a median r of .85.
When a ranking of scores was made, it was found that the highest
scale on the long form compared to the top three Midi-Mult
scales by rates of 88%, 76%, and 59% respectively. When the
external Midi-Mult was administered, the range of correlations
was .46 to .85 with a median r of .67. Leer dismissed this
finding as being not too meaningful, and noted that the overall
ranking order of correlations for all the scales was generally
the same for the extracted Midi-Mult, the independently admin­
istered Midi-Mult, and their respective MMPI's. No data are
available in his study to support this later conclusion. Leer
stated that his study supported the findings of Dean, and rec­
ommended further research with the external form to confirm his
findings.
At the same time Leer was attempting to validate the Midi-Mult, Spera (1973) had developed still another abbreviated MMPI. Spera pointed out that while the Mini-Mult did result in high correlations with the MMPI, the frequently used scale Mf, and scale Si had been omitted. In an attempt to alleviate this shortcoming, and to improve MMPI predictability, Spera developed the Maxi-Mult. Using Kincannon's original 71 items, Spera added 33 additional questions representing Grayson's critical items. These items have been included in the MMPI as "stop" items in screening individuals for psychiatric disorders. They deal blatantly with serious emotional problems and evidence has been advanced (Gravitz 1968) that they are rarely answered in the pathological direction. Regression equations were then used to derive conversion tables that would convert these scores to standard MMPI Scores. Using a population of 200 male psychiatric patients in a Veterans Hospital, Spera proceeded to score their MMPI's for the Maxi-Mult items.

This investigation produced a range of correlations of .52 (Mf) to .95 (Hs) with a median r of .86. Ranking of scores revealed that the highest MMPI score appeared among the three highest Maxi-Mult scores in 86% of the cases. The second and third highest scores both appeared in 80% of the Maxi-Mult scales. It was also found that for the Maxi-Mult, 44% of the cases had the same three point code as the MMPI. An external form of the test using specially prepared test booklets was then administered to 24 male psychiatric patients one week after they completed the standard MMPI. The range of corre-
lations obtained from this administration was .54 (L) to .86 (Sc) with a median $r$ of .81. Ranking of scores revealed that the highest MMPI score appeared among the three highest Maxi-Mult scores in 85% of the cases. The second and third highest scores appeared in 81% and 58% of the highest Maxi-Mult scores respectively.

Spera's findings are indeed encouraging and point to the need for additional research. The purpose of the present study is to determine the efficiency of the Maxi-Mult using only the external form of the instrument. Unlike Spera's population, a more heterogeneous group will be examined in order to assess variability of results owing to sex, method of test presentation, and diagnostic category.
METHOD

Materials used in this study consisted of Maxi-Mult test booklets, scoring templates and conversion tables prepared by Spera. Also employed were group form MMPI test booklets, MMPI answer sheets, MMPI scoring templates, and MMPI profile analysis sheets.

Sixty randomly selected referrals to the psychological services department in a general hospital were used in the study. Thirty of the Ss were hospitalized on the psychiatric unit, while the remaining patients equally represented general medical and alcoholism services. Hospital records revealed that 53% of the total of sixty patients had been diagnosed as neurotic, 27% as psychotic, and 20% as character disorders. Thirty of the Ss were adult males (\( \bar{X} \) age 36), while the remaining thirty were adult females (\( \bar{X} \) age 32). Mean age for the entire population was 34.

One half of the Ss received the MMPI followed by the Maxi-Mult, while the remaining Ss received the Maxi-Mult first. Ss were informed that the second test was a part of normal admissions procedures and received it within twenty-four hours of completion of the first.

MMPI answer sheets were scored with the MMPI scoring templates and recorded on the profile analysis sheets in the conventional manner. Maxi-Mult answer sheets (i.e. MMPI group form answer sheets completed through item 104) were scored with
their respective templates, converted to MMPI scaled scores, and recorded on the MMPI analysis sheets in the same manner.

Further descriptive information concerning the S population is provided in Table 1.
# TABLE 1

Descriptive Information of the Subject Population N=60 *

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>SEX</th>
<th>X AGE</th>
<th>PSYCHIATRIC DIAGNOSIS</th>
<th>X LENGTH OF HOSPITALIZATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatry N=30</td>
<td>43% Male</td>
<td>29 years</td>
<td>50% Psychotic</td>
<td>18.9 Days</td>
</tr>
<tr>
<td></td>
<td>57% Female</td>
<td></td>
<td>33% Neurotic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17% Character Disorder</td>
<td></td>
</tr>
<tr>
<td>Alcholism N=15</td>
<td>93% Male</td>
<td>43 years</td>
<td>0% Psychotic</td>
<td>11.2 Days</td>
</tr>
<tr>
<td></td>
<td>7% Female</td>
<td></td>
<td>80% Neurotic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20% Character Disorder</td>
<td></td>
</tr>
<tr>
<td>General Medical</td>
<td>20% Male</td>
<td>37 years</td>
<td>7% Psychotic</td>
<td>11.5 Days</td>
</tr>
<tr>
<td>N=15</td>
<td>80% Female</td>
<td></td>
<td>73% Neurotic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20% Character Disorder</td>
<td></td>
</tr>
</tbody>
</table>

* All Ss were referred for psychological evaluation.
RESULTS

A three-way analysis of variance involving the following
groups was performed: Psychiatric vs. Non-Psychiatric (Type),
Maxi-Mult presented first vs. MMPI presented first (Order), and
Male vs. Female (Sex). This preliminary analysis resulted in
interactions on scale F, Pa, and Pt. Scale F resulted in Order
as a significant source of error with the test administered
last having consistently lower scores (F=11.42, a=0.001).
Scale Pa showed Type to be the significant source of error as
Psychiatric subjects scored consistently higher on the MMPI
(F=4.25, a=0.04). Order of presentation came into play again
on scale Pt, where the Order-Sex interaction revealed that female
Ss scored significantly lower on the second test presented to them
(F=4.34, a=0.04).

While interactions were not observed, scales L and Mf
showed sex as a significant source of error. On scale L
females scored significantly lower on the Maxi-Mult (F=10.63,
a=0.002), while on scale Mf they scored significantly higher
(F=47.97, a=0.000). Sc revealed Type as a major source of
error with psychiatric patients scoring consistently higher on
the MMPI (F=6.81, a=0.01). Interactions were not observed on
scale Sc or on any of the remaining scales.

A two-way analysis of variance was then performed with
the S population divided into Psychiatric, Alcoholic, and General
Medical Groups. Separate analyses were performed for male and
female Ss with a finding of no significant interactions for any of the groups.

$t$-tests were also run with comparisons of Psychiatric vs. Alcoholism, Alcoholism vs. General Medical, and Psychiatric vs. General Medical groups. Tests were performed for male and female Ss and revealed no significant differences ($p=0.05$).

Pearson Product-Moment correlations were computed for groups composed of Psychiatric patients, Non-Psychiatric patients, General Medical patients, Alcoholic patients, Males, Females, and the total S population. Results of these computations are represented in Tables 2-8.

As MMPI scores are typically ranked in ordinal sequence, Tables 9-15 represent the percentage of Maxi-Mult-MMPI correspondence with respect to the three clinical scales highest in rank.
TABLE 2


(N=60)

<table>
<thead>
<tr>
<th>SCALE</th>
<th>Maxi-Mult&lt;sup&gt;a&lt;/sup&gt;</th>
<th>MMPI&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEANS</td>
<td>SD</td>
</tr>
<tr>
<td>L</td>
<td>48.75</td>
<td>4.67</td>
</tr>
<tr>
<td>F</td>
<td>66.01</td>
<td>8.50</td>
</tr>
<tr>
<td>K</td>
<td>50.06</td>
<td>6.99</td>
</tr>
<tr>
<td>Hs</td>
<td>65.43</td>
<td>12.53</td>
</tr>
<tr>
<td>D</td>
<td>69.51</td>
<td>13.19</td>
</tr>
<tr>
<td>Hy</td>
<td>64.55</td>
<td>10.59</td>
</tr>
<tr>
<td>Pd</td>
<td>68.18</td>
<td>10.26</td>
</tr>
<tr>
<td>Mf</td>
<td>63.40</td>
<td>6.73</td>
</tr>
<tr>
<td>Pa</td>
<td>64.23</td>
<td>9.60</td>
</tr>
<tr>
<td>Pt</td>
<td>65.78</td>
<td>14.24</td>
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<tr>
<td>Sc</td>
<td>70.43</td>
<td>13.72</td>
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<tr>
<td>Ma</td>
<td>62.70</td>
<td>10.93</td>
</tr>
<tr>
<td>Si</td>
<td>57.00</td>
<td>7.46</td>
</tr>
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Median 0.68

<sup>a</sup>Scores are represented in T scores.
TABLE 3

(N=30)

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<thead>
<tr>
<th>Scale</th>
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<th>MMPIa</th>
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<td>Means</td>
<td>SD</td>
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<tr>
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<td>4.62</td>
</tr>
<tr>
<td>F</td>
<td>5.56</td>
<td>7.42</td>
</tr>
<tr>
<td>K</td>
<td>51.03</td>
<td>7.21</td>
</tr>
<tr>
<td>Hs</td>
<td>63.33</td>
<td>13.30</td>
</tr>
<tr>
<td>D</td>
<td>69.96</td>
<td>15.29</td>
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<tr>
<td>Hy</td>
<td>63.43</td>
<td>10.68</td>
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<tr>
<td>Pd</td>
<td>68.83</td>
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<td>Mf</td>
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<td>Pa</td>
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<td>Ma</td>
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<tr>
<td>Si</td>
<td>56.50</td>
<td>6.84</td>
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aScores are represented in T scores.

Median 0.66
TABLE 4

(N=30)

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</tr>
<tr>
<td>F</td>
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<td>9.57</td>
</tr>
<tr>
<td>K</td>
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<td>6.75</td>
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<tr>
<td>Hs</td>
<td>67.53</td>
<td>11.55</td>
</tr>
<tr>
<td>D</td>
<td>69.06</td>
<td>10.93</td>
</tr>
<tr>
<td>Hy</td>
<td>65.66</td>
<td>10.58</td>
</tr>
<tr>
<td>Pd</td>
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<tr>
<td>Mf</td>
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<td>Pa</td>
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<td>Ma</td>
<td>63.60</td>
<td>11.53</td>
</tr>
<tr>
<td>Si</td>
<td>57.50</td>
<td>8.28</td>
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</table>

Median 0.66

\[^a\]Scores are represented in T scores.
TABLE 5

Means, Standard Deviations, and Product-Moment Correlations
of All Scales on the Independently Administered MMPI and the
(N=30)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Maxi-Mult&lt;sup&gt;a&lt;/sup&gt;</th>
<th>MMPI&lt;sup&gt;a&lt;/sup&gt;</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Means</td>
<td>SD</td>
<td>Means</td>
</tr>
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<td>L</td>
<td>47.60</td>
<td>4.51</td>
<td>48.40</td>
</tr>
<tr>
<td>F</td>
<td>69.90</td>
<td>9.48</td>
<td>71.30</td>
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<tr>
<td>K</td>
<td>49.13</td>
<td>7.44</td>
<td>48.13</td>
</tr>
<tr>
<td>Hs</td>
<td>66.80</td>
<td>13.48</td>
<td>66.13</td>
</tr>
<tr>
<td>D</td>
<td>73.00</td>
<td>14.07</td>
<td>74.90</td>
</tr>
<tr>
<td>Hy</td>
<td>66.30</td>
<td>11.28</td>
<td>71.86</td>
</tr>
<tr>
<td>Pd</td>
<td>74.70</td>
<td>10.57</td>
<td>64.76</td>
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<td>Mf</td>
<td>55.43</td>
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<td>73.00</td>
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<td>78.50</td>
<td>14.84</td>
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<tr>
<td>Ma</td>
<td>65.20</td>
<td>11.85</td>
<td>65.20</td>
</tr>
<tr>
<td>Si</td>
<td>59.66</td>
<td>6.83</td>
<td>64.16</td>
</tr>
</tbody>
</table>

<sup>a</sup>Scores are represented in T scores.

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**TABLE 6**


<table>
<thead>
<tr>
<th>Scale</th>
<th>Maxi-Mult&lt;sup&gt;a&lt;/sup&gt;</th>
<th>MMPI&lt;sup&gt;a&lt;/sup&gt;</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Means</td>
<td>SD</td>
<td>Means</td>
</tr>
<tr>
<td>L</td>
<td>49.90</td>
<td>4.61</td>
<td>50.66</td>
</tr>
<tr>
<td>F</td>
<td>62.13</td>
<td>5.11</td>
<td>57.43</td>
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<td>6.50</td>
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<tr>
<td>Hs</td>
<td>64.06</td>
<td>11.57</td>
<td>64.43</td>
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<td>D</td>
<td>66.03</td>
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<tr>
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Median 0.65

<sup>a</sup>Scores are represented in T scores.
# TABLE 7


(N=15)

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\(^a\)Scores are represented in T scores.

Median 0.62
TABLE 8


(N=15)

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Median 0.65

<sup>a</sup>Scores are represented in T scores.
TABLE 9

Comparison of the Independently Administered Maxi-Mult and the MMPI with Respect to the Ordinal Position of the Three Clinical Scales Highest in Rank on the Standard MMPI as Found in the Scores of All Subjects.

(N=60)

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\(^a\)In Percentages
TABLE 10

Comparison of the Independently Administered Maxi-Mult and the MMPI with Respect to the Ordinal Position of the Three Clinical Scales Highest in Rank on the Standard MMPI as Found in the Scores of Male Subjects.

(N=30)

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</tbody>
</table>

\(^a\)In Percentages
TABLE 11

Comparison of the Independently Administered Maxi-Mult and the MMPI with Respect to the Ordinal Position of the Three Clinical Scales Highest in Rank on the Standard MMPI as Found in the Scores of Female Subjects.

(N=30)

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<td>3</td>
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aIn Percentages

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TABLE 12


(N=30)

<table>
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<th>Rank on Maxi-Mult</th>
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<sup>a</sup>In Percentages
TABLE 13


(N=30)

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<sup>a</sup>In Percentages
TABLE 14


(N=15)

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</table>

\(^a\)In Percentages
TABLE 15

Comparison of the Independently Administered Maxi-Mult and the MMPI with Respect to the Ordinal Position of the three Clinical Scales Highest in Rank on the Standard MMPI as Found in the Scores of General Medical Ward Subjects.

(N=15)

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</tbody>
</table>

*aIn Percentages*
DISCUSSION

One of the more interesting findings of this study is the effect of order of presentation on some scales. The results of Rosen (1953) revealed that when hospitalized Ss are readministered the MMPI, the results from the second test administration are significantly lower on some scales; among them scale F. As this scale measures the S's perception of his own psychopathology, it was concluded that after a period of hospitalization the patient does not perceive himself to be in as an acute a state of distress as when he was first admitted. A similar decrease in the F scale was observed in the present study, and it is felt that Rosen's explanation would also apply here. While order of test presentation was not found to be a significant source of error on any other scale, an interaction effect was observed on scale Pa. The significant source of error on this scale was Type i.e., the Maxi-Mult consistently underestimated the MMPI scores of the group of psychiatric patients. This finding, coupled with the expected decrease due to retest effect noted above, probably contributed to the Type-Order interaction observed on the Pa scale. Order of test presentation came into play on only one other scale when an Order-Sex interaction was noted on scale Pt. As the second test administration revealed lower scores, it is consistent with the above explanation for the F and Pa scales. The fact that females scored consistently lower on this scale when they were administered the second phase of this study, however, calls for an additional explanation. Sexual differences
were also noted on scales L and Mf, and can be explained by noting the way in which the Maxi-Mult was designed and modified for this study. Spera's population consisted of an all male group, and an Mf scale for females was not prepared. Scoring keys were developed for this study in which pathological responses for males on scale Mf were scored as non-pathological for females. This rather simplistic modification resulted in the poorest prediction of MMPI results for any scale (F=47.97, p=0.000; r for N=60 was -0.09). While Mf items are not scored for scales L and Pt, it is hypothesized that the fact that females were not employed in the original work may be responsible for the shortcoming of these scales in this study. Such a conclusion is speculative, however, as sexual variation was not observed in any other scale.

The fact that psychiatric patients scored consistently higher on scale Sc of the MMPI can be explained in light of other studies that have attempted to abbreviate the MMPI. For example, Hartman and Robertson (1972) found that the scales measuring psychosis are typically underestimated on the Mini-Mult. Such a phenomenon was observed in this study on scale Pa as well as Sc, and an explanation can be offered by again noting the construction of the Maxi-Mult. The addition of Grayson's critical items onto Kincannon's original Mini-Mult made for a disproportionate number of items blatantly dealing with psychosis. While the MMPI contains many items, the Maxi-Mult questionnaire has many items obviously intended for the measurement of psychosis. It is hypothesized that this
may have led to a transparency effect with genuinely psychotic individuals showing a reluctance to consistently endorse items dealing explicitly with psychosis. With its increase in number of items, the MMPI can devote more questions pertaining to psychosis and can present them in a more subtle fashion. Such a presentation may have a less threatening and less anxiety arousing effect on the S thus resulting in more accurate measurements on scales Sc and Pa.

While the interaction effects and the sources of error do provide illuminating data pertaining to Maxi-Mult applicability, the import of this study can be seen in the tables of correlation. The rather mediocre median r of .68 for the total population of sixty Ss differs significantly from Spera's finding of .86 for the extracted Maxi-Mult (N=200) and 0.81 for the external form of the questionnaire (N=24). Particularly dismal among the findings was the r of -.09 found for scale Mf. While most of the Maxi-Mult scales resulted in correlations of statistical significance, only scale D recorded a practical correlation of .84. In examining scales 2-8, it can be seen that scale D had the highest correlation for five of the seven groups, ranked as second highest for the group of alcoholics, and third highest for the group of females. The encouraging results of this scale can probably be explained by noting that of the forty critical items added to Kincannon's Mini-Mult, only one was added to the existing D scale. As this scale is an essentially unmodified Mini-Mult scale, it is felt that the high Maxi-Mult correlations recorded for this scale are in reality indices of Mini-Mult reliability. The present author takes partial responsibility for the consistently
low findings on scale Mf. The attempt to create an Mf-female scale by the previously mentioned simplistic method resulted in disastrous negative correlations in five of the seven groups. While results of the Mf-female scale were discouraging, the same scale recording male responses was higher, but far from encouraging. Among the group of male Ss, and alcoholics (composed mostly of males), correlations of .31 and .43 were among the lowest obtained. The fact that the Maxi-Mult was developed with an exclusively male population is apparent by comparing the results of tables 3 and 7 with the other groups. The alcoholic group recorded four groups with correlations of .80 or higher, and are overshadowed only slightly by the five comparable correlations for the male group. The fact that the five highest correlations for the alcoholic group were also highest for the male group illustrates again an apparent sexual bias in the Maxi-Mult.

Spera's attempt to develop the previously nonexistent abbreviated Si scale resulted in low but encouraging findings for the groups composed chiefly of males (Males r = .64, alcoholics r = .62). This new scale had its poorest predictive value for the psychiatric group, where its r of .32 was surpassed in inaccuracy only by scale Mf.

As MMPI profiles are frequently represented in the form of three point codes, tables 9-15 were prepared in order to represent the various high points for the different subject groups. As table 9 indicates, the Maxi-Mult successfully predicted the highest scale in only 51% of the cases among the total S population. This compares with Spera's finding of 77% for the 200 Ss whose MMPI's were scored for Maxi-Mult items, and 62% for the 24 Ss receiving the external
form. As was found in previous statistical data, the highest predictability was achieved in the predominantly male group of alcoholics. An apparent contradiction was noted among these findings, however, when it was found that the female group had a slightly more accurate prediction of high points than the all male group. As both groups substantially underestimated high point predictability (40% and 33% respectively), it is felt that trying to formulate an explanation for this variation is of marginal utility, and none is offered at this time.

The results of this study indicate that the Maxi-Mult is a rather inefficient instrument in predicting MMPI scores. While it cannot be said that the Maxi-Mult is useless, its value might only be shown in certain populations. Its widespread use as a replacement for the MMPI is contraindicated by the results of this study. Although the Efficiency of the Maxi-Mult was shown to be poor, several questions remain unanswered. While previous research on abbreviated MMPI's has been met with qualified success, one is curious about the reliability of these instruments with heterogeneous populations where order of presentation is controlled and examined. Further research into those instruments may show that there is variation between scales and with different types of Ss. The potential for a hybrid short form MMPI employing the best factors of these tests is worth consideration, and would appear to be the logical target for future research.
REFERENCES


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Appendix A

The 104 Items of the Maxi-Mult
1. I have a good appetite.
2. I wake up fresh and rested most mornings.
3. My daily life is full of things that keep me interested.
4. There seems to be a lump in my throat much of the time.
5. I work under a great deal of tension.
6. Once in a while I think of things too bad to talk about.
7. I am very seldom troubled by constipation.
8. My sex life is satisfactory.
9. At times I have very much wanted to leave home.
10. At times I have fits of laughing and crying that I cannot control.
11. I am troubled by attacks of nausea and vomiting.
12. No one seems to understand me.
13. Evil spirits possess me at times.
14. At times I feel like swearing.
15. I have nightmares every few nights.
16. I find it hard to keep my mind on a task or job.
17. I have had very peculiar and strange experiences.
18. If people had not had it in for me I would have been much more successful.
19. I have never been in trouble because of my sex behavior.
20. During one period when I was a youngster I engaged in petty thievery.
21. I have had periods of days, weeks, or months when I couldn't take care of things because I couldn't "get going".
22. My sleep is fitful and disturbed.
23. Much of the time my head seems to hurt all over.
24. When I am with people I am bothered by hearing very queer things.
25. I am in just as good physical health as most of my friends.
26. I have often had to take orders from someone who did not know as much as I did.
27. I see things or animals or people around me that others do not see.
28. I wish I could be as happy as others seem to be.
29. I am very strongly attracted by members of my own sex.
30. I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others.
31. I have often wished I were a girl. (or if you are a girl) I have never been sorry that I am a girl.
32. I get angry sometimes.
33. Sometimes I am strongly attracted by the personal articles of others such as shoes, gloves, etc., so that I want to handle or steal them though I have no use for them.
34. I am certainly lacking in self-confidence.
35. I have little or no trouble with my muscles twitching or jumping.
36. Much of the time I feel as if I have done something wrong or evil.
37. I am happy most of the time.
38. Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right.
39. Often I feel as if there were a tight band about my head.
40. I believe I am being plotted against.
41. I believe I am being followed.
42. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.
43. I have a great deal of stomach trouble.
44. Often I can't understand why I have been so cross and grouchy.
45. I have never indulged in any unusual sex practices.
46. At times my thoughts have raced ahead faster than I could speak them.
47. I believe that my home life is as pleasant as that of most people I know.
48. Sometimes I feel as if I must injure either myself or someone else.
49. I certainly feel useless at times.
50. I have the wanderlust and am never happy unless I am roaming or traveling about.
51. Someone has been trying to poison me.
52. During the past few years I have been well most of the time.
53. I have had periods in which I carried on activities without knowing later what I had been doing.
54. I feel that I have often been punished without cause.
55. I cannot understand what I read as well as I used to.
56. I have never felt better in my life than I do now.
57. There is something wrong with my mind.
58. What others think of me does not bother me.
59. My memory seems to be all right.
60. I am worried about sex matters.
61. I find it hard to make talk when I meet new people.
62. I am afraid of losing my mind.
63. I commonly hear voices without knowing where they come from.
64. I feel weak all over much of the time.
65. I have very few headaches.
66. I have had no difficulty in keeping my balance in walking.
67. I do not like everyone I know.
68. There are persons who are trying to steal my thoughts and ideas.
69. I wish I were not so shy.
70. I believe I am a condemned person.
71. At times it has been impossible for me to keep from stealing or shoplifting something.
72. I believe my sins are unpardonable.
73. I have used alcohol excessively.
74. I frequently find myself worrying about something.
75. My parents have often objected to the kind of people I went around with.
76. I gossip a little at times.
77. At times I feel that I can make up my mind with unusually great ease.
78. I hardly ever notice my heart pounding and I am seldom short of breath.
79. I get mad easily and then over it soon.
80. I have periods of such great restlessness that I cannot sit long in a chair.
81. My parents and family find more fault with me than they should.
82. I have had blank spells in which my activities were interrupted and I did not know what was going on around me.
83. No one cares much what happens to you.
84. I do not blame a person for taking advantage of someone who lays himself open to it.
85. At times I am all full of energy.
86. My eyesight is as good as it has been for years.
87. Someone has control over my mind.
88. I do not often notice my ears ringing or buzzing.
89. At one or more times in my life I felt that someone was making me do things by hypnotizing me.
90. Someone has been trying to influence my mind.
91. I have periods in which I feel unusually cheerful without any special reason.
92. I have never been in trouble because of my sex behavior.
93. Even when I am with people I feel lonely much of the time.
94. I think nearly anyone would tell a lie to keep out of trouble.
95. I am more sensitive than most other people.
96. I have had very peculiar and strange experiences.
97. Peculiar odors come to me at times.
98. I feel anxiety about something or someone almost all the time.
99. Most of the time I wish I were dead.
100. I often feel as if things were not real.
101. I have strange and peculiar thoughts.
102. I hear strange things when I am alone.
103. I am afraid of using a knife or anything very sharp or pointed.
104. People often disappoint me.
## Appendix B

T Scores Obtained From the Maxi-Mult Results of Psychiatric Ward Subjects, N = 30

<table>
<thead>
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<th>Sex</th>
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