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Minnesota Multiphasic Personality Profiles of the Morbidly Obese

Philip J. Lanzisera, PhD, Allan DeHorn, PhD, Carolyn MacDonald, RD, Conni Sroka, RD, and J. David Fachnie, MD

Minnesota Multiphasic Personality Inventory profiles of 132 morbidly obese individuals participating in a protein-sparing modified fast were examined via factor analytic methods yielding five interpretable psychometric factors. The results support the hypothesis that the morbidly obese are a psychologically heterogeneous population which can be subdivided conceptually. However, the findings fail to support the hypothesis that any particular psychopathology is intricately linked to the development of morbid obesity. (Henry Ford Hosp Med J 1988;36:78-81)

For years clinicians have sought to isolate Minnesota Multiphasic Personality Inventory (MMPI) profiles associated with chronic obesity, but these efforts have yielded inconsistent and equivocal results. Whether the morbidly obese are a homogeneous population (as viewed through the MMPI) or a heterogeneous group requiring subdivision is an important question left unanswered by the current literature.

Lauer et al (1) compared the MMPI profiles of 24 seriously obese women who were entering a diet program with the normative data from the general population. The mean T-scores of these women differed from the general population group on the following scales: D(2), Hy(3), Pd(4), Mf(5), and Pa(6) (see MMPI Scale Key; T-scores are normalized standard scores with a mean of 50 and a standard deviation of 10). All of these scales were significantly higher than the general population, except for scale 5 which was significantly lower. A significant difference was also observed on the MacAndrew subscale, which is designed to measure tendencies toward alcoholism (2). Perhaps more significant is the percentage of individuals with elevations above 70T: 19% had such elevations on scale 2, 11% on scale 3, and 15% on scale 4. (70T, being two standard deviations above the mean, is the customary statistical cutoff for the indication of deviation from the norm.) However, predictions of weight loss were not successful with only Si(0) correlating significantly in the negative direction.

Leon et al (3) found that scales 2 and 4 were relatively elevated for obese individuals. They conducted a two-point profile analysis** and found that code 2-0/0-2 was the most common code among the obese, which occurred in 16.1% of the group. This profile has often been associated with chronic depression in affection-starved individuals. In studying a sample of Native Americans, Pine (4) found no differences between the MMPI profiles of obese and nonobese individuals. Held and Snow (5) found significant differences between obese and nonobese adolescents on scales 2, 4, 6, 7, and 8, with the largest differences on scales 4, 7, and 8.

In examining the MMPI profiles of individuals seeking gastric stapling for treatment of obesity, Hutzler et al (6) found that 60% had at least one MMPI scale above a T-score of 70. They also reported a slight elevation on scale 4 for both males and females. Females displayed a significant suppression of scale 5, producing a marked negative slope between these scales. Rosen and Aniskiewicz (7) compared the MMPI profiles of morbidly obese women who elected intestinal bypass surgery with those who did not choose that procedure. The former group had significantly higher scores on scales 2, 4, 6, and 0.

McCall (8) compared the MMPI profiles of women who succeeded in losing weight with those who failed and found that the latter group had significantly higher elevations on nine of the ten clinical scales, scoring lower only on scale 5. The greatest differences were on scales 1, 2, 3, 4, 7, and 8. In a follow-up study, McCall (9) found that self-control training was particularly helpful for individuals whose MMPI profiles resembled those of the women who had failed to lose weight. However, Hartz et al (10) found no differences in MMPI profiles between those who succeeded and those who failed in losing weight.

All these studies viewed the obese population as essentially homogeneous, an assumption often demonstrated as faulty in studies of groups displaying deviant behavior. Duckro et al (11) found three factored subgroups among 199 hyperobese women presenting for gastric surgery. The first group yielded essen-

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**A two-point profile code is the standard method of classifying MMPI profiles wherein the two highest clinical scales are noted as the profile type. Thus, a 2-0/0-2 profile code indicates that scales 2 and 0 (D and Si) are the highest scales in the profile.
Initially normal MMPI profiles, the second yielded profiles with primarily neurotic features, and the third yielded profiles suggestive of anger and hostile acting-out.

While these studies offer some evidence that the morbidly obese do differ from the general population insofar as their MMPI profiles are concerned, the nature of the differences vary. We hypothesized that these inconsistencies may be due to the frequent assumption of homogeneity within the obese population. Our study, following that of Duckro et al (11), seeks to clarify the nature of the obese group as seen through their MMPI profiles and other selected measures.

**Patients and Methods**

MMPI profiles were obtained from 33 men and 99 women who wanted to participate in an intensive weight loss (IWL) program (total n = 132). The mean age was 40.4 ± 10.1 years, and the mean initial weight was 117 ± 23.9 kg (260 ± 53.1 lb). Each participant completed an MMPI before starting the IWL program which included the use of supplemented fasting (The Optifast® Program, Sandoz Pharmaceuticals, Minneapolis, MN), periodic medical examinations, and nutritional and behavioral management classes. Criteria for inclusion in the IWL program included a weight at least 50% over ideal body weight and the absence of medical contraindications for participation in such a program. Ideal body weight was calculated using a formula from the Food and Nutrition Board of the National Research Council (12).

Individuals unfamiliar with the MMPI results rated each participant as to his or her compliance with the program according to: 1) drop out in less than two months, 2) drop out between two and six months, 3) irregular attendance for more than six months, and 4) regular attendance for more than six months. Initial weights were obtained during the entry physical examination, and final weights were determined according to a patient's last session with the program. Weight loss and weight loss percentages (weight loss/initial weight − ideal body weight) were calculated using these figures.

A Q type factor analysis of the K corrected T-scores* was performed using an iterated principal factors approach with a verimax rotation. The cutoff eigenvalue for determining factors was determined by the number of subjects divided by the number of variables in the analyses.

**Results**

The group had a mean weight loss of 18.5 ± 13.5 kg (41 ± 30 lb) and a mean weight loss percentage of 45.7% ± 35.9%. A total of 43 (32%) subjects dropped out of the program before two months, 34 (26%) dropped out between two and six months, 26 (20%) were irregular participants, and 29 (22%) were consistent participants.

The entire group mean MMPI profile includes no scale elevations above 70T on either the validity or the clinical scales. A total of 72 (55%) patients had no significant elevations. The most frequent two-point reciprocal code types were single-point 3 (n = 5), 2-4/4-2 (n = 5), and 1-3/3-1 (n = 4).

The factor analysis suggests the presence of five factors exceeding the established cutoff eigenvalue. Thus, up to five subgroups of the morbidly obese are possible (as viewed by their MMPI profiles). Table 1 displays the group size, mean age, starting weight, total weight loss, and weight loss percentage for each of the five groups. Table 2 presents the mean MMPI scale T-scores of the five factor groups and the overall T-scores.

The subgroups did not differ significantly from each other on age, starting weight, total weight loss, or weight loss percentage based on the general linear model analysis of variance, nor by Scheffe tests of the means. Significant differences did emerge between groups for the MMPI scale scores using the Scheffe test. However, for the group scale score means, most elevations were below 70T. While these profiles may suggest personality differences, they are not suggestive of pathology.

Inspection of the five subgroups suggests that the predominant group (n = 45) has a normal profile with highest elevations on scales K and 4-3. This profile may be associated with the presence of fairly well operating psychological defenses in an

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**Table 1**

<table>
<thead>
<tr>
<th>Q Type Factor Analysis of the Morbidly Obese Sample Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>No. of patients (n = 132)</td>
</tr>
<tr>
<td>Age (years) (mean = 40)</td>
</tr>
<tr>
<td>Starting weight mean = 117 kg</td>
</tr>
<tr>
<td>(260 lb)</td>
</tr>
<tr>
<td>Weight loss mean = 18.5 kg</td>
</tr>
<tr>
<td>(41 lb)</td>
</tr>
<tr>
<td>Weight loss % (mean = 46)</td>
</tr>
</tbody>
</table>

Filter: 119
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*K corrected T-scores actually appear on the MMPI profile. The standard scoring method for the MMPI requires that the raw scores of several scales be corrected for response bias by adding a portion of the raw score of the K (Correction) scale. Using this correction, these scales are standardized.
individual for whom the control of aggression and conflict in relationships is important but not necessarily problematic.

The second subgroup (n = 21) had a single clinical elevation (scale 2 = 70T) with five scales (Pd, Pa, Pt, Sc, and Si) in the 65T to 70T range. A prominent 4-6 V (high scales 4 and 6, low scale 5) was also present. This profile (probably mostly women) suggests some real discomfort and at least some compromised functioning, although overt pathology is not suggested. The difficulties most suggested concern conflicts over the expression of aggression with a tendency toward excessive overt constriction, the experience of victimization, and general social alienation and discomfort. However, with a mean profile this low, the degree of discomfort is limited.

The third subgroup (n = 14) had very little elevation on the MMPI profile, with Ma at 66T being the highest score. This is a normal group using (probably) healthy, normal defenses of denial and optimism.

The fourth subgroup (n = 18) yielded almost clinically significant elevations on the neurotic triad (1, 2, and 3), suggesting somatic focus, denial or minimization of aggressive impulses, and interpersonal conflict. Again, these qualities would be expected to be present only minimally.

The fifth subgroup (n = 10) (probably mostly men) had a clinically significant elevation on scale Mf (70T), with scales Hy and Pd being the next highest. This profile (if of a male) is some-times associated with insecurity in the male role and tendencies toward psychosexual passivity. As in the second subgroup, adequate expression of aggression is often lacking in this profile type. In many respects this subgroup is similar to the second subgroup regarding difficulty with aggression, with the chief differences being easily attributable to the different ways in which men and women present the problems suggested by the difficulties with aggression.

A total of 24 (18%) profiles could not be classified.

The group to which a patient belonged was not found to have a significant relationship between success and failure in the IWLP program, to weight loss, nor to percentage of weight loss. The restricted range of the actual scores may have made adequate discrimination difficult to achieve.

Discussion

Significant psychological dysfunction (as measured by the MMPI) existed in less than half of our population and thus is probably not a major contributing factor per se to the existence of obesity, at least for most obese individuals. While the absence of a control group of the untreated obese does not allow generalization to the entire obese population, clearly the morbidly obese in our sample are a heterogeneous group. Care must be taken in the interpretation of these results due to the absence of many mean profiles with many elevations above 69T. While profiles without scores above 70T can be interpreted for personality style, the resulting descriptions should not be interpreted to suggest pathology but only style. Thus, these results suggest the presence of differing coping styles and interpersonal and intrapsychic difficulties rather than differential diagnostic pathology. Such differences can be expected to result in differing sensitivities to stress. This in turn can be expected to contribute differentially to difficulty with relapse. These data, however, do not demonstrate empirically that such expected differences do occur.

We may hypothesize that the fourth factor group would be less stress-sensitive overall given their probable greater freedom from intrusive conflict. They may also be likely to be group leaders given their higher than average energy level and outgoing qualities.

The first factor group may be only slightly more stress-sensitive and then only in the face of direct interpersonal conflict involving strong aggressive responses. A potentially important area of focus for them would be assertiveness training and the use of behavioral techniques to inoculate them against relapse under such stress. The third factor group may be similar in regard to relevant stressors but would be expected to be generally more inhibited than the first factor group. Assertiveness training, then, may be equally important for this group. However, they may be more prone to acute distress when under stress and more likely to use more overtly inappropriate defenses. Somatic focus may include alterations in the experience of hunger.

The second group is most likely to be stress-sensitive and to have a broader band of relevant stressors. Thus this group might require the greatest support during a prolonged fast. They...
are most likely to be sensitive to criticism and to require that individuals who help them will avoid the use or suggestion of criticism.

The fifth factor group would require that their passivity, greater than often expected in men, be respected without excessive challenge. Assertiveness training may be helpful as long as it is not perceived as a demand.

Attention to these differing interactional needs may help the clinician to foster the greatest possible patient compliance with a behaviorally difficult treatment program.

In many respects our study replicates the findings of Duckro et al (11), except that we isolated two additional factor groups. Each of Duckro et al’s three factor groups appear to be represented in our factor groups. Our third and first groups may be represented in their first group, while their second group may be represented by our fourth group. Our second group, with their lesser stress tolerance and broader spectrum of stressors, may be similar to Duckro et al’s third factor group.

None of the subgroups in our study emerged with a markedly disturbed profile, which is reassuring in terms of screening individuals for participation in IWL programs. While some of the 18% who were unclassified may fall into this disturbed profile category, most would not.

Because the profile subgroupings do not discriminate between those who succeed and those who fail in losing weight, factors other than or in addition to the profile type will be required to make that prediction. However, success in a weight loss program may be maximized by taking into account those personality differences noted between the profile types.

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