



## Personality and Drug Use: A Study of the Usefulness of the Mf Scale of the MMPI in Measuring Creativity and Drug Use

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*FOREWORD: This article is another in a long series of drug studies which have been conducted by Professor Steffenhagen and his associates at the University of Vermont. The research from which these data were taken was supported by Grant #PH1RO1MH16 from NIMH in 1968-69.*

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**INTRODUCTION:** Although millions of dollars of Federal monies are being spent to combat drug abuse, little is known about the drug user and why he is resorting to drug use. The thrust of the efforts to combat drug abuse appears to be toward rehabilitation rather than research or prevention programs. The research which has been done, tends to be split between epidemiologic and psychogenic.

Psychogenic studies of drug users tend to use subjects only from the 'sick' population, those receiving psychiatric aid and therefore, are unrepresentative of the normal drug user. To avoid this problem we used a sample of non-users to compare with a 'non-clinic' user population.

In this paper we will examine one aspect of our findings, those pertaining to the Mf scale of the MMPI which has been used to differentiate users from non-users (McAree, Steffenhagen and Zheutlin, 1969). This scale was originally designed to measure heterosexual adjustment on the basis of the interest patterns of masculine to feminine males. High scoring males on the Mf scale frequently manifest either overt or covert sexual inversion. According to Hathaway and McKinley (1951, p. 20), "Every item finally chosen for this scale indicated a trend in the direction of femininity on the part of the male sexual inverts."

A high score on this scale, however, should not be construed as indicative of homosexuality without other confirmatory clinical evidence. As Dalstrom and Welsh (1960, p. 64) pointed out, "Persons with this personality pattern often engage in homoerotic practices as part of their feminine emotional makeup; however, many of these men are too inhibited or full of conflict to make an overt expression of their sexual preferences." The femininity may be expressed in their interests, attitudes and values, as well as in their sexual behavior.



The Mf scale has frequently been assumed to be an indicator of masculine or feminine interests. However, one study which made this initial assumption (Graham, et al., 1971, pp. 368-9) found that while it may measure masculine and feminine interests, "liking masculine activities is independent of one's attitude about feminine activities." On the basis of a factor analysis of this scale, the author concluded that "heterosexual adjustment does not emerge as one of its most important dimensions."

Dalstrom and Welsh (1960, pp. 37-8) indicated that on the Mf scale, college males score about one S. D. above the mean of the general male population and they raise the following questions: "Are they more feminine than the MMPI sample of men in general used in deriving this scale? Or is there some variable not connected with femininity that is operating specially within this college subgroup to distort their verbal behavior in this way?" If these questions were appropriate in 1960, it is possible that they are even more appropriate today.

In examining drug use within an Adlerian framework, the principal investigator (R. A. Steffenhagen) set forth the proposition that bi-sexuality is becoming a more common and less deviant practice among college students, than it was in the 1950's. Certainly, sexual behavior among college students has changed in the last 20 years: behavior which was at one time considered deviant is becoming more common place e.g., oral and anal sex (Steffenhagen, 1974). Sex behavior and other behavior which was at one time deviant may become the norm of the future. We are in a period of rapid cultural change, and these changes are permeating the sexual as well as other areas of normative behavior. Gonen, et al. (1968) hypothesized that college students are more "feminine" than the general population and that college males would respond to more items in a unipolar fashion than females. MacKinnon (1968, p. 111) hypothesized that creative males score higher on the Mf scale (5 to 10 points above the mean) than do non-creative males and that this is indicative of sensitivity, inner-directedness and femininity of interests. Older concepts of what comprises masculinity are being questioned especially in light of unisex and womens' 'lib' movements. Thus, what was normative in the 1950's for sexual behavior is not necessarily true today.

Individuals who are high on the Mf scale would be inner-directed in terms of Reisman's typology of behavior. The inner-directed individuals are sensitive, imaginative and insightful and they live without strict rules and regulations. This is, in many ways, a description of the drug users of the 1960's.

**METHOD:** The population for this research consisted of 100 male volunteer drug users and 100 male non-users who were undergraduate students at the University of Vermont during the 1968-69 academic year. A socio-demographic questionnaire and the MMPI was administered to each volunteer. Under a grant of immunity from the State's Attorney of



Chittenden County and the Attorney-General of Vermont, we were able to interview and test drug users within the college milieu. The subjects knew the investigation was confidential and that their anonymity would be protected.

We hypothesized that the drug users of the 1960's were an avant-garde group and as such would score high on tests of creativity. By avant-garde, we mean individuals who are in the vanguard of social change. They are the creative people who are responsive to new ideas and are not afraid to assert their individuality; they are the innovators of social change, the individualists who dare to stand apart from society. Tests used on an experimental basis to test for creativity were the Barron-Welsh "Art Scale," the Allport—Vernon-Lindsey "Study of Values" and the Fromm-Maccoby "Life Orientation Test." These tests were administered to sub-samples of 40 of the drug users and 40 of the non-users. The Mf scale of the MMPI was also used as a creativity test and was analyzed for the entire sample of 100 drug users and 100 non-users.

#### HYPOTHESES:

1. Students who score high on creativity will also score high on the Mf scale of the MMPI.
2. Drug users will score higher on creativity and the Mf scale than non-drug users.
3. The Mf scale of the MMPI is a better indicator of aesthetic appreciation than of sexual behavior.

**RESULTS:** We focus here upon the results of an item analysis and factor analytic analysis of the masculinity-femininity scale of the MMPI (the Mf scale) for the 100 male drug users and the 100 male non-drug users. Our tests of creativity showed a significant differentiation between drug users and non-drug users: drug users showed greater creativity ( $P < .01$  using  $X^2$ ) as measured by the Barron-Welsh Art Scale, the aesthetic scale of the Allport-Vernon-Lindsey Study of Values, and the Fromm-Maccoby Life Orientation Test.

Turning to the Mf scale of the MMPI we also found a significant difference in scores between drug users and non-drug users, ( $P < .01$  using the Mann-Whitney Test). Drug users rated significantly higher on the femininity variable than non-drug users (McAree, Steffenhagen and Zheutlin, 1969, p. 71). Because of this finding in which so many of the drug users appear as very sensitive and idealistic youth we decided to do an item analysis of the Mf scale in hope of shedding further light on the phenomena of drug use and on the Mf scale itself as related to psychological and sociological influences upon the user.

The results of the item analysis of all 60 Mf scale items can be seen in Table I. The drug users and non-drug users ranged from identical responses



for question No. 87 (difference 0) to a difference of 31 for question No. 78. A chi. sq. test was then made for each question (between the users and non-users) beginning with the larger differences and continuing until they no longer were significant. The results of the chi. sq. tests are reported in Table II. Of the 60 items on the Mf scale, only 13 differentiated the drug users from the non-drug users at the  $P \leq .01$  level of significance.

Looking at these significant items in terms of function, we can categorize 3 items as dealing with art, 5 with occupations and 5 with a loose category of ego function. Interestingly, none of the items dealt with questions of sexual behavior but rather with attitudes which had been associated previously with femininity.

The items of the Mf scale which differentiated the drug users from the non-users were aesthetic rather than sexual in quality. The drug users appeared to be 1) less mechanical, 2) more poetic, 3) less religious, 4) more sensitive, 5) greater liking for drama, 6) less scientific, 7) more journalistic, 8) more romantic, 9) kinder to animals, 10) more prone to dreaming, 11) more concerned, and 12) less likely to be joiners. These characteristics would be consistent with our contention that the drug user was (1968-69) a creative, sensitive aesthetic person.

A further analysis was made of those items contained on several sub-scales of the MMPI reported by Dalstrom and Welsh (1960). The Pepper and Strong sub-scales are Mf 1 (Personal and emotional sensitivity), Mf 2 (Sexual identification), Mf 3 (Altruism), and Mf 4 (Feminine occupational identification). None of our significant differences appeared on the Mf 2 (Sexual identification) but were dispersed among the other sub-scales. One item, #249, which has a religious connotation, did not appear on any of these sub-scales. Thus, the items which were the significant differentiators were not those related to sexual behavior, but rather those items which have been thought to be related to feminine attitudes.

The 13 scale items which differentiated users from non-users were then selected out of all 60 items to see how well they were associated with each other. Of the 78 possible associations (pairs), only 10 were above the .20 level (Pearson's r) and only 2 were above the .30 level, which suggest that these thirteen items do not form a homogeneous scale for this population. The largest associations of the 1770 total possible pairs (among all 60 items) were:

<u>Pairs</u>	<u>Values</u>
29-54	.720
22-29'	.636
22-54	.631
50-60	.543
7-19	.519



These paired items were as follows:

- Pair 1 I would like to be a soldier.  
Most people make friends because friends are likely to be useful to them.
- Pair 2 Most people are honest chiefly through fear of being caught.  
I would like to be a soldier.
- Pair 3 Most people are honest chiefly through fear of being caught.  
Most people make friends because friends are likely to be useful to them.
- Pair 4 If I were an artist I would like to paint flowers.  
There never was a time in my life when I liked to play with dolls.
- Pair 5 I am very strongly attracted to members of my own sex.  
I frequently find it necessary to stand up for what I think is right.

While it is possible to think of interpretations for these associations (for example, Pairs 1, 2 and 3 appear to measure other-directed and/or manipulative personalities; Pair 4 perhaps tendencies to stereotype; and Pair 5 deviant or conflict tendencies) there is no clear way in which they all hold together. It is even less clear that they are related to sexual attitudes or behavior.

Another approach was to factor-analyze the correlation matrix of all sixty items to see if there was some underlying simple structure. However, the two strongest factors explained only 11.9% of the variance (6.6 and 5.3 respectively), again indicating the lack of association among the scale items. These two factors were then rotated in a factor matrix to determine what items were highly loaded in each factor and the following items appeared (less than half are those which differentiate users from non-users):

<u>Factor 1</u>		<u>Factor 2</u>	
<u>Variable</u>	<u>Value</u>	<u>Variable</u>	<u>Value</u>
12	-.46970	8	.49093
34	-.52315	16	.45420
39	.58590	24	.45402
43	.46409	25	.40579
53	.58015	35	.44782
54	.41643	36	.43546
55	.50756	50	.40626
59	.55609		

Finally, we ran a multiple regression of drug use on our thirteen significant items, which resulted in a multiple R<sup>2</sup> of .32. Thus, about a third



of the variance in drug use was accounted for by these items which seem to us to measure aesthetic appreciation or avant-garde attitudes.

**DISCUSSION:** Our study shows that the Mf scale of the MMPI is a poor prognosticator of sexual pathology. As Dalstrom and Welsh suggest, the college male population score one S.D. higher on this scale than the non-college population. We have previously found (Steffenhagen, 1974) that those students who score high on the Mf scale of the MMPI also score higher on other tests of creativity (Barron-Welsh "Art Scale", aesthetic scale of the Allport-Vernon-Lindsey "Study of Values", and the Fromm-Maccoby "Life Orientation Test"). Our analysis of the data presented here shows that the college drug-using population of the late 1960's scored significantly ( $P \geq .01$ ) higher on the Mf scale and these tests of creativity than the non-drug using population. Furthermore, it would appear that there are certain items on the Mf scale which are more highly correlated with creativity and aesthetic appreciation than with sexual pathology.

Those cultural and/or psychological factors which would lead a male to choose (previously assumed) 'feminine' responses may be a function of the sensitivity and creativity of the individual rather than his sexual attitudes or interests.

In a sample population of 211 students three years later (1972) we found that neither the Mf scale nor the other 3 tests differentiated between drug users and non-users. The decision to take drugs apparently disseminated through the college sub-culture so that today an estimated 80% of the students do use or have tried at least marijuana and/or other drugs. We conclude from this that the avant-garde values haven't permeated the student sub-culture to the same degree as drug use since the individuals of the avant-garde group do comprise a select minority of highly creative individualistic people.

### Conclusion

From the foregoing analysis we were able to confirm our three hypotheses:

1. Students who scored high on the creativity tests also scored high on the Mf scale.
2. Drug users scored higher on both creativity on the Mf scale than non-drug users.
3. The Mf scale is a better indicator of aestheticism and creativity than sexual behavior.

It would seem that the use of the Mf scale as a predicator of behavior is questionable. The lack of internal consistency raises questions as to its validity as a scale of either sexual behavior, masculine or feminine interests, or drug use. We believe that the change taking place in the sex roles of college students, especially womens' lib and the unisex movements has un-



determined older attitudes regarding masculinity and femininity. We suggest, however, that certain items on the Mf scale have legitimate use as indicators of creativity, sensitivity and aesthetic appreciation.

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**Table 1**  
**MF SCALE ANALYSIS FOR 100 DRUG USERS**  
**AND 100 NON-DRUG USERS**

MMPI #	Expected Response	True		False		Blanks	Difference Between User & Non-User in Response	
		User	Non-User	User	Non-User			
1	1	F	30	53	70	47	0	23
2	4	T	10	12	90	88	0	2
3	19	F	30	16	68	82	4	14
4	25	T	44	43	55	57	1	1-2
5	26	F	27	33	72	66	2	6
6	28	F	19	25	80	75	1	6-5
7	69	T	6	4	93	96	1	2-3
8	70	T	7	13	77	66	37	6-11
9	74	T	11	10	89	90	0	1
10	77	T	16	27	84	73	0	11
11	78	T	76	45	24	55	0	31
12	79	F	22	43	78	57	0	21
13	80	F	29	34	71	66	0	5
14	81	F	49	57	51	43	0	8
15	87	T	5	5	95	95	0	0
16	89	F	55	42	43	57	3	13-14
17	92	T	2	5	97	95	1	3-2
18	99	F	55	60	45	40	0	5
19	112	F	78	65	22	35	0	13
20	115	F	34	51	62	45	8	17
21	116	F	30	20	69	80	1	10-11
22	117	F	48	45	52	54	1	3-2
23	120	F	69	73	31	27	0	4
24	126	T	74	49	25	51	1	25-26
25	132	T	22	14	78	86	0	8
26	133	F	68	72	32	28	0	4
27	134	T	91	82	9	18	0	9
28	140	T	67	55	33	44	1	12-11
29	144	F	9	12	91	87	1	3-4
30	149	T	18	11	82	89	0	7
31	176	F	73	71	27	29	0	2
32	179	T	24	31	76	69	0	7
33	187	T	87	89	13	11	0	2
34	198	F	18	39	82	61	0	21
35	203	T	35	18	65	82	0	17
36	204	T	42	21	58	79	0	21
37	213	F	14	8	86	92	0	6
38	214	F	33	48	67	52	0	15
39	217	T	76	54	24	46	0	22
40	219	F	29	36	71	64	0	7
41	221	F	67	87	33	13	0	20
42	223	F	17	44	83	56	0	27
43	226	T	57	50	43	50	0	7
44	229	F	14	33	86	67	0	19





45	231	T	63	66	36	34	1	3-2
46	239	T	59	47	41	53	0	12
47	249	F	10	37	87	62	4	27-25
48	254	F	27	34	73	65	1	7-8
49	260	F	13	10	87	90	0	3
50	261	T	24	15	75	85	1	9-10
51	262	F	69	60	31	39	1	9-8
52	264	F	27	23	73	77	0	4
53	278	T	62	49	38	51	0	13
54	280	F	27	16	73	83	1	11-10
55	282	T	53	44	47	56	0	9
56	283	F	42	56	58	44	0	14
57	295	T	70	42	26	53	9	28-27
58	297	T	22	25	77	75	1	3-2
59	299	T	74	49	26	51	0	15
60	300	F	75	67	23	33	2	8-10

TABLE II

Chi Sq. Analysis of "Mf" Scale Items of the MMPI for Drug Users and Non-users

*Question Number	Item	X <sup>2</sup> Value	
78	I like poetry. (T)	20.04	P ≤ .001
249	I believe there is a Devil and a Hell in afterlife. (F)	18.92	P ≤ .001
223	I very much like hunting. (F)	17.37	P ≤ .001
295	I liked "Alice in Wonderland" by Lewis Carroll. (T)	16.93	P ≤ .001
126	I like dramatics. (T)	14.40	P ≤ .001
221	I like science. (F)	11.30	P ≤ .001
198	I daydream very little. (F)	10.96	P ≤ .001
1	I like mechanics magazine. (F)	10.88	P ≤ .001
217	I frequently find myself worrying about something. (T)	10.64	P ≤ .01
229	I should like to belong to several clubs or lodges. (F)	10.22	P ≤ .01
204	I would like to be a journalist. (F)	10.15	P ≤ .01
79	My feelings are not easily hurt. (F)	10.15	P ≤ .01
203	If I were a reporter I would very much like to report news on the theatre. (F)	7.53	P ≤ .01

\*Nothing above a P ≤ .01 is reported.