EMOTIONAL REACTIONS AND GENERAL PERSONALITY STRUCTURE

Written by Carole Case

The purpose of this part of the study was twofold: to discover (1) what effect marihuana has on the emotional reactivity of the person taking it, and (2) what differences in emotional reaction and general personality structure exist between the marihuana user and non-user.

TESTS

Two types of tests are available for studying personality. These are the paper-pencil tests and the projective tests. Projective techniques which reveal the subject's personality through his treatment of the test material are generally more valid and more revealing than the paper-pencil tests which require the underlining of words or the answering of "Yes" or "No" to a list of questions. This is true of all subjects but seemed to apply more particularly to those used in this study. Such tests as the Psychosomatic Inventory and the Bell Adjustment Test were tried out in the initial stages of the investigation but were soon discontinued as the subjects gave continued evidence of a desire to ingratiate themselves with, or to make a showing for, the examiner. Questions whose intent was obvious were almost invariably answered as the subject thought the examiner wanted them to be or as he thought would look best on his record. For this reason most of the tests employed were those whose purposes were less easily interpreted by the subjects.

Rorschach Test

One of the primary tests employed for examining the personality of the subjects was the Rorschach Test. It consists of ten standardized ink blots printed on 7- by 91/2-inch white cards. Some of the blots are black, some red and black, and some multicolored. The cards are presented to the subject one at a time and he states what they look like to him, what he sees. The manner in which the subject interprets the plates gives an indication of his formal approach to various types of situations. The extent and directions of the subject's affective reactions, his drive, his ability to make good social adjustment, and his emotional stability are some of the personality traits which can be determined on the basis of this test.

Goodenough Test (Drawing of a Man)

This test was standardized originally as an intelligence test for children, but clinical use has demonstrated its value as an instrument for personality diagnosis. The subject is given a sheet
of paper 81/2 by 11 inches and asked to draw the figure of a man. In his drawing he unconsciously portrays his own body image so that the picture by its emphasis and omissions betrays which body parts are important or unimportant to him; A:low he sees himself. Although results from this type of interpretation have not, to our knowledge, been standardized, they may nevertheless be used for comparing the marihuana user and non-user in terms of their attitudes toward their body images and for noting the differences in these concepts before and after the administration of marihuana.

**Level of Aspiration Test**

The purpose of a Level of Aspiration Test is to ascertain the relationship between the goal a person sets for himself and the level of his performance. Roughly, there are three possible reactions: (1) the individual, in an attempt to protect his ego, sets himself so low a goal that he must inevitably reach or surpass it; (2) he exposes his ego to failure for overevaluating his ability and sets a goal which he cannot possibly reach or surpass; or (3) he sets a goal commensurate with his ability.

The test devised for this experiment is a very simple one. The subject is required to place sixteen colored cubes in a box, red side up. Before beginning he is asked to estimate how long it will take to complete the task. He is then given the signal to proceed and at the end of the trial is told how much time was actually consumed. On the basis of this result, the subject is again asked to state how much time he thinks he will need to fulfill the task and again at its completion is told how long it actually took him. The subject's estimate given before he had any actual experience with the test is disregarded. From the nine subsequent trials, averages of the subject's estimate (the goal he set for himself) and of his actual performance times are calculated. The difference between these two averages gives a measure of his level of aspiration.

**Frustration Test**

When a person is prevented from finishing a task correctly, thus being left with an incomplete gestalt, he has definite feelings of frustration. His reactions to such feelings will vary depending upon his general manner of emotional response. In this investigation, the method used to frustrate the subjects was to present them with a series of relatively simple mazes (Wechsler Self-Administering Mazes), the third or fourth one being so blocked off that no exit is possible. The subject is highly praised for his performance on the first two or three and, when he
becomes involved in the closed one, is aggravated by the comments of the examiner concerning the success of some of the other men with this identical maze. After fifteen seconds of futile attempts to get out the subject is told that his time is up. Immediately after this he is given the Level of Aspiration Test, the assumption being that frustration might affect this level in some way.

Binet Lines

Suggestibility is a specific rather than a general trait and can therefore be interpreted only with reference to the situation in which it is tested. For example, a man may be very responsive to the suggestions of his attractive secretary but negativistic to those of his business rival.

Binet's Suggestibility Test, which consists of twelve rectangular pieces of cardboard on which are drawn lines of varying length, was used in this investigation. The length of the first five lines increases by specific amounts; the sixth line does not increase but is identical with the fifth, the seventh line again is longer; the eighth is its equivalent; and so on. The assumption is that the progressive increase of the first five lines will influence the suggestible person and he will continue to increase the lines for some time before he becomes aware of the fact that they are no longer consistently lengthening.

The following directions are given: "I want to see how well you can estimate length. I am going to show you some cards, each with a line drawn on it. Some of the lines are long and some are short. I'll show you each card for just two seconds and when I take it away you must draw the line. Try to make it exactly the length of the line on the card." The subject is given a sheet of paper which has a vertical line drawn about half an inch in from the left-hand edge of the paper. Numbers, placed about half an inch apart, appear inside this margin, beginning at the top with number 1 and going through number 12. The subject is told to begin his line opposite the number and right up against the vertical-line margin. As soon as he has drawn his line it is covered with the card and the next card is presented.

Results are scored in accordance with Binet's method. The average amount of increase (measured in sixteenths of an inch) for the even lines which actually should not increase is divided by the average increase in the odd lines which should increase, and the quotient is multiplied by 100.
Wechsler Vocational Interest Blank

The Wechsler Vocational Interest Blank consists of a list of forty jobs or vocations, each followed by the letter "L" or "D." These vocations may be classed as professional, artistic, industrial, or manual. The subject is told that for the moment he is to assume that each job pays the same amount and that he has the training and ability to do any of them. The only thing to influence his choice of a job is his own inclination, that is, whether or not that type of work appeals to him. If it does he is told to encircle the "L," but if it does not he is to encircle the "D." The choice of certain constellations of jobs, such as painting, teaching, and working in a florist shop, indicates a general feminine trend, while preference for others gives evidence of strongly masculine inclinations. Again, the selection of many positions may be taken to indicate an active, outgoing nature, while a small number of likes reflects a less active, more critical attitude.

Loofbourrow Personal Index: Test 1

This test is given to adolescent boys to measure their proneness to delinquency. In this study it was employed as a measure of self-confidence. It consists of one hundred words of which thirty are nonexistent, that is, words which look like unusual but real words but which are actually not part of the English language. If at any time, drugged or undrugged, a subject indicates familiarity with a significantly larger number of words than on another occasion, the assumption is that the increase in vocabulary corresponds to a rise in the subject's estimate of his own ability and mental capacity.

Wechsler Free Association Test

This test consists of a list of forty-five words chosen for their obvious value in personality study. The examiner reads the words one at a time to the subject and records his responses and his reaction time in fifths of a second. Reaction times and average deviation are computed for each subject, and those words for which the reaction time is delayed, that is, words which fall beyond the limits of the average deviation, are considered disturbing stimuli.

Pressey X-0 Test
There are four parts to this test, each one consisting of twenty-five lines of five words each. In Test I the subject is asked to cross out every word whose meaning is unpleasant to him and to encircle the one word in each row whose meaning is the most unpleasant. In Test II each row of words is preceded by a word in large print and the subject is instructed to cross out every word in the row which is connected in his mind with the word in large letters at the beginning of the row. At the end of this test the subject encircles the one word in each row which he most closely associates with the word in large letters. Test III requires the subject to cross out every word he thinks has a bad meaning and then to encircle the one thing in each row he thinks is worst. Test IV follows the same procedure, only here the subject crosses out everything he has ever worried about and encircles the one thing in each row he has worried about most. Norms have been established on college students, giving the average number of words crossed out and the modal word to be encircled.

**Downey Will-Temperament Test: Test I**

This test consists of a series of paired personality traits such as sociable or unsociable, clumsy or graceful. The subject is asked to underscore the trait of each pair which he thinks describes him more accurately. The test is not intended as a self-rating personality index, and therefore there are no norms for responses of this nature. It was used in this study solely to determine if the ingestion of marihuana produces changes in the individual's self-evaluation as indicated by a comparison of the traits he thinks apply to him when he is in his normal condition and when he is under the influence of the drug.

**Thematic Apperception Test**

This test employs a series of pictures which are handed to the subject one at a time with the following directions: "This is a test of creative imagination. I am going to show you some pictures. Around each picture I want you to compose a story. Outline the incidents which have led up to the situation shown in the picture; describe what is occurring at the moment—the feelings and thoughts of the characters; and tell what the outcome will be. Speak your thoughts aloud as they come to your mind. I want you to use your imagination to the limit." Productions are recorded verbatim. Scoring takes into account the needs of the subject as revealed in his stories and the environmental forces acting upon him.

**PROCEDURE**
EMOTIONAL REACTIONS AND GENERAL PERSONALITY STRUCTURE

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All the tests dealing with emotional reactions were given as individual tests. Although they are not as subject to practice effect as the Intelligence tests, practice does alter the results somewhat. For this reason every possible effort was made to give examinations during drugged and undrugged periods as far apart in time as possible and to divide the groups so that half the subjects took the initial examination while under the influence of marihuana and the other half before the administration of the drug.

Rorschach Test

This test was given once without marihuana and once under maximum dosage (3 cc. to 6 cc.) or with cigarettes, the number of cigarettes smoked being optional with the subject. Four subjects took the test three times, once without the drug, once with the drug in pill form, and once with cigarettes, but it was found impracticable to give the test more than twice in four weeks both because of the time it consumed and because of the subjects' growing boredom with it. In all, 45 subjects, 27 users and 18 non-users, took this test.

Goodenough, Level of Aspiration, Binet Lines, Vocational Interest Tests and Downey Test I

These tests were given to all subjects at least twice and some subjects took them as often as four times, that is, without the drug, under 2 cc., under 5 cc., and after smoking marihuana cigarettes. The number of times a subject was tested was determined primarily by the amount of time available. Twenty-seven users and 18 non-users took the Goodenough, Level of Aspiration and Vocational Interest Tests; 25 users and 17 non-users the Binet Lines; and 14 users and 8 non-users the Downey Will-Temperament Test.

Frustration, Free Association, and Pressey X-0 Tests, and Loofbourrow Test I

These tests were added later in the testing program and were therefore given to a limited number of subjects. They were administered twice, once without marihuana and once either with cigarettes or with large oral doses (3 cc. to 5 cc.).
Thematic Apperception Test

In an effort to conserve time, the administration of this test was not in accordance with the directions. Instead of relating the story to the examiner, the subject sat in a room by himself and recited his tale into the dictaphone. In addition to the time saved, this had the advantage of sparing the subject considerable embarrassment, since most of the men were very self-conscious about telling these stories when anyone was present. The disadvantage of this procedure lay in the examiner's inability to persuade the subject to give a fuller story. The test was given to each subject twice, once with and once without cigarettes. Only the following pictures were used: 3, 4, 5, M-11, M-12, M-13, M-15, M-18, M-19, M-20, F-14, and F-19. Although the results showed promise of interesting findings, the administration of the test was limited to only 9 subjects because so many mechanical difficulties were involved.

FINDINGS

Rorschach Test

Table 14 gives the Rorschach findings for 45 subjects both in the undrugged and drugged states. The measurable changes on the test which occurred during the period of drug intoxication were few and not far-reaching. They may be considered indications of tendencies rather than of significant alterations of the personality.
more than 15 per cent. Altogether the personality types among the non-users show a much
deviation is the small percentage of users who showed an extravertive personality. Only 15 per

more even distribution than those among the users as seen in Table 15. Judging by the
personality types the majority of marihuana users lack social ease and adroitness and are likely
given in the literature for the degree of extraversion in the general population, it seems definitely
world about them as compared with 28 per cent of the non-users. While no definite figures are
compared with those of the non-users or with the norms postulated for average adults of this age
non-user. While the number of subjects in both groups was too small to allow of definite

greater adverse or disorganizing effect on the neophyte than on the experienced smoker, again,
habituation.

indicated by the findings in Table 14, except that on the whole the alterations which did occur
the non-user, his falling off being as great as 31 per cent as compared with 24 per cent for the

number of responses given by the user increased only 11 per cent, those of the non-user rose
as was the case in the study of mental functioning, suggesting the possibility of psychological
statements, the trend seemed to indicate that the ingestion or smoking of marihuana has a

interpretation by the user as against a 12 per cent. Again, the user when drugged gave only 6 per, cent fewer whole answers as
2.3:1.6 when he was in the undrugged state and 2.9:2.1 when he was in the drugged phase.

induced by his drugged condition produced an entirely new attitude in the subject. Instead of the
subject played around with answers and often repeated them. He seemed anxious to get his

anxiety of others and was often concerned with maintaining his image. His type of approach changed from the customary deferential, almost ingratiating approach there was now a confident "know-it-all"
interpretation he allowed himself. For example, one interpretation on Card II read: "Two dogs.

which is somewhat less likely to see the obvious and the commonplace than he is in his normal state.
Drug to 20 per cent with drug. In other words, during the period of drug intoxication an individual
was in the undrugged state.

When the subjects were under the influence of marihuana (either 3-6 cc. or cigarettes, the
23.3. This increased number of responses was due primarily to the subject's greater awareness
of small, extraneous details which in his undrugged state he overlooked. Thus, while 17 per

associations than there was when they were in the undrugged state, an increased productivity
concern himself with the larger, more important aspects of a situation, and this implies some
emotional trends remain essentially unchanged under the influence of marihuana was further
revealed by the fact that the ratio for evaluating the individual's emotional type, that is, the ratio

tend to withdraw somewhat from the world about them and depend primarily on their own inner

EMOTIONAL REACTIONS AND GENERAL PERSONALITY STRUCTURE

TABLE 14

<table>
<thead>
<tr>
<th>Average number of responses</th>
<th>45 SUBJECTS</th>
<th>27 USERS</th>
<th>18 NON-USERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without Marihuana</td>
<td>With Marihuana</td>
<td>Without Marihuana</td>
</tr>
<tr>
<td>Whole</td>
<td>20.0</td>
<td>23.3</td>
<td>19.4</td>
</tr>
<tr>
<td>Whole</td>
<td>40</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Detail</td>
<td>43</td>
<td>42</td>
<td>47</td>
</tr>
<tr>
<td>Rare detail</td>
<td>17</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>Form</td>
<td>57</td>
<td>56</td>
<td>62</td>
</tr>
<tr>
<td>Form +</td>
<td>92</td>
<td>86</td>
<td>92</td>
</tr>
<tr>
<td>Ms</td>
<td>11</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>C</td>
<td>10</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Chiaroscuro</td>
<td>14</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>FM + m</td>
<td>12</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>A</td>
<td>36</td>
<td>54</td>
<td>37</td>
</tr>
<tr>
<td>Ad</td>
<td>18</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>H</td>
<td>13</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Hd</td>
<td>8</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>p</td>
<td>27</td>
<td>20</td>
<td>29</td>
</tr>
<tr>
<td>M:C</td>
<td>2.3:1.6</td>
<td>2.9:2.1</td>
<td></td>
</tr>
</tbody>
</table>
overall change was not startling when compared with results on the Level of Aspiration Test. At first, there was a slight trend toward lowering the level of aspiration (Table 17), but the decrease was not significant when no frustrating experience was introduced. On the whole it appears that small doses of marihuana and of marihuana cigarettes tend to lower the individual level of aspiration, that is, there is a slight lessening in the subject's drive to attain it.

When the group was divided into users and non-users the trend was the same for both. The estimated time for the job was generally happy and relaxed, but the performance time 24.4 seconds. Here the relationship between estimated and performance time was similar to that found in the undrugged phase, that is, there was a 1.2-second gap between the estimated time and the performance time needed for carrying out a set task (putting sixteen blocks in a box, red side up). As with the group results are not meaningful (except for one finding given below) because of a lack of significance.

With marihuana there was an increase in the percentage of subjects who remembered to give themselves more time. His attitude during the test was a much easier, more happy-go-lucky one. He occasionally stopped in the middle of the experiment to discuss his experience of other experiments, namely, the tendency to place their estimate just a little above their actual performance. This was demonstrated by the fact that while the average estimated time was 23.1 seconds, performance time 23.4 seconds. Although the subject actually took no longer to do the job, he thought he would work more slowly and in predicting his performance time, he would give himself more time. His attitude during the test was a much easier, more happy-go-lucky one. He occasionally stopped in the middle of the experiment to discuss his experience of other experiments, namely, the tendency to place their estimate just a little above their actual performance. This was demonstrated by the fact that while the average estimated time was 23.1 seconds, performance time 23.4 seconds.

As their performance improved with practice, the subjects tended to allow themselves less time for the job. Such statements as, "I should do better this time," or "I'll take a chance," were not made. If the subject was often satisfied to indicate such items by a single line or dash rather than by a more adequate fashion. The one consistent finding for this test was the fact that the subject's ability to draw the person was not influenced by his acute self-conception. On the contrary, as their performance improved with practice, the subjects tended to allow themselves less time for the job. Such statements as, "I should do better this time," or "I'll take a chance," were not made. If the subject was often satisfied to indicate such items by a single line or dash rather than by a more adequate fashion. The one consistent finding for this test was the fact that the subject's ability to draw the person was not influenced by his acute self-conception.

When a person is given a sheet of paper and is asked to draw a man on it, the paper and the subject's reactions before and after he had taken marihuana. Again, after the ingestion of marihuana there was a slight trend toward lowering the level of aspiration (Table 17), but the decrease was not significant when no frustrating experience was introduced. On the whole it appears that small doses of marihuana and of marihuana cigarettes tend to lower the individual level of aspiration, that is, there is a slight lessening in the subject's drive to attain it.

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Table 15

<table>
<thead>
<tr>
<th>Personality Types</th>
<th>Users</th>
<th>Non-Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversive</td>
<td>15%</td>
<td>28%</td>
</tr>
<tr>
<td>Introversive</td>
<td>37%</td>
<td>28%</td>
</tr>
<tr>
<td>Ambivert</td>
<td>19%</td>
<td>28%</td>
</tr>
<tr>
<td>Constricted</td>
<td>30%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Table 16

<table>
<thead>
<tr>
<th>Dose</th>
<th>Users and non-users</th>
<th>Users</th>
<th>Non-users</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 cc.</td>
<td>21.9</td>
<td>23.6</td>
<td>1.7</td>
</tr>
<tr>
<td>2 cc.</td>
<td>23.1</td>
<td>23.4</td>
<td>.3</td>
</tr>
<tr>
<td>5 cc.</td>
<td>23.2</td>
<td>24.4</td>
<td>1.2</td>
</tr>
<tr>
<td>Cigs.</td>
<td>24.1</td>
<td>24.4</td>
<td>.3</td>
</tr>
</tbody>
</table>
aggression was not paralleled by the findings of the other tests nor by the behavior of the
influence of 5 cc. of marihuana or of marihuana cigarettes believed themselves to be careful,
characters. There was also a decrease in the number who considered themselves suggestible
confidence and self-assurance. The changes in the subjects' responses on this test showed a shift in their attitude toward
better of themselves when they were "high" than they did in their undrugged state. This is
physiological changes occurring with the smoking of the drug gave the subject a feeling of
imposed not only on the happier reactions but on all the repressed unpleasantness as well, and
This was noted when at least two of the subjects had "crying jags" when drugged, reproaching
themselves for what they had done to their mothers and wives. The only negative traits which the subject admitted to more frequently when he
seemed to be a concomitant of the more obvious feeling of general well-being which is the
increase in the agitation aroused by the words "suicide" and "death." It appears that the feeling
of well-being produced by the drug tended to alleviate the loneliness, guilt, and frustration which
user showed in response to the words "wish" and "murder" and the delayed reaction of the
Under the influence of 5 cc. of marihuana or of marihuana cigarettes the user was less
always present fear of his "blowing his top," or it may be a reflection of the problems which were
increase in the agitation aroused by the words "suicide" and "death." It appears that the feeling
of well-being produced by the drug tended to alleviate the loneliness, guilt, and frustration which
user showed in response to the words "wish" and "murder" and the delayed reaction of the
In the undrugged state the user and non-user were disturbed by the same stimulus words,
sent to prison because of stealing or a sex offense, it seems it was these problems which the
marihuana users, there was a falling off in the popularity of some jobs which require
Analysis of the type of position chosen shows that under the influence of marihuana there was
new disturbing stimulus words were not those which upset the user but
The non-user, after taking marihuana, was also less disturbed by the words "lonely,
"money," and "sex." Since the non-user in our group was generally an individual who had been
the word "insult." The new disturbing stimulus words were not those which upset the user but
liked after the ingestion or smoking of marihuana indicates that no real withdrawal is implied.
Wechsler Vocational Interest Blank
The lack of consistency in the findings seems to suggest that the individual's psychological and
probably more suggestible than he would be in his undrugged state, while large doses have a
if his "blowing his top," or it may be a reflection of the problems which were
other words, the marihuana user when under the influence of the drug tended to continue an
of this difference in effect on user and non-user appears to lie in the fact that the drug made the
user more relaxed and easy-going and less controlled in motor activity than he was in his
undrugged state, while the non-user was often more tense and disturbed. As was so often the
uncomfortable and intellectually disorganized.
activity he had started without being too discriminatory or controlled about it. The non-user, on
Binet Lines
Loofbourrow Personal Index: Test I
soldier were most frequently chosen; for the non-user aviator, doctor, explorer, forest ranger,
newspaper reporter and prize _fighter were most popular.
The trend was the same for the user and the non-user in both the drugged and undrugged
state was 13.2. With 2 cc. of marihuana the average was 12.9; with 5 cc., 12.7; and with
Vocabulary showed a gain of 6 words, the non-user's 5 words. In both cases the subject's
identical number of words, 65.2. After he had smoked marihuana cigarettes, the user's
confidence in his verbal capacity was enhanced by the use of marihuana.
TABLE 17
Average time estimated and taken for Frustration Test

| Dose | Users and non-users | | | Users | | | Non-users | | |
|------|---------------------|---|---|------|---|---|------|---|---|---|
| 0 cc. | 21.4 | 22.6 | 1.2 | 21.5 | 22.7 | 1.2 | 21.3 | 22.4 | 1.1 |
| 5 cc. | 23.6 | 23.1 | 0.5 | 24.5 | 23.2 | 1.3 | 22.7 | 23.0 | 0.3 |
| Cigs. | 22.6 | 22.6 | 0.0 | 23.1 | 23.1 | 0.0 | 22.0 | 22.0 | 0.0 |

TABLE 18
Average scores on the Binet Lines Test

<table>
<thead>
<tr>
<th>Dose</th>
<th>Users</th>
<th>Non-Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 cc.</td>
<td>90.2</td>
<td>99.2</td>
</tr>
<tr>
<td>2 cc.</td>
<td>105.9</td>
<td>60.9</td>
</tr>
<tr>
<td>5 cc.</td>
<td>81.1</td>
<td>98.7</td>
</tr>
<tr>
<td>Cigs.</td>
<td>106.3</td>
<td>87.3</td>
</tr>
</tbody>
</table>
EMOTIONAL REACTIONS AND GENERAL PERSONALITY STRUCTURE

Written by Carole Case

In general the changes which occurred in this test after the subject had had marihuana were not consistent for the user and the non-user or for different amounts of the drug. They merely served to indicate that when the subject was under the influence of marihuana there were shifts in his feelings about himself which reflected a prevailing mood of confidence and self-satisfaction.

Thematic Apperception Test

Without cigarettes the needs most frequently expressed in the subjects' stories were "affiliation," "aggression," "sex," "dominance," "succorance," "self-abasement," and "play." These terms may be defined as follows:

1. Affiliation: to be sociable, to make friends, to love.
2. Aggression: to fight, to criticize, to blame, to accuse or ridicule maliciously, to injure or kill, sadism.
3. Sex: to seek sex objects, to court, to enjoy intercourse.
4. Dominance: to influence or control others, leadership.
5. Succorance: to seek aid, protection or sympathy.
6. Self-abasement: to comply, to surrender, to accept punishment, to apologize, to condone, to atone, to depreciate ego, masochism.
7. Play: to relax tension and alleviate stress by pleasurable and humorously irresponsible activity, motor, verbal or mental.

In general the frequency with which all needs were expressed fell off after the subjects had smoked marihuana cigarettes. The most striking drops were in the need for self-abasement and aggression where the frequency of occurrence changed from 2.4 to 1.1 for the former, and from 2.7 to 1.7 for the latter. Contrary to the general trend there was an increase in the need for dominance.

When the subjects were not "high" the environmental influences most frequently mentioned in their stories were illness and death and accepting parents. After smoking marihuana the general trend was similar to that noted for the "needs," that is, there was a falling off in the frequency with which the subjects used most of the concepts. There was, however, no diminution in the number of times that illness and death played a part in their tales, the average number being 2.1 before smoking and 2.2 after smoking. Likewise the awareness of restraint and imprisonment remained constant, occurring 1.1 times before smoking and 1.2 after. Contrary to the general trend there was an increased awareness of an accepting love object. This concept appeared in the stories on an average of .8 time before smoking and 1.2 after.

The decrease in the number of times both needs and environmental pressures were expressed in the stories given after the subjects had had cigarettes was not due to a curtailment in the length of the story. The tales were often more wordy in the drugged than in the undrugged state, but their length was frequently due to embellishment and repetition, and there was likely to be less meaningful material. In general the stories obtained from the subjects after smoking indicated that they had less capacity for expressing themselves directly and clearly, and also less concern with self-abasement and aggression. As defined on this test these needs represent a conflict between aggression against the self and against others and appear to stem from insecurity and feelings of guilt and inadequacy. In the drugged state the subjects appeared less disturbed by this conflict and had less need to harry themselves and others. They had a greater need for dominance, a desire for leadership. This ties in with the greater self-assurance demonstrated by other tests and with the increased awareness of acceptance by a love object found on this test.

It is interesting to note that these subjects showed no falling off in their awareness of illness and death or of restraint and imprisonment after smoking. The frequency of the latter concept was undoubtedly related to their status as prisoners, while the former ties in with the findings on the Free Association Test where the word "death" remained a disturbing factor even after marihuana had been smoked or ingested.

FINDINGS ON WOMEN SUBJECTS

As in the case with the men, when the female subject was under the influence of marihuana her basic personality structure did not change and only some relatively superficial emotional reactions were different. As a group, the women used in this study showed a somewhat constricted personality, and this constriction was not lessened when the subject was "high." The emotional reactions revealed in the Rorschach Test showed that the subjects in this particular group were primarily extraversive, and this remained unchanged after the administration of marihuana. Again, like the men, when under the influence of the drug the women lowered the achievement levels they set for themselves. However, they did not show any increased self-confidence as did the men, either by an increase in the number of words they claimed to know in the Loofbourrow Test or in their appraisal of themselves as indicated in the Downey Will-Temperament Test. In general, the women exhibited a loss of drive for participation in anything requiring effort. This is inferred from their performance in the Level of Aspiration Test, the Vocational Interest Blank, and the Binet Lines Test, as well as from their behavior.
BEHAVIOR DURING THE TEST PERIOD OF SUBJECTS UNDER THE INFLUENCE OF MARIHUANA

The findings reported here have all been in terms of objective, quantitative measures. Some effects of the drug, observable during examinations, cannot be quantified but are nevertheless important to the understanding of the drug action. These effects were reflected in those reactions of the subjects which were not directly related to the test situation.

Behavior was somewhat different when the subject had ingested marihuana concentrate than it was when he had taken the drug in cigarette form. With pills gastro-intestinal disturbances were more pronounced and drowsiness and fatigue seemed greater and more enduring. Some individuals were so overcome by fatigue that they worked for a few seconds only, and then sat with their heads on the table. If spoken to, they made a great effort to do the work but rarely continued for very long. When summoned to take the test, especially toward the end of the day when they were almost invariably lying on their beds, the subjects were overcome with fatigue and were aroused only with the greatest difficulty. In some instances there was definite resentment of this disturbance and the impression was that only the presence of the police officer and all the implications in the prison set-up prevented a definite refusal to continue cooperatively. With both pills and cigarettes many of the men had difficulty in concentrating and maintaining a fixed goal. Subjects often stared vacantly for long periods and when addressed came back to the test with a start. Many burst into uncontrollable laughter over a test which in their undrugged state had evoked no merriment. The laughter frequently affected the entire group and most markedly those who had been given marihuana.

The behavior of the user and non-user with marihuana cigarettes was somewhat different. The user was pleasantly excited at the thought of smoking, selected his cigarettes with the manner of a connoisseur, and criticized or praised the product offered him. His smoking took on something of a ritualistic ceremony and was done in a careful and prearranged fashion which varied slightly from individual to individual. In general the men first opened the end of the cigarette to examine the marihuana, then wet the "stick" by inserting it in their mouths to prevent the paper from burning too rapidly. When the cigarette was ignited the men took several short puffs, at the same time inhaling as much air as possible. This caused the tip of the "stick" to glow and resulted in a succession of low gasping sounds from the subject. The smoke was retained as long as possible, occasionally causing severe paroxysms of coughing. Although eager to be "high" the user was consistent in his fear of "blowing his top," and there was always a point beyond which no amount of talking or cajoling could make them continue smoking. As a rule, the user liked to smoke in company. He was generally satisfied if one friend, a "kick partner," could be with him To this friend he would explain his thoughts and feelings which to the objective observer were very superficial. In trying to make a point, and usually a minor one at that, the user, when smoking, would talk on endlessly and soon lose his goal. He cracked many "jokes" which were uproariously funny to him. In some instances "leaping" or involuntary
jerking of the arms, head, shoulders or legs occurred. The subject described his sensations as floating, leaping, rocking or most often as being "in the groove." He was obviously enjoying pleasant physical sensations and wanted to be left to himself to lie on his bed, listen to soft music and dream or carry on "deep" conversations. The test questions were frequently called a "bring down" in that they forced the subject to face reality and abandon his pleasurable feelings. Several subjects concurred in describing part of their drug experience as comparable to the twilight state between sleeping and waking in which the individual floats pleasantly and does not allow outside stimuli to impinge. Just as strong extraneous sensations will bring the sleeper face to face with reality, so the insistence of the examiner that the subject perform certain tasks served to destroy his general feeling of well-being. Aside from the test situation any unpleasant circumstances can serve as a "bring down." This "bring down" apparently only results in destroying the subject's pleasure but cannot do away with the disadvantageous effect on intellectual functioning.

When testing was completed the subject generally lay on his bed and dozed or listened to the radio. His drowsiness persisted for many hours.

Most non-users approached the smoking with apprehension. They were instructed by the users in the art of lighting and inhaling, but they rarely cooperated to the fullest extent, though this was undoubtedly unconscious on their part.

The effects of marihuana on the non-users were variable. A few of them enjoyed the results so much that they claimed they would continue to smoke whenever they had a chance. They described such sensations as "lying in fur," and "floating in space." Some became acutely nauseous and could not continue with their work, while others experienced little or no change in feeling, undoubtedly because they never smoked correctly.

When the subjects were "high," particularly in the case of the non-user, there was a general loss of inhibition and lessening of many social restraints which had previously been exercised. Thus, all the men talked much more freely, confronted each other more directly, and manifested a state of well-being at times amounting to euphoria. They were much more confiding, talked spontaneously about love and sexual affairs, and in two instances exposed themselves and masturbated.

Although there was an undeniable increase in overt sex interest following the ingestion of marihuana, it seems probable that this interest was not the result of direct sexual stimulation but
rather a manifestation of a falling off in inhibiting factors. This sex interest seems to have been
due primarily to the fact that these men had been imprisoned for varying periods and had not
had access to women. It is not at all certain that under free conditions or with different subjects
this behavior would have been manifested. In any case, the behavior of these prisoners was
more like that which any man deprived of sexual activity for a long period of time would display
under a releasing stimulus and not at all like the behavior shown at marihuana "tea-pads."

SUMMARY AND DISCUSSION

Under the influence of marihuana changes in personality as shown by alterations in test
performance are slight. They are not statistically significant and indicate only tendencies or
trends. Moreover, the drug effect is not always in proportion to the amount taken, nor are the
changes consistently in one direction. In many instances the effect of small doses (2 cc.) or of
marihuana cigarettes is the opposite of the effect of larger doses (5 cc.) .2

The personality changes observed when the subject is under the influence of 2 cc. of marihuana
or marihuana cigarettes demonstrate that the subject experiences some reduction in drive, less
objectivity in evaluating situations, less aggression, more self-confidence and a generally more
favorable attitude toward himself. These reactions can be ascribed to two main causes, namely,
an increased feeling of relaxation and disinhibition and increased self-confidence. As the drug
relaxes the subject, the restraints which he normally imposes on himself are loosened and he
talks more freely than he does in his un-drugged state. Things which under ordinary
circumstances he would not speak about are now given expression. Metaphysical problems
which in the undrugged state he would be unwilling to discuss, sexual ideas he would ordinarily
hesitate to mention, jokes without point, are all part of the oral stream released by the
marihuana.

At the same time that he verbalizes more freely, there is a reduction in the individual's critical
faculty. This is probably due both to the intellectual confusion produced by the drug and to the
less exacting attitude his feeling of relaxation induces. He holds himself less rigidly to the
standards of his undrugged phase and does not drive himself to achieve. He is satisfied with
himself and willing to accept himself as he is. This self-satisfaction undoubtedly helps produce
the feeling of self-confidence which allows the subject to come out more freely in fields which he
formerly avoided. This increased confidence expresses itself primarily through oral rather than
physical channels. Physically the subject reports pleasant sensations of "drifting" and "floating"
and he allows himself to become enveloped in a pleasant lassitude.

After the administration of larger doses of marihuana (5 cc.) the pleasurable sensations appear
to be outweighed by oncomitant feelings of anxiety and, in some cases, of physical listress,
such as nausea. Under these circumstances, for many subjects there is little increase in confidence but rather heightened insecurity which precludes outgoing reactions and tends to invoke generally negativistic attitudes to most stimuli.

It is important to note that neither the ingestion of marihuana nor the smoking of marihuana cigarettes affects the basic outlook of the individual except in a very few instances and to a very slight degree. In general the subjects who are withdrawn and introverted stay that way, those who are outgoing remain so, and so on. Where changes occur the shift is so slight as to be negligible. In other words reactions which are natively alien to the individual cannot be induced by the ingestion or smoking of the drug.

Although in most instances the effects of the drug are the same for the user and the non-user, there are some differences both in kind and extent. Where the effects for the two groups are in the same direction they generally are more marked in the case of the non-user. This is not unexpected in view of the non-user's lack of habituation to the drug action. For the non-user his present experience is a strange, even hazardous one, and the uncertainty and anxiety attendant upon this impairs the sense of well-being which the drug produces in the user. Thus the non-user frequently feels less secure when he is "high" than he does normally and is less well adjusted than he is in ordinary circumstances.

When the productions of the undrugged marihuana user are studied, certain personality traits which serve to differentiate him from the non-user and from the "average" individual can be discerned. As a group the marihuana users studied here were either inhibited emotionally or turned in on themselves, making little response to stimuli in the world about them. People with this type of personality generally have difficulty adjusting to others and are not at ease in social situations. This withdrawal from social contacts apparently finds little compensatory or sublimating activity elsewhere. These subjects did not have a desire or urge to occupy themselves creatively in a manner which might prove socially useful. They showed a tendency to drift along in passive fashion and gave a good portion of their attention to relatively unimportant matters. These men were poorly adjusted, lonely and insecure. As indicated by their history they seldom achieved good heterosexual adjustment.

CONCLUSIONS

1. Under the influence of marihuana the basic personality structure of the individual does not change but some of the more superficial aspects of his behavior show alteration.
2. With the use of marihuana the individual experiences increased feelings of relaxation, disinhibition and self-confidence.

3. The new feeling of self-confidence induced by the drug expresses itself primarily through oral rather than through physical activity. There is some indication of a diminution in physical activity.

4. The disinhibition which results from the use of marihuana releases what is latent in the individual's thoughts and emotions, but does not evoke responses which would be totally alien to him in his undrugged state.

5. Marihuana not only releases pleasant reactions but also feelings of anxiety.

6. Individuals with a limited capacity for effective experience and who have difficulty in making social contacts are more likely to resort to marihuana than those more capable of outgoing responses.

1 Directions for Thematic Apperception Test prepared by Robert W. White and R. Nevitt-Sanford, Harvard Psychological Clinic, February 1941.

2 While sufficient experimentation has not been made to validate the finding, it should be noted that the personality changes produced by 2 cc. or marihuana cigarettes are almost always in agreement in contrast to the changes resulting from the ingestion of 5 cc. The 2 cc. dosage apparently more nearly approximates the amount a person would take if left to his own devices.