# THE PLACEBO EFFECT AS A FUNCTION OF THE PHYSICAL AND SOCIAL CONTEXT

by

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ABSTRACT

To investigate the placebo effect for marijuana,100 male subjects received an inert red liquid purported to be the active ingredient from marijuana. Twenty-five of the subjects reported experiencing a mild high. Their ratings of how high they felt they were differed significantly ($p<.01$) from the group that did not respond to the placebo. In a "psychedelic" environment 36% of the subjects experienced a high,while in a "stark" setting 14% said they were high. This difference was significant at the .05 level and demonstrated the impact of the physical environment on the placebo effect. The social setting was shown to have had little influence since the per centages of subjects who reported being high were not significantly different whether the subjects were alone or in groups of 2 or 4. These findings and the placebo effect were discussed in relation to the broader area of expectancy.

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## Introduction

Psychologists are now aware that a subject's behaviour may be influenced by his perception of the performance expected of him. Thus it has been traditional that researchers have not informed subjects of the hypotheses being tested. However as Orne (1969,1970) has pointed out naive subjects search for cues (what Orne refers to as demand characteristics) which will help them determine the true purpose of the experiment. Such demand characteristics have been demonstrated to influence subjects' performance in a wide variety of experimental situations,often in a fashion which will fulfill the experimenter's predictions (see also Rosenthal 1970).

In more general terms,this can be viewed as a demonstration of the fact that behaviour is often a function of expectancy. Psychological research ranging from the influence of set on perception to the analgesic effects of hypnosis documents this pervasive human characteristic.

The form of this phenomenon of interest in the present investigation is the placebo effect. This term refers to the behaviour of subjects who,after receiving a physiologically inert substance (placebo) purported to be an active drug,report experiencing the effects to be expected from the active drug. Reviews of research on this topic (Kurland 1960,Claridge 1970) suggest that on average one-third of the subjects receiving a placebo will report experiencing the drug effects expected.

The placebo used in the present study was described as $\Delta^9$ tetrahydrocannabinol, the active ingredient in marijuana. This drug was selected for two main reasons. First, most of the individuals in the population from which the sample was taken (college students) were expected to have first- or second-hand knowledge of the characteristic effects of marijuana. Second, these effects (referred to as a "high") occur principally in subjective, feeling states. The high has few physiological concomitants of which the subject himself might be aware except for increased heartrate and reddening of the eyes (Low et al 1973). Weil (1972) in fact has termed marijuana the "active placebo".

There is some evidence that a marijuana high could be induced if subjects were given a placebo rather than marijuana. In the study by Weil et al (1968), nine naive subjects (who had not previously tried marijuana) smoked high, low and placebo dosages of the drug. When asked to indicate what dosage they received, most of the subjects made correct identifications but one subject rated the placebo dosage as a low dosage. Caldwell et al (1969) used marijuana cigarettes and alfalfa cigarettes (placebo) in their experiment with 20 experienced subjects (who were familiar with smoking marijuana). They report that one of their subjects commented "I could have become high from smoking the alfalfa cigarette if I hadn't been told what it was". The LeDain Commission Report (1970, p.92) summarizes results of a 1969 study by Jones and Stone in which 10 experienced subjects smoked both a

placebo and low dose (equivalent to the Weil et al low dose). The 10 subjects rated both the placebo and low dosages as being of moderate potency and their average ratings were not significantly different. Klonoff (1973) found that approximately three-quarters of the experienced male and female subjects tested rated themselves "minimally high" or higher after smoking a placebo. In fact 10% rated themselves subjectively "very high" after smoking the placebo.

The studies cited indicate that some of the naive and experienced subjects were unable to distinguish between marijuana and the placebo,and would report experiencing a high after receiving a placebo.

In line with Kurland's (1960) and Claridge's (1970) reviews of placebo studies,it was proposed that approximately one-third of the subjects in the present experiment would report experiencing a high.

Tart (1971a) suggests that the placebo effect can be understood in relation to long term factors such as the culture of the individual,his personality,physiology and past experience with drugs;immediate user factors like his mood,expectations and desires;and situational factors such as the physical setting,social situation,formal instructions he receives and implicit demands he perceives. The present study investigated the effect of two of these variables (physical setting and social situation) on the placebo effect.

The nature of the physical surroundings in which the high is experienced appears to be of importance. Weil and Zinberg (1969) replicated the finding of Weil et al (1968) that experienced marijuana users reported experiencing a high in a "neutral" lab setting while naive subjects did not. More interestingly, Caldwell et al (1969) disclose that a large proportion of their experienced subjects reported the intensity of the high they experienced was reduced in a "sterile" laboratory environment. In the present study the physical environment was chosen as an independent variable which had two conditions. In the "stark" condition the experimental room was sterile and laboratory-like. In the "psychedelic" condition the experimental room was non-sterile and non-laboratory-like. The psychedelic condition was assumed to be more like the physical enviroment in which an experienced user would have previously been high,and more like the setting in which a naive subject would expect to experience a high. Physical surroundings can influence the intensity of highs and might also be expected to influence the proportion of subjects who would report experiencing a placebo-induced high. It was proposed that more subjects in the psychedelic environment would report experiencing a high than in the stark condition.

Much of the literature on marijuana suggests its use is a social rather than a solitary activity. For example Russell and Tuxford (1971) surveyed 775 marijuana users and found that more than half preferred not to get high alone and that over 55% pre-

ferred social activities when they were high. The significance of the social situations in which the high is experienced has been largely overlooked by marijuana researchers. The present study investigated the influence of the other independent variable, social environment, by employing three social situations: a) subjects by themselves; b) subjects in groups of two; c) subjects in groups of four. Claridge (1970) reports that the placebo effect can be heightened by the presence of others. It was expected that more subjects in the social situations where two or four subjects were present would report experiencing a high than in the situation where subjects were alone.

The present study was designed, therefore, to investigate the influence of the physical and social context on the placebo effect.

## METHOD

Design: Six experimental rooms were used. The three "stark" rooms had plain grey walls and were lit by bright fluorescent lighting. The three comparably sized "psychedelic" rooms had blue-filtered lighting, posters on the walls, incense burning and electronic rock music music playing. Rooms accommodated 1, 2 or 4 subjects. The rooms for 4 subjects were four times as large as the rooms for 1 or 2 subjects.

Subjects: The subjects were male university student volunteers recruited by posters which read "Wanted - male subjects for a marijuana drug study". The first 100 volunteers who presented

themselves for testing were employed after subjects with physical or psychological problems had been identified and screened out.

Stimuli: On a table in each one of the experimental rooms was a questionnaire (Appendix A).

The following stimuli were presented:

(a) visual - a booklet of coloured sheets of paper

(b) gustatory - orange juice and after-dinner mints

(c) olfactory - vials of after-shave and perfume

(d) haptic - boards with materials of different textures affixed

(e) auditory - electronically produced sounds piped in.

The placebo was a red liquid (cherry and blackberry extract in water) which each subject took orally from a small vial.

A microphone was in evidence in rooms with 2 or 4 subjects present to record their interactions.

Producure: Subjects were briefed by means of a handout (Appendix B) and signed a consent form (Appendix C). They were then randomly assigned to one of the six experimental rooms where pre-recorded instructions indicated what they were to do. The following time schedule applied in all conditions:

| Time (minutes) | Activity | Questionnaire |
|---|---|---|
| 0 | Introduction | First page |
| 1 | commences questionnaire | Sections A to C |
| 15 | First Adjective Checklist | Page D |
| 22 | Subject experiences stimuli | |
| 25 | Experimenter enters and administers placebo | |

| Time (minutes) | Activity | Questionnaire |
|---|---|---|
| 35 | Second Adjective Checklist | Page E |
| 40 | Subject experiences stimuli | |
| 43 | Subjective Responses #1 | Page F |
| 47 | Third Adjective Checklist | Page G |
| 51 | Subjective Responses #2 | Page H |
| 55 | Comments | Page I |

Following the Comments section each subject was debriefed by the experimenter who explained the nature and purpose of the placebo study and answered any questions. Two of the subjects were vocal in expressing their displeasure at not receiving an active drug.

## RESULTS

The 100 subjects were distributed among the six experimental conditions a shown in Table 1.

Table 1.

Distribution of the 100 Ss in the six experimental conditions.

| Social environment | Physical environment: Stark | Physical environment: Psychedelic | |
|---|---|---|---|
| 1 S | 8 | 8 | |
| 2 Ss | 14 | 14 | |
| 4 Ss | 28 | 28 | |
| | 50 | 50 | 100 |

They ranged in age from 17 to 38 with an average age of 20.6 (Appendix D). First and second year students predominated (Appendix D).

Table II

Comparison of average "high" ratings for the High and Unresponsive groups.

| Group | Average "high" ratings | |
|---|---|---|
| High | 2.04 | (n=25) |
| Unresponsive | 1.04 | (n=75) |

*t=3.16 ($t_{.01}$,98 d.f. two tailed =2.63)

*p<.01

Appendix E shows that only two of the subjects had not previously used marijuana. Another subject who had used it "once or twice" had not experienced a high. The remaining 97 subjects reported being well acquainted with marijuana and its effects.

Table III

Comparison of average ratings of "strength of THC received" for the High and Unresponsive groups

| Group | Average strength ratings | |
|---|---|---|
| High | 1.76 | (n=25) |
| Unresponsive | 1.02 | (n=75) |

*t=1.92 ($t_{.05}$,98 d.f. two tailed =1.99)

*.10>p>.05

Of the 100 subjects,25 answered YES to the question "Did you experience a high?". An independent rater who considered each subject's written comments and (where available) tape recorded remarks also arrived at this figure.

Table IV

Distribution of the 25 High Ss among the six experimental conditions

| Social environment | Physical environment: Stark | Physical environment: Psychedelic |
|---|---|---|
| 1 S | 0 | 4 |
| 2 Ss | 4 | 5 |
| 4 Ss | 3 | 9 |
| Total | 7 (14%) | 18 (36%) |

The 25 subjects comprise the High group. All had previously expreienced a marijuana high. The remaining 75 make up the Unresponsive group.

Table V

Distribution of the High and Unresponsive Ss under the two physical environment conditions.

| Group | Physical environment: Stark | Physical environment: Psychedelic | |
|---|---|---|---|
| High | 7 | 18 | |
| Unresponsive | 43 | 32 | |
| Total | 50 | 50 | 100 |

*$\chi^2$=6.45 ($\chi^2_{.05}$,1 d.f. =3.84)

*p<.05

Using a five point scale ranging from "not high at all" (1) to "highest I have ever been" (5), the High group rated themselves significantly higher ($p<.01$) than the Unresponsive group (Table II). Rating the strength of the THC they received, the High group's average rating was higher than that of the Unresponsive group, although the difference fell short of significance ($.10>p>.05$, see Table III).

Table VI

Distribution of the High and Unresponsive Ss under the three social environment conditions.

| Group | Social environment | | |
|---|---|---|---|
| | 1 S | 2 Ss | 4 Ss |
| High | 4 | 9 | 12 |
| Unresponsive | 12 | 19 | 44 |

100

*$\chi^2$=1.13 ($\chi^2_{.05}$, 2 d.f. =5.99)

*p>.05)

The distribution of the 25 subjects in the High group is shown in Table IV. A $\chi^2$ test revealed that significantly ($p<.05$) more subjects in the psychedelic environment reported experiencing a high than in the stark environment (Table V). However when the distribution of the High subjects in each of the three group size conditions was tested, a non-significant $\chi^2$ value was obtained (Table VI).

Table VII

Composition of groups in which High Ss were present.

| Social environment | Physical environment: Stark | Physical environment: Psychedelic |
|---|---|---|
| 2 Ss | 2 High Ss in each of 2 groups<br>Total = 4 | 1 High S in each of 5 groups<br>Total = 5 |
| 4 Ss | 2 High Ss in 1 group<br>1 High S in 1 group<br>Total = 3 | 4 High Ss in 1 group<br>3 High Ss in 1 group<br>1 High S in 2 groups<br>Total = 9 |

Table VII shows the distribution of the 21 High subjects among the conditions with 2 or 4 subjects present.

## Discussion

Except for the 3 subjects who were relatively naive to drug taking, the present study attracted a large number of volunteers who were well acquainted with marijuana and a variety of other drugs. It is not reasonable to consider this group to be a representative sample of the university population, thus the results can be generalized only to a sample chosen in a comparable fashion.

Self reports are customarily taken as evidence of a subjective high. In the present study those subjects reporting a high

rated it on average slightly above 2 on a 5 point scale,indicating they felt they had experienced a mild high. It might be argued that the overlap in distributions of the average ratings given by the High and Unresponsive groups makes the difference in average ratings inconsequential (although statistically significant). However the High group subjects' own comments (written and spoken) clearly indicated they felt mildly "stoned",and allowed an independent rater to distinguish these subjects from the Unresponsive subjects.

Both the High and Unresponsive subjects rated the THC they received as being relatively weak. The difference in their average ratings of THC strength fell short of statistical significance. Yet it is not inconsistent that some of the subjects experienced a mild high on what they considered a weak dosage while other did not.

The overall placebo response rate of 25% (25 out of 100 subjects reported experiencing a high) is lower than the usual rate of about 33%,but the range of 14% for the stark condition to 36% for the psychedelic condition includes this value. The hypothesis that approximately one-third of the subjects would report experiencing a high was considered confirmed.

The hypothesis that more subjects in the psychedelic condition would report experiencing a high than in the stark environment was confirmed. As Table IV indicates the per centages for the stark and psychedelic settings were 14% and 36% respectively;

a striking difference. This pattern of results parallels the finding by Caldwell et al (1969) that experienced users reported their marijuana-induced highs were diminished in a sterile laboratory environment. It also offers a clue as to why twice as many subjects in the psychedelic environment experienced highs. If the stark environment had the effect of diminishing a high which was at best only mild, this could account for the observation that fewer subjects in the stark condition experienced a high. One subject summarized the remarks made by many of the subjects in the stark condition when he commented "How do you expect me to get off sitting in this sterile cell for an hour?". Since the physical environment is of such importance, the results of marijuana studies conducted in laboratory settings should be generalized with caution. The term "neutral lab setting" may well be misleading.

Appendix G shows that only 2 of the 98 subjects who had previously used marijuana were alone when they first tried the drug. This finding lends support to the notion that marijuana use is a social rather than a solitary activity. Yet the dimension of presence or absence of others was not shown to be a significant factor influencing whether or not a subject experienced a high as suggested by the third hypothesis. In the groups of 2 and 4, subjects were instructed to observe the others present and rate how high they appeared to be. Tart (1971a) reports that a phenomenon known as a "contact high", whereby a non-intoxicated person feels somewhat high simply by being

in close contact with a person who is high,was mentioned by a large number of the 150 users he surveyed. In the present experiment if one member of a group responded to the placebo (got high) the contact high effect would have been expected to lead the other group members to experience a high. However the data show no clear pattern in this regard. In the psychedelic condition with 4 subjects present,7 of the 9 High subjects came from 2 of the 4 groups,suggesting the occurrence of contact highs in these 2 groups. On the other hand,the data from the other groups does not follow this trend. Perhaps with a private event such as a marijuana high the subjects did not feel compelled to conform to a group norm as they would if some public event was being judged. While the presence or absence of others seems to have no consistent effect on whether or not a marijuana user gets high,it might influence his enjoyment of the high and in this way account in part for the social use of the drug. In relation to this,Appendix H reveals that only 12% of the subjects stated that when high they never or rarely want to interact with people more.

Only 2 naive subjects volunteered for the present study and neither experienced a high. While this is consistent with a previous finding by Weil et al (1968) and Weil and Zinberg (1969) that naive subjects did not experience a high in a laboratory setting,the small number of naive volunteers makes the present observation suggestive rather than conclusive. Also of interest •

is the fact that less than half of the subjects reported experiencing a high the first time they tried marijuana. Presumably they first experimented with the drug in a non-laboratory setting, yet many still failed to experience a high.

Tart (1971b) sampled 150 experienced marijuana users to determine how frequently common marijuana sensations occurred. Using descriptions of sensations provided by Tart, similar frequencies were collected from the subjects in the present study. Appendix J lists the frequencies found by both studies and shows that, with few exceptions, the frequencies are remarkably similar. This offers a further indication that the subjects in the present research were well acquainted with the typical effects of a marijuana high. Appendix I demonstrates this with reference to expected senstations. In spite of the uniqueness of each individual's marijuana high the majority of subjects in the present study expected to experience sensations which Tart's subjects reported as typical of a high.

The first adjective checklist (ACL) was completed before the placebo was administered, and the second and third ACLs after. A comparison was made of the number of adjectives each subject endorsed differently the second and third times through for the High and Unresponsive groups. As Appendix K shows, the average number of changes made was almost identical for the two groups. The ACL technique did not prove to be of use in distinguishing those subjects who reported experiencing a high from those who did not. This finding is similar to the Weil et al (1968) result

that moods as measured by self-rating scales did not vary..

After the placebo was administered,subjects were asked to use a five point scale to rate how accurately descriptions of sensations matched their subjective responses. Appendix K shows the average ratings for the High and Unresponsive groups collected 18 minutes (Subjective Responses #1) and 26 minutes (Subjective Responses #2) after the subject received the placebo. The average ratings for the Unresponsive group remained relatively constant,while the average ratings for the High group increased. However,because of the large variances associated with both sets of measurements the difference between the ratings for the two groups could not be considered significant.

Subjects present in groups of 2 or 4 were asked to rate how high the other subject(s) appeared to be. The High subjects received a higher average rating than the Unresponsive subjects, but since large variances accompanied both sets of average ratings the difference was not considered significant. Because the reported highs were mild subjects might have been expected to have had difficulty distinguishing High from Unresponsive subjects.

The present study investigated the placebo effect in relation to two of the variables Tart (1971a) suggested were important. Other variables were also indexed: the subject's past experience with drugs (a long term factor),his mood and expectations (immediate user factors) and the formal instructions he received (experimental factors). Following the suggestions made by Claridge (1970) on maximizing the likelihood that

a placebo response will occur,an impressive-looking red liquid was administered in an experimental situation by a professional-looking experimenter. With this in mind it is somewhat surprising that the physical environment had so much impact while the social setting had so little. Future research might consider the nature of the social situation in relation to whether group members are friends or strangers,and whether they had previously experienced a high together. Since marijuana has been tagged the "new social drug" it is difficult to believe that such factors are unimportant.

By administering a placebo it was possible to induce 25% of the subjects to report experiencing a mild high. This per centage could be influenced markedly by the nature of the physical surroundings. The present study offers another demonstration of the role expectation plays in influencing behaviour. In particular it showed that one of its aspects,the placebo effect,can have important implications for future study in as topical an area as marijuana research.

References

Caldwell,D.F.,Myers,S.A. & Domino,E.F. Auditory and visual threshold effects of marijuana in man. Perceptual and Motor Skills,29,755,1969.

Claridge,G.S. Drugs and Human Behavior. London:A. Lane,1970.

Klonoff,H. Strategy and tactics of marijuana research. Canadian Medical Association Journal,108,145,1973.

Kurland,A.A. Placebo effect. In Uhr,L. & Miller,J.G. (eds.) Drugs and Behaviour. New York:John Wiley & Sons,1960.

LeDain Commission Report. Ottawa:Information Canada,1970.

Low,M.D.,Klonoff,H. & Marcus,A. The neurophysiological basis of the marijuana experience. Canadian Medical Association Journal,108,157,1973.

Orne,M.T. Demand characteristics and the concept of quasi-controls. In Rosenthal,R. & Rosnow,R.L. (eds.) Artifact in Behavioral Research. New York:Academic Press,1969.

Orne,M.T. On the social psychology of the psychological experiment:with particular reference to demand characteristics and their implications. In Schultz,D.P. (ed.) The Science of Psychology:Critical Reflections. New York:Appleton-Century-Crofts,1970.

Rosenthal,R. Experimenter Effects in Behavioral Research.New York: Appleton-Century-Crofts,1970.

Russell,J.S. & Tuxford,G.S. Drug Use Among Young Adults. The Narcotic Addiction Foundation of British Columbia,1971.

Tart,C.T. On Being Stoned: a psychological study of marijuana intoxication. Palo Alto,California:Science & Behavior Books,1971a.

Tart,C.T. Work with marijuana:II Sensations,Psychology Today, 4(12),41,1971b.

Weil,A.T.,Zinberg,N.E. & Nelson,J.M. Clinical and psychological effects of marijuana in man. Science,162,1234,1968.

Weil,A.T. & Zinberg,N.E. Acute effects of marijuana on speech. Nature,222,434,1969.

Weil,A.T. The natural mind - a new way of looking at natural consciousness,Psychology Today,6(5),61,1972.

YOUR SUBJECT NUMBER _____

IMPORTANT

DO NOT SIGN THE QUESTIONNAIRE. Place only your subject number in the space provided above. All responses are to be ANONYMOUS and will be kept STRICTLY CONFIDENTIAL. Please read all instructions and answer all questions as rapidly but as honestly as possible. When you come to a blank page in the questionnaire please STOP and wait for further instructions. There will be a chance for you to ask questions after the experiment has been completed.

## GENERAL INFORMATION



Age: _____

Year in University: ____1st ____2nd ____3rd ____4th ____Graduate.

Height: ___ft. ____inches Weight: ____pounds.

Length of time since last meal or snack: ____hours ____minutes.

List the specific medications (bought in a drug store) you have used in the last 24 hours (if prescribed by a doctor, write "PRESCRIBED"):

_____

_____

Are you an epileptic? ___Yes ___No A diabetic? ___Yes ___No

## USAGE

Directions: For each of the substances listed, choose one response (the one that comes closest to what you would like to say) and write its number next to the substance.

A: I have used the substances listed

1. Never
2. Once or twice
3. Three to five times
4. Six to nine times
5. Ten or more times
6. Continuously

___Coffee ____Marijuana ____Hashish (hash)

___Alcohol (Beer, wine, gin, etc.,) ____Tobacco ___LSD

___Tranquilizers ___Methedrine (meth, speed) ___Mescaline

___Heroin (H, junk) ___Benzedrine ____Cocaine

Others (specify)_____

B: The first time I used the substance was:

1. I have never used it
2. Prior to senior high school years
3. During senior high school years
4. As a student in university
5. After high school graduation but before university

___Coffee ____Marijuana ___Hashish (Hash)

___Alcohol (Beer, wine, gin, etc.,) ___Tobacco ___LSD

___Tranquilizers ___Methedrine (meth, speed) ___Mescaline

___Heroin (H, junk) ___Benzedrine ___Cocaine

Others (specify)_____

C: The last time I used the substance was:

1. I have never used it
2. Within the last 24 hours
3. Within the last week
4. Within the last month
5. One or two months ago
6. Three to five months ago
7. Six months to a year ago
8. More than a year ago

____Coffee ____Marijuana ____Hashish (Hash)

____Alcohol (Beer, wine, gin, etc.,) ____Tobacco ____LSD

____Tranquilizers ____Methedrine (meth, speed) ____Mescaline

____Heroin (H, junk) ____Benzedrine ____Cocaine

Others (specify)_____

D: My own personal experience with this substance has been:

1. I have never used it
2. It is very helpful and beneficial, no serious unpleasant effects
3. It is helpful and beneficial, but there are unpleasant effects also
4. No particular effect either beneficial or harmful
5. Mostly unpleasant or harmful, but not serious
6. Very disturbing, very upsetting or seriously harmful

____Coffee ____Marijuana ____Hashish (Hash)

____Alcohol (Beer, wine, gin, etc.,) ____Tobacco ____LSD

____Tranquilizers ____Methedrine (meth, speed) ____Mescaline

____Heroin (H, junk) ____Benzedrine ____Cocaine

Others (specify)_____

E. My reasons for using the substance have been primarily (if more than one reason applies, list the numbers in order of importance)

1. I have never used it
2. Curiosity - just to find out what it is like
3. "Kicks" - for increased ecitement or pleasure
4. Boredom - nothing else to do
5. Escape - from problems I don't want to think about
6. Habit - I'm used to using it
7. Social pressure - go along with others who use it
8. Understand myself, gain insight
9. Medical - painkiller, etc.,
10. Other (specify)_____

____Coffee ____Marijuana ____Hashish (Hash)

____Alcohol (Beer, wine, gin, etc.,) ____Tobacco ____LSD

____Tranquilizers ____Methedrine (meth, speed) ____Mescaline ____Heroin(H, junk)

____Benzedrine ____Cocaine Others (specify):_____

(If you have NOT previously used marijuana, skip this section and go on to the EXPECTED SENSATIONS section, page C)

The first time I used marijuana I was

____alone ____with acquaintance(s)

____with friend(s) ____with stranger(s)

The first time I tried marijuana I experienced a "high". ___YES ____NO

When I am "high" I experience the following sensations (number as follows)

1. Never
2. Rarely
3. Sometimes (10 to 50% of the time)
4. Very often (more than 50% of the time)
5. Usually or always

"I see patterns and meaningful designs in visual material that is not patterned or meaningful when I am straight" # ____

"Things stand out more sharply against the background" #____

"I see more subtle shades of colour" #____

"The notes of music are purer and the rhythm stands out more" #____

"I can understand the words of songs which are not clear when I am straight" #____

"My sense of touch is more sensual, more exciting" #_____

"Taste sensations take on new qualities" #_____

"Smells are richer and more unique" #____

"Time passes very slowly" #____

"I feel a lot of pleasant warmth inside my body" #____

"With my eyes closed my body seems very light" #____

"I get physically relaxed and don't want to get up or move around" #____

"When I move about my motions seem smooth and well coordinated" #_____

"I have feelings of insight into how other people 'tick'" #____

"I find it very hard to play ordinary social games" #____

"I talk a lot less" #____

"I want to be with people more, to interact with them" #____

"I appreciate very subtle humour in what I and others say" #____

"I can 'come down' at will if I need to deal with some problem" #____

"My memory span for conversations is shortened, I forget what it is about before it has ended" #____

"I feel emotions more strongly, so they affect me more" #____

"I feel good, regardless of how I felt before I turned on" #____

"I get somewhat paranoid about the people with me, suspicious about what they are doing" #____

"I feel more open to experiences of all kinds" #____

## Expected Sensations

During this experiment you will be experiencing a variety of different sensations. You probably have an idea of the kind of sensations you expect to experience. Check any of the following sensations you expect to experience after you are given the THC:

___Colours will be brighter, clearer

___Colours will be duller, more pastel

___Visual patterns will be fuzzy, hazy

___Visual patterns will be sharp, clear

___Sounds will be less distinct

___Sounds will be more distinct, clearer

___Touch sensations will be more distinct, more sensual

___Touch sensations will be diminished, numbed

___Taste sensations will be more vivid, things will taste better

___Taste sensations will be bland, everything will taste the same

___Smell sensations will be lessened, odours will be less noticeable

___Smell sensations will be richer, more unique

___Time will seem to speed by

___Time will seem to pass very slowly

___My body will seem heavier

___My body will seem lighter

___I will feel relaxed, will want to stay still

___I will feel restless, will want to move around

___My thoughts will seem permanent, long-lasting

___My thoughts will seem to disappear, slip away

___I will feel pleasant, comfortable

___I will feel unpleasant, uncomfortable

## FIRST ADJECTIVE CHECKLIST



Some of the adjectives below may describe the way you feel RIGHT NOW.

If an adjective really describes the way you feel, put two check marks in the space beside it. Example: If you are really happy; ✓✓happy.

If an adjective sortof describes the way you feel, put one check mark in the space. Example: If you are sort of happy; ✓happy

If an adjective does not describe the way you feel, or if you don't know what it means, draw a line through the word. Example: If you are not happy; ___~~happy~~.

Work as quickly as you can - use the first impression that comes to you after you read the adjective.

| | | |
|---|---|---|
| ___Alert | ___Bored | ___Weak |
| ___Sociable | ___Dizzy | ___Excited |
| ___Dreamy | ___Active | ___Happy |
| ___Bold | ___Shaky | ___Impulsive |
| ___Sluggish | ___Bleary eyed | ___Tired |
| ___Friendly | ___Peaceful | ___Detached |
| ___On edge | ___Depressed | ___Self-conscious |
| ___Drunk | ___Drowsy | ___Lightheaded |
| ___Suspicious | ___Changeable | ___Good |
| ___Self-confident | ___Tense | ___Muddled |
| ___Sexy | ___Jittery | ___Cold |
| ___Good natured | ___Quiet | ___Clearheaded |
| ___Mentally cloudy | ___Calm | ___Self-controlled |
| ___Impatient | ___Numb | ___Warm |
| ___Energetic | ___Restless | ___Affectionate |
| ___Angry | ___Dopey | ___Cooperative |
| ___Playful | ___Relaxed | ___Nervous |

## SECOND ADJECTIVE CHECKLIST

Same directions as before: Two checks if the adjective really describes how you feel right now; One check if the adjective sort of describes how you feel; a line through the word if it does not describe how you feel or if you do not know what it means. Work quickly.

| | | |
|---|---|---|
| ____Nervous | ____Relaxed | ____Playful |
| ____Cooperative | ____Dopey | ____Angry |
| ____Affectionate | ____Restless | ____Energetic |
| ____Warm | ____Numb | ____Impatient |
| ____Self-controlled | ____Calm | ____Mentally Cloudy |
| ____Clearheaded | ____Quiet | ____Good Natured |
| ____Cold | ____Jittery | ____Sexy |
| ____Muddled | ____Tense | ____Self-confident |
| ____Good | ____Changeable | ____Suspicious |
| ____Lightheaded | ____Drowsy | ____Drunk |
| ____Self-conscious | ____Depressed | ____On edge |
| ____Detached | ____Peaceful | ____Friendly |
| ____Tired | ____Bleary eyed | ____Sluggish |
| ____Impulsive | ____Shaky | ____Bold |
| ____Happy | ____Active | ____Dreamy |
| ____Excited | ____Dizzy | ____Sociable |
| ____Weak | ____Bored | ____Alert |

SUBJECTIVE RESPONSES #1



Some of the statements below may describe your reactions to the THC. Circle the appropriate number on the five point scale:

"Does not describe my experience at all" 1 2 3 4 5 "Describes my experience perfectly"

Read the descriptions, consider your own experience, then rate the description.

| | |
|---|---|
| "Things stand out more sharply against the background" | 1 2 3 4 5 |
| "I see more subtle shades of colour" | 1 2 3 4 5 |
| "Sounds are purer, more distinct" | 1 2 3 4 5 |
| "My sense of touch is more sensual, more exciting" | 1 2 3 4 5 |
| "Smells are richer and more unique" | 1 2 3 4 5 |
| "Time is passing very slowly" | 1 2 3 4 5 |
| "I feel a pleasant warmth inside my body" | 1 2 3 4 5 |
| "When I move my motions seem smooth and fluid" | 1 2 3 4 5 |
| "Thoughts keep slipping away before I can grasp them" | 1 2 3 4 5 |
| "I am physically relaxed and don't want to move" | 1 2 3 4 5 |
| "With my eyes closed my body feels very light" | 1 2 3 4 5 |

Other sensations not listed above (described as accurately as you can):

## THIRD ADJECTIVE CHECKLIST

Same directions as before - describe the way you feel <u>right now</u>.
<u>Two</u> checks - really describes the way I feel
<u>One</u> check - <u>sort of</u> describes the way I feel
<u>Line</u> through the word - adjective <u>does not</u> describe the way I feel

| | | |
|---|---|---|
| ____Bored | ____Dizzy | ____Active |
| ____Shakey | ____Bleary eyed | ____Peaceful |
| ____Depressed | ____Drowsy | ____Changeable |
| ____Tense | ____Jittery | ____Quiet |
| ____Calm | ____Numb | ____Restless |
| ____Dopey | ____Relaxed | ____Weak |
| ____Excited | ____Happy | ____Impulsive |
| ____Tired | ____Detached | ____Self-conscious |
| ____Lightheaded | ____Good | ____Muddled |
| ____Cold | ____Clearheaded | ____Self-controlled |
| ____Warm | ____Affectionate | ____Cooperative |
| ____Nervous | ____Alert | ____Sociable |
| ____Dreamy | ____Bold | ____Sluggish |
| ____Friendly | ____On edge | ____Drunk |
| ____Suspicious | ____Self-confident | ____Sexy |
| ____Good natured | ____Mentally cloudy | ____Impatient |
| ____Energetic | ____Angry | ____Playful |

## SUBJECTIVE RESPONSES #2

Same directions as before: read the descriptions, consider your own experience, then circle the appropriate number;

"Does not describe my experience at all" 1 2 3 4 5 "Describes my experience perfectly"

| | |
|---|---|
| "With my eyes closed my body feels very light" | 1 2 3 4 5 |
| "Thoughts keep slipping away before I can grasp them" | 1 2 3 4 5 |
| "I feel a pleasant warmth inside my body" | 1 2 3 4 5 |
| "Smells are richer and more unique" | 1 2 3 4 5 |
| "Sounds are purer, more distinct" | 1 2 3 4 5 |
| "Things stand out more sharply against the background" | 1 2 3 4 5 |
| "I am physically relaxed and don't want to move" | 1 2 3 4 5 |
| "When I move my motions seem smooth and fluid" | 1 2 3 4 5 |
| "Time is passing very slowly" | 1 2 3 4 5 |
| "My sense of touch is more sensual, more exciting" | 1 2 3 4 5 |
| "I see more subtle shades of colour" | 1 2 3 4 5 |

Other sensations not listed above (describe as accurately as you can):

COMMENTS

Your subject #:_____

We want you to judge how "high" each of the other subjects is and tell us how well you know each one.

Subject #____ is (circle one)
"Not high at all" 1 2 3 4 5 "Really high, really stoned"
and he is (check one) __a friend __an acquaintance __a stranger.

Subject #____ is (circle one)
"Not high at all" 1 2 3 4 5 "Really high, really stoned"
and he is (check one) __a friend __an acquaintance __a stranger.

Subject #____ is (circle one)
"Not high at all" 1 2 3 4 5 "Really high, really stoned"
and he is (check one) __a friend __an acquaintance __a stranger.

NOTE - this form was used for groups with 4 subjects present. Where 2 subjects were present, the form contained space for the ratings of one other subject. Where 1 subject was present this page was omitted.

## COMMENTS

How strong was the THC (drug) you received? (Circle one)
weak 1 2 3 4 5 strong

Did you experience a "high"? (Circle one) Yes No

Have you experienced a similar "high"? Yes No

How would you rate your present "high"? (circle one)
"Not 'high' at all" 1 2 3 4 5 "Highest I have ever been"

T

Since this is the first experiment with THC at SFU we would appreciate your comments on the way the experiment was run.

Were the instructions easy to understand? ___Yes ___No

What could be done to improve the instructions?

# APPENDIX B

The purpose of this study is to test the short-term effects of $\Delta^9$ tetrahydrocannabinol (THC), the active ingredient from marijuana. Your participation is entirely VOLUNTARY. The main part of the experiment lasts approximately 60 minutes and involves no painful procedures.

As you may know, some drugs react with other drugs to produce complicated effects. If you have taken any kind of medication (for example: Insulin, Librium, tranquilizers, etc.) within the last 24 hours DO NOT TAKE PART IN THIS EXPERIMENT. If you have any psychological or physical problem that could be worsened by this experiment DO NOT TAKE PART.

APPENDIX C

Consent Form

I,_____,voluntarily submit to the conditions of the experiment,understanding fully that I may be required to take a psychoactive drug. I have no medical or emotional problem that might be worsened by my participation.

Signed _____

Distribution of Ss according to age.

| Age | Number of Ss |
|---|---|
| 17 | 2 |
| 18 | 8 |
| 19 | 22 |
| 20 | 12 |
| 21 | 9 |
| 22 | 13 |
| 23 | 5 |
| 24 | 8 |
| 25 | 9 |
| 26 | 4 |
| 27 | 1 |
| 28 | |
| 29 | 2 |
| 30 | |
| 31 | 2 |
| 32 | |
| 33 | |
| 34 | 1 |
| 35 | 1 |
| 36 | |
| 37 | |
| 38 | 1 |
| Total | 100 |

Distribution of Ss according to educational level

| Year in University | Number of Ss |
|---|---|
| 1 | 34 |
| 2 | 30 |
| 3 | 17 |
| 4 | 12 |
| Graduate | 7 |
| Total | 100 |

Drug usage by subjects

| Drug | Usage: never | once/ twice | 3 - 5 times | 6 - 9 times | 10/more times | continuously | missing data (m.d.) | Total | |
|---|---|---|---|---|---|---|---|---|---|
| Coffee | 3 | 4 | 0 | 1 | 15 | 80 | 0 | 100 | subjects |
| Marijuana | 2 | 1 | 0 | 2 | 42 | 53 | 0 | 100 | |
| Hashish | 3 | 0 | 4 | 12 | 29 | 50 | 2 | 100 | |
| Alcohol | 0 | 0 | 4 | 1 | 36 | 58 | 1 | 100 | |
| Tobacco | 13 | 11 | 3 | 1 | 18 | 54 | 0 | 100 | |
| LSD | 25 | 15 | 13 | 12 | 28 | 7 | 0 | 100 | |
| Tranquilizers | 57 | 31 | 4 | 1 | 5 | 2 | 0 | 100 | |
| Methedrine | 68 | 18 | 8 | 2 | 2 | 0 | 2 | 100 | |
| Mescaline | 38 | 20 | 9 | 8 | 21 | 3 | 1 | 100 | |
| Heroin | 92 | 4 | 0 | 1 | 1 | 0 | 2 | 100 | |
| Benzedrine | 81 | 11 | 4 | 3 | 1 | 0 | 0 | 100 | |
| Cocaine | 74 | 11 | 7 | 2 | 4 | 1 | 1 | 100 | |

Time of last use by subjects

| | never used | day | week | month | two months | five months | year | longer | m.d. | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Coffee | 3 | 81 | 9 | 0 | 0 | 0 | 0 | 0 | 4 | 100 |
| Marijuana | 2 | 27 | 34 | 22 | 6 | 6 | 0 | 0 | 3 | 100 |
| Hashish | 3 | 18 | 28 | 29 | 8 | 10 | 0 | 2 | 2 | 100 |
| Alcohol | 0 | 45 | 41 | 12 | 1 | 0 | 0 | 1 | 0 | 100 |
| Tobacco | 13 | 56 | 2 | 4 | 3 | 4 | 4 | 11 | 3 | 100 |
| LSD | 25 | 0 | 3 | 14 | 11 | 10 | 14 | 23 | 0 | 100 |
| Tranquilizers | 57 | 0 | 1 | 1 | 1 | 4 | 9 | 24 | 3 | 100 |
| Methedrine | 68 | 0 | 0 | 0 | 1 | 6 | 8 | 14 | 3 | 100 |
| Mescaline | 38 | 0 | 3 | 6 | 5 | 8 | 19 | 20 | 1 | 100 |
| Heroin | 92 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 1 | 100 |
| Barbiturates | 81 | 0 | 0 | 0 | 0 | 7 | 4 | 7 | 1 | 100 |
| Cocaine | 74 | 0 | 2 | 2 | 5 | 6 | 4 | 3 | 4 | 100 |

Time of first use by subjects:

| | never used | prior to senior high | senior high | prior to university | university | missing data | Total |
|---|---|---|---|---|---|---|---|
| Coffee | 3 | 80 | 12 | 5 | 0 | 0 | 100 |
| Marijuana | 2 | 19 | 43 | 13 | 23 | 0 | 100 |
| Hashish | 3 | 16 | 36 | 13 | 30 | 2 | 100 |
| Alcohol | 0 | 63 | 33 | 1 | 3 | 0 | 100 |
| Tobacco | 13 | 60 | 60 | 1 | 6 | 0 | 100 |
| LSD | 25 | 8 | 30 | 12 | 23 | 2 | 100 |
| Tranquilizers | 57 | 7 | 11 | 2 | 19 | 4 | 100 |
| Methedrine | 68 | 2 | 11 | 3 | 13 | 3 | 100 |
| Mescaline | 38 | 5 | 20 | 13 | 15 | 1 | 100 |
| Heroin | 92 | 0 | 1 | 2 | 4 | 1 | 100 |
| Barbiturates | 81 | 2 | 6 | 3 | 7 | 1 | 100 |
| Cocaine | 74 | 0 | 4 | 4 | 16 | 2 | 100 |

Personal attitude toward specific drugs based on personal experience

| | never used | very beneficial | beneficial | neutral | mostly unpleasant | very harmful | m.d. | Total |
|---|---|---|---|---|---|---|---|---|
| Coffee | 3 | 25 | 17 | 50 | 2 | 1 | 2 | 100 |
| Marijuana | 2 | 69 | 17 | 10 | 0 | 0 | 2 | 100 |
| Hashish | 3 | 63 | 21 | 9 | 1 | 0 | 3 | 100 |
| Alcohol | 0 | 26 | 47 | 19 | 6 | 1 | 1 | 100 |
| Tobacco | 13 | 12 | 28 | 17 | 19 | 8 | 3 | 100 |
| LSD | 25 | 26 | 36 | 7 | 5 | 2 | 3 | 100 |
| Tranquilizers | 57 | 13 | 14 | 6 | 5 | 1 | 4 | 100 |
| Methedrine | 68 | 4 | 13 | 3 | 6 | 5 | 1 | 100 |
| Mescaline | 38 | 31 | 21 | 7 | 2 | 1 | 0 | 100 |
| Heroin | 92 | 5 | 1 | 0 | 1 | 1 | 0 | 100 |
| Barbiturates | 81 | 3 | 9 | 2 | 5 | 0 | 0 | 100 |
| Cocaine | 74 | 14 | 4 | 4 | 2 | 0 | 2 | 100 |

Subject's primary reasons for using specific drugs:

| | never used | curiosity | kicks | boredom | escape | habit | social pressure | gain insight | medical | other | m.d. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coffee | 3 | 6 | 0 | 15 | 0 | 50 | 10 | 0 | 1 | 12 | 3 | 100 |
| Marijuana | 2 | 16 | 30 | 3 | 1 | 3 | 4 | 15 | 0 | 15 | 1 | 100 |
| Hashish | 3 | 10 | 41 | 3 | 0 | 4 | 4 | 12 | 1 | 12 | 1 | 100 |
| Alcohol | 0 | 5 | 39 | 5 | 3 | 14 | 20 | 1 | 0 | 12 | 1 | 100 |
| Tobacco | 13 | 12 | 1 | 3 | 0 | 45 | 17 | 0 | 0 | 4 | 5 | 100 |
| LSD | 25 | 28 | 11 | 0 | 0 | 1 | 1 | 27 | 0 | 5 | 2 | 100 |
| Tranquilizers | 57 | 7 | 2 | 2 | 4 | 0 | 0 | 0 | 21 | 4 | 3 | 100 |
| Methedrine | 68 | 9 | 6 | 2 | 3 | 0 | 0 | 2 | 1 | 6 | 3 | 100 |
| Mescaline | 38 | 17 | 15 | 0 | 1 | 1 | 1 | 18 | 0 | 4 | 5 | 100 |
| Heroin | 92 | 3 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 100 |
| Barbiturates | 81 | 4 | 4 | 2 | 0 | 0 | 1 | 0 | 4 | 4 | 0 | 100 |
| Cocaine | 74 | 10 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 100 |

"The first time I tried marijuana I experienced a 'high'":

| | |
|---|---|
| Yes | 44 subjects |
| No | 52 " |
| missing data | 2 |
| Total | 98 subjects |

Social context of first marijuana experience:

| | |
|---|---|
| alone | 2 subjects |
| with friends | 84 " |
| with acquaintances | 9 " |
| with strangers | 1 " |
| missing data | 2 |
| Total | 98 subjects |

Subject's previous experience with marijuana sensations:

Frequency 1 = never
2 = rarely
3 = sometimes (10 to 50% of the time)
4 = very often (more than 50% of the time)
5 = usually or always

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| I see patterns and meaningful designs in visual material that is not patterned or meaningful when I am straight | 10 | 33 | 33 | 12 | 2 |
| Things stand out more sharply against the background | 8 | 21 | 38 | 16 | 8 |
| I see more subtle shades of colour | 7 | 22 | 27 | 27 | 9 |
| The notes of music are purer and the rhythm stands out more | 2 | 5 | 9 | 20 | 54 |
| I can understand the words of songs which are not clear when I am straight | 4 | 12 | 38 | 25 | 15 |
| My sense of touch is more sensual,more exciting | 1 | 9 | 26 | 26 | 28 |
| Taste sensations take on new qualities | 2 | 11 | 19 | 22 | 36 |
| Smells are richer and more unique | 4 | 18 | 26 | 21 | 20 |
| Time passes very slowly | 5 | 10 | 28 | 23 | 28 |
| I feel a lot of pleasant warmth inside my body | 4 | 12 | 37 | 27 | 16 |
| With my eyes closed my body seems very light | 2 | 19 | 35 | 17 | 21 |
| I get physically relaxed and don't want to get up and move around | 2 | 7 | 43 | 28 | 16 |
| When I move about my motions seem smooth and well coordinated | 2 | 16 | 40 | 24 | 11 |
| I have feelings of insight into how other people tick | 5 | 17 | 36 | 22 | 12 |
| I find it very hard to play ordinary social games | 4 | 10 | 31 | 26 | 24 |
| I talk a lot less | 8 | 19 | 35 | 20 | 11 |
| I want to be with people more,to interact with them | 2 | 10 | 44 | 21 | 15 |

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| I appreciate very subtle humour in what I and others say | 1 | 2 | 32 | 37 | 20 |
| I can come down at will if I need to deal with some problem | 2 | 11 | 24 | 23 | 29 |
| My memory span for conversations is shortened I forget what it is about before it is ended | 1 | 16 | 29 | 26 | 18 |
| I feel emotions more strongly so they affect me more | 3 | 18 | 35 | 20 | 16 |
| I feel good regardless of how I felt before I turned on | 0 | 6 | 44 | 22 | 17 |
| I get somewhat paranoid about the people with me suspicious about what they are doing | 18 | 36 | 31 | 5 | 1 |
| I feel more open to experiences of all kinds | 1 | 4 | 29 | 36 | 21 |

Expected sensations endorsed by the subjects:

| No. of Ss | Sensations |
|---|---|
| 48 | colours will be brighter,clearer |
| 13 | colours will be duller,more pastel |
| 15 | visual patterns will be fuzzy,hazy |
| 42 | visual patterns will be sharp,clear |
| 10 | sounds will be less distinct |
| 64 | sounds will be more distinct,clearer |
| 61 | touch sensations will be more distinct,more sensual |
| 11 | touch sensations will be diminished,numbed |
| 59 | taste sensations will be more vivid,everything will taste better |
| 10 | taste sensations will be bland,everything will taste the same |
| 17 | smell sensations will be lessened,odours will be less noticeable |
| 44 | smell sensations will be richer,more unique |
| 20 | time will seem to speed by |
| 54 | time will seem to pass very slowly |
| 18 | my body will seem heavier |
| 48 | my body will seem lighter |
| 57 | I will feel relaxed,I will want to stay still |
| 21 | I will feel restless,will want to move around |
| 24 | my thoughts will seem permenent,long lasting |
| 41 | my thoughts will seem to disappear,slip away |
| 76 | I will feel pleasant,comfortable |
| 3 | I will feel unpleasant,uncomfortable |

APPENDIX J

Per centages of subjects in the Tart (1971b) and present studies endorsing sensations as occurring "sometimes,very often and usually or always" when the subjects are high

| | Per Centages | |
|---|---|---|
| | Tart | Simmons |
| I see patterns and meaningful designs in visual material that is not patterned or meaningful when I am straight | 85 | 52 |
| Things stand out more sharply against the background | 72 | 68 |
| I see more subtle shades of colour | 70 | 69 |
| The notes of music are purer and the rhythm stands out more | 99 | 92 |
| I can understand the words of songs which are not clear when I am straight | 85 | 83 |
| My sense of touch is more sensual,more exciting | 86 | 89 |
| Taste sensations take on new qualities | 93 | 86 |
| Smells are richer,more unique | 69 | 75 |
| Time passes very slowly | 95 | 84 |
| I feel a lot of pleasant warmth inside my body | 71 | 83 |
| With my eyes closed my body seems very light | 68 | 77 |
| I get physically relaxed and don't want to get up or move around | 95 | 90 |
| When I move my motions seem smooth and well coordinated | 81 | 81 |
| I have feelings of insight into how other people tick | 85 | 76 |
| I find it hard to play ordinary social games | 83 | 85 |
| I talk a lot less | 83 | 71 |
| I want to be with people more,to interact with them | 76 | 87 |

| | Tart | Simmons |
|---|---|---|
| I appreciate very subtle humour in what I and others say | 91 | 97 |
| I can come down at will if I need to deal with some problem | 89 | 85 |
| My memory span for conversations is shortened, I forget what it is about before it has ended | 89 | 81 |
| I feel emotions more strongly so they affect me more | 80 | 77 |
| I feel good regardless of how I felt before I turned on | 80 | 93 |
| I get somewhat paranoid about the people with me, suspicious about what they are doing | 80 | 41 |
| I feel more open to experiences of all kinds | 91 | 94 |

Average number of changes in applicability of adjectives between first and second, and between second and third administrations of the Adjective Check Lists for the High and Unresponsive groups

| Group | Average number of changes/subject | |
|---|---|---|
| | Ist vs. 2nd ACL | 2nd vs. 3rd ACL |
| High (n=25) | 13.36 | 14.17 |
| Unresponsive (n=75) | 13.22 | 15.01 |

Average ratings for subjective responses for the High and Unresponsive groups (higher ratings = subjective responses are more applicable)

| | Subjective Responses #1 - average rating |
|---|---|
| High | 3.01 |
| Unresponsive | 2.09 |

| | Subjective Responses #2 - average rating |
|---|---|
| High | 3.34 |
| Unresponsive | 2.02 |

Average ratings by other subjects in group situations of how high the High and Unresponsive subjects appeared to be ( higher ratings = higher the subject appeared to be)

| | Average ratings of how high by other subjects |
|---|---|
| High | 2.24 |
| Unresponsive | 1.81 |