ABSTRACT

Mood Changes in Alcoholic Subjects with
Programmed and Free-Choice Experimental Drinking of Alcohol

By: David Davis M.B., Ch.B.

Two studies of programmed and free-choice experimental drinking of alcohol with chronic alcoholic subjects were conducted to determine: (1) the effect of alcohol on self-reported mood scores, (2) the trends in mood over five day periods of drinking, (3) the effect of anticipation of the first drink on mood, (4) the effect of the same one dose of alcohol at the same time each day over a five day period of drinking, (5) the relationship of blood alcohol levels to mood scores, (6) the difference in mood scores between subjects, and (7) the difference in mood scores and alcohol levels between the programmed and free-choice drinking designs. Nine chronic alcoholics took part in the programmed study and eight in the free-choice study. All subjects had full physical and mental status examinations, laboratory studies, mood assessments and Breathalyzer tests. The mood was assessed by a Q-sort developed from the Lorr-McNair mood adjective checklist. Several devices were introduced to assure the reliability and validity of the instrument.

It was found that in both groups there was a significant decrease in "carefree" and "friendliness" scores and an increase in "hostility" scores during the drinking periods, as well as other mood score changes peculiar to each group. The data also suggest that a decrease in the score on the

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"carefree" scale may have been a more sensitive indicator of lowering of mood than an increase on the "depression" scale. These mood changes tended to increase or decrease as drinking progressed, with the levels of "hostility" and "anxiety" being altered significantly in the first two days of free-choice drinking. For the total subjects, differences before, after, and between drinking for "carefree", "anxiety", "cognitive gain" and "fatigue" scores in free-choice drinking were significant, while change in the "fatigue" score was the major difference during programmed drinking. The increase in depression and anxiety which occurred in most subjects in anticipation of drinking may have clinically significant implications. The variation of mood patterns among subjects emphasizes the importance of an individualized interpretation of the findings. Clustered patterns indicate the high probability that mood profiles among alcoholics are definable, with potential value in formulating therapeutic programs.

MOOD CHANGES IN ALCOHOLIC SUBJECTS WITH PROGRAMMED AND FREE-CHOICE EXPERIMENTAL DRINKING OF ALCOHOL.

A THESIS

PRESENTED TO

THE FACULTY OF MEDICINE

THE UNIVERSITY OF GLASGOW

BY DAVID DAVIS, M.B., Ch.B.

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"Nor haue we one or two kinde of drunkards onely, but eight kindes. The first is Ape drunke, and he leapes, and sings, and hollowes, and daunceth for the heauens: the second is Lion drunke, and he flings the pots about the house, calls his Hostesse whore, breakes the glasse windowes with his dagger, and is apt to quarrell with any man that speaks to him: the third is Swine drunke, heauy, lumpish, and sleepie, and cries for a little more drinke, and a fewe more cloathes: the fourth is Sheepe drunke, wise in his owne conceipt, when he cannot bring foorth a right word, the fifth is Mawdlen drunke, when a fellowe will weepe for kindnes in the midst of his Ale, and kisse you, saying; By God Captaine, I loue thee, goe thy waies thou dost not thinke so often of me as I do of thee, I would (if it pleased GOD) I could not loue thee so well as I doo, and then he puts his finger in his eie, and cries: the sixt is Martin drunke, when a man is drunke and drinkes himselfe sober ere he stirre: the seventh is Goate drunke, when in his drunkennes he hath no mind but on Lechery: the eighth is Foxe drunke, when he is craftie drunke, as many of the Dutch men bee, will never bargaine but when they are drunke. All these species and more, I haue seene practised in one Company at one sitting, when I haue been permitted to remaine sober amongst them, onely to note their seuerall humors. Hee that plies any one of them harde, it will make him to write admirable verses, and to haue a deepe casting head, though hee were neuer so verie a Dunce before."

Thomas Nash
Pierce Penilesse, His Supplication to the Diuell
(1592)

CHAPTER I.

Introduction and Statement of the Problem

I. INTRODUCTION AND STATEMENT OF THE PROBLEM

We are continually confronted with the question as to why alcoholics drink alcohol. It is conceivable that part of the answer may lie in an understanding of the effects of alcohol upon them. A number of hypotheses have been advanced to explain continued alcohol ingestion based on such variables as the effect of alcohol on memory (Tamerin et al.1970), its effect on biogenic amines to produce morphine-like alkaloids (Davis and Walsh 1970), its use as an agent of self-destruction as a consequence of a lifetime of inadequacy and failure and its effect in initially reducing anxiety. The latter constitutes a paradox of alcohol addiction wherein anxiety (as well as depression and hostility) although reduced for the first few hours of alcohol consumption is actually increased with continued drinking* (Mendelson et al.1964, Mayfield 1968, Tamerin and Mendelson 1969, Nathan et al 1970).

This study is an attempt to consider, in greater depth, the effect of alcohol on the mood of the chronic alcoholic during experimental drinking to demonstrate what, if any, the relationship between anticipation of a drink and the effects of the drink on mood might be as a means of understanding these changes and perhaps providing a baseline for later studies involving modification of such mood changes whereby interference with the alcoholic's drinking pattern may be achieved.

*The terms "drink" and "drinking" are used throughout this report to indicate the ingestion of alcohol.

Mendelson, LaDou and Soloman in 1964 were the first to challenge the notion that alcohol reduces anxiety and depression in the alcoholic. In 1966, Williams with his experimental cocktail party demonstrated that normals did not exceed their pre-party level of anxiety and depression while the alcoholics did so. Mayfield and Allan in 1967 showed that mild or moderate intoxication produced no improvement in alcoholics whereas greater than moderate intoxication produced an increase in depression and aggression with a decrease in friendliness and in 1968 McNamee, Mello and Mendelson suggested that the most prominent of these emotional changes was their lability.

Tamerin and Mendelson in their study in 1969 described progressive depression, guilt, psychic pain, increased sexuality, aggressive behavior with continued drinking and Tamerin et al. in 1970 demonstrated that the alcoholics in their study saw more aggression, sexuality and dysphoria in themselves with drinking than they had anticipated. Also in 1970 Mello and Mendelson showed that their alcoholic subjects during free-choice drinking maintained blood levels two to three times as high as in four-hourly programmed drinking although the blood alcohol level was rarely an adequate predictor of behavior and Nathan et al. in 1970 reported that ten out of eleven of their subjects spontaneously reported heightened anxiety, depression and hostility and a lowered energy level by the second or third day of drinking but did not experience this during the first several hours of drinking. Mayer-Gross et al. further state that "The emotional reaction to increasing degrees of intoxication is to a large extent determined by the

personality; but the extent to which the emotional reaction keeps this individual stamp diminishes as the degree of intoxication becomes progressively more severe."

In an effort to examine these mood changes two series of studies were designed in an attempt to more precisely delineate the changes in mood as they occurred in relation to one drink each day of a five-day continuous drinking period, the measurements being taken just before the drink, just after and midway between that drink and the next drink during two separate series of studies, one of four-hourly programmed drinking and one of free-choice drinking.

Thus, the purpose of the present study was to measure the mood of alcoholic subjects in relation to the consumption of an individual drink each day during the course of a period of drinking and to look at the overall pattern of changes in mood as they occurred during the total drinking period when the drinking was either programmed or free-choice in nature. During the programmed drinking sequence of chronic alcoholics the questions to which the study directs itself, therefore, are:

(1) What is the effect of alcohol on self-reported mood scores?

(2) What are the mood trends over five days drinking?

(3) What is the effect of anticipation of the first drink on mood?

(4) What is the effect of the same one dose of alcohol at the same time each day over a five day period?

(5) What is the relation of the blood alcohol level to the mood scores?

(6) What is the difference in mood scores between subjects?

The questions during free-choice drinking are similar to those just ennumerated with an additional question regarding the difference between night and day mood scores. Two further questions concerning the programmed and free-choice drinking mood scores are asked:

What is the difference between the overall mood scores obtained on each of these drinking paradigms?, and what is the overall difference in alcohol level between programmed and free-choice drinking?

CHAPTER II.

Research Design

II. RESEARCH DESIGN

A. SUBJECTS

(1) Programmed Drinking Study

The subjects consisted of nine volunteer male, chronic alcoholics with a mean average spree-drinking history of 18 years (range 10-30). Three were black and six were white. Three were married and six divorced or separated. All were 50 years of age and under with a mean age of 44 (range 27-50) and mean I.Q. of 101.6 (range 80-120) on the Wechsler-Bellevue Intelligence Scale (see Table I). The difference between the verbal and performance scales on the WAIS and the Benton Visual Retention Test were used to determine the extent of organic brain damage and to eliminate from the study anyone with gross damage (See Table III). All subjects were able to read and did not give a history of being violent, having seizures, nor indicated that they were unable to remember their behavior while drinking. Subjects who appeared excessively eager to participate in the experimental program were excluded on the basis of experience which has shown that such subjects generally tend to act out while drinking and are unable to cooperate in the assessments which have to be made. No court-committed patients were accepted. Subjects who were lost from the experiments were those who were rejected because of liver profiles indicating possible damage, those who became violent during the alcohol administration period, and one who became too anxious during the baseline period at the restriction of activity and signed out (a total of three subjects).

TABLE I. Characteristics of Subjects - (Programmed Drinking Sequence).

	Subject	Age	Race	Mar.*	Wais I.Q.	Length of Drinking - Yrs.
Prog'd. Drinking N=9	BR	50	W	M-D	106	30
	FA	45	C	M	106	20
	PA	47	W	M-D	102	10
	TR	50	W	M	98	17
	WE	50	W	M	120	25
	NE	27	C	M-S	90	11
	PH	47	W	M-S	94	10
	RA	39	W	M-S	96	18
	WR	42	C	M-D	102	24
		$\bar{X}$ 44			$\bar{X}$ 101.6	$\bar{X}$ 18

TABLE II. Characteristics of Subjects - (Free-Choice Drinking Sequence).

	Subject	Age	Race	Mar.*	Wais I.Q.	Length of Drinking - Yrs.
Free Drinking N=8	RN	34	C	S	104	9
	KA	44	W	MX2	94	20
	DO	49	W	M-D	87	22
	PU	27	W	S	99	11
	DA	45	W	M-S	100	24
	MK	29	C	M-S	84	11
	OW	38	W	MX2	127	19
	WI	34	C	S	102	12
		$\bar{X}$ 37.5			$\bar{X}$ 99.6	$\bar{X}$ 16

* M-D Married and then divorced
M-S Married and then separated
S Single
M Married
W White
C Colored

TABLE III. Psychological Test Results

	SUBJECT	Wechsler-Bellevue Intelligence Scale V	P	FS	Benton Visual Retention Test
Prog'd Drinking N=9	BR	106	105	106	Probable memory loss
	FA	106	95	101	Strong possibility of memory loss
	PA	102	103	102	Within normal limits
	TR	92	106	98	Probable memory loss
	WE	120	116	119	Within normal limits
	NE	93	86	90	Within normal limits
	PH	95	93	94	Strong probability of memory loss
	RA	94	99	96	Marked loss
	WR	93	114	102	Probable memory loss
	--				
Free Drinking N=8	RN	105	102	104	Within normal limits
	KA	91	100	94	Within normal limits
	DO	92	83	87	50% loss
	PU	101	98	99	25% loss
	DA	98	103	100	Within normal limits
	MK	81	90	84	Within normal limits
	OW	127	122	127	Suspected minor loss
	WI	99	106	102	Moderate loss

The subjects were recruited voluntarily from a Rehabilitation Center for Alcoholics. All had a history of withdrawal symptoms and had no evidence of current major physical illness, psychosis, nor use of medication. No subject had ingested alcohol for at least two weeks prior to the study.

(2) Free-Choice Drinking Study

These subjects consisted of an additional eight male chronic alcoholics of mean age 37.5 years (range 27-49), three black, five white, three divorced or separated, three single, two married, mean I.Q. 99.6 (range 84-127) and average drinking history of 16 years (range 9-24). The same criteria of selection applied to this group as to those in the programmed drinking sequence (with a prior loss of four subjects for the reasons stated above). (See Tables II and III)

B. SETTING

The experiments were carried out in the inpatient alcoholism research ward (Alcohol Study Unit) of the National Center for Prevention and Control of Alcoholism at St. Elizabeths Hospital, Washington, D.C. The ward consists of six single bedrooms, offices and a day-room. The outside door to the ward was kept locked during the control and experimental periods.

All subjects were confined to the ward druing the control and experimental periods and signed a voluntary agreement to participate in the studies (See Appendix I).

C. PROCEDURES AND ASSESSMENTS

Differences have been observed (Mello and Mendelson 1970) in the behavioral and biologic responses of alcoholics when alcohol is consumed according to a programmed schedule or whether it is ingested in a spontaneous manner. Such subjects were reported to have drunk more, achieved higher blood alcohol levels and tolerated alcohol better during the spontaneous drinking paradigm with subsequent severer withdrawal signs and symptoms. In view of possible differential effects on mood it was decided to carry out the mood studies with both programmed and free drinking paradigms. Thus, two studies were conducted. Firstly, the programmed drinking sequence was repeated for two sets of subjects (4 and 5 respectively) and the free drinking sequence was repeated for two different sets of subjects (4 and 4 respectively).

(1) Programmed Drinking (See Appendix II for Research Protocols)

Each group of subjects was on the ward for 28 days, which was divided into: (a) a control period of eight days during which baseline assessments were made including physical and mental status examinations, laboratory studies, (urinanalysis, blood count and hemoglobin, VDRL, SGOT, BSP, serum bilirubin, serum amylase and fecal occult blood) mood assessments and Breathalyzer tests; (b) a drinking period of five days during which 50% grain ethyl alcohol in diluent (7 ml/kg/day) was given every four hours (approximately 16 oz. each per day); (c) a withdrawal period of five days; (d) a further five days of drinking (10 ml/kg/day) every four

hours (approximately 26 oz. per day each)* and finally; (e) a withdrawal period of five days.

TABLE IV. Schedule of Research Design - (Programmed Drinking).

	Baseline	Drinking	Withdrawal	Drinking	Withdrawal
Days	8	5	5	5	5

The alcohol was consumed within ten minutes except for the 11 a.m. dose each day which was drunk immediately as this was the dose around which the daily mood assessments were made.

Mood Assessment

Each subject was required to sort a set of 68 cards into a box (36" x 7½" x 5") divided into four bins labelled: (1) "not at all", (2) "a little", (3) "quite a bit", and (4) "extremely" (Appendix IV). This procedure was carried out three times daily -- just before the 11 a.m. dose of alcohol, just after (at 11:30 a.m.), and between that dose and the next one (at 1 p.m.). The box and bin sorting system was devised to make it possible for an intoxicated subject to manage the arrangement of the cards.

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*The reason for the increase in dosage was that it was felt that the 7 ml/kg rate was not yielding a sufficiently high blood alcohol level so that an increase in the intake of alcohol was instituted at the rate of 10 ml/kg.

Each subject underwent a trial and training period during the first day of the baseline period to make certain that he understood the meaning of the words on all the cards. The items on the cards are derived from the NIMH (MH-T-36-9) mood scales, originally developed from the Lorr-McNair mood adjective checklist. Raskin et al, 1969 have derived factor loadings of the various items in the scale wherein item significance was arbitrarily defined as a loading of 0·40 or higher on one factor and no loading of 0·40 or higher on any other factor. Factor analysis carried out by Raskin et al. 1967, 1968, 1969 across three studies may be regarded as an empirical test of reliability although not statistically so but there appears to be good prior agreement in these ratings based on observation of filmed interviews and observation of a role playing session (Raskin 1971).

Each set of 8" x 5" cards consists of 60 cards each with a word or phrase (51 of which refer to mood and nine to special complaints, mostly somatic in nature), plus four extra cards which are duplicates and four more cards which contain instructions such as "place in bin 1 face down", or "place in bin 4 upside down". The cards have one corner cut off so that when an instructional card is placed face down or upside down, a corner of the card protrudes from the pile in the bin. This enables the staff to determine whether the instructional cards have been read and sorted correctly.

Three sets of cards (A,B,C) are used in each of which the duplicate and instructional cards are different and are given to the subjects in an order according to a predetermined schedule (Appendix II). The pack is

shuffled before each sorting. Once the sorting has been completed and if the instructional cards are in their appropriate bins, the subject is rewarded with ten cigarettes. If the instructional cards are not in their appropriate bins, the sorting is regarded as invalid and the subject must sort the pack of cards once more and correctly if he is to receive the cigarettes. In actual practice, resorting was seldom required.

During the entire study period Breathalyzer readings were obtained from all subjects in the same order five times daily to record blood alcohol levels.

Breathalyzer

This instrument was developed by Robert F. Borkenstein in 1954 and manufactured by the Stephenson Corporation, Red Bank, New Jersey (Appendix VII).

The subject blows into a solution containing potassium dichromate and sulphuric acid which is yellow in color. Light is passed through a filter and then through the solution. This light falls on a photoelectric cell which indicates the amount of light the solution is transmitting on a meter. This can then be compared with a duplicate tube of solution containing no alcohol. The addition of the alcohol in the breath to the potassium dichromate and sulphuric acid solution causes a decrease in the yellow color of the solution and therefore a logarithmic increase in the blue-light transmittance in accordance with the Beer-Lambert Law. At mouth temperature (34°C) 2100 parts of alveolar breath contain the same amount of alcohol as one part of blood. From these ratios, the

amount of alcohol in 100 parts of blood is determined and this is the percent blood alcohol. The accuracy of the breathalyzer is tested by comparison of readings with blood alcohol levels determined by the enzymatic method of Bucher and Redetzki (1951).

Calorie Levels

The caloric intake of each subject was also recorded, subjects being strongly encouraged to maintain an adequate intake of food during the drinking period. It is necessary to take into account the relationship between calorie intake and levels of blood alcohol. It is known that reduction of calorie intake significantly reduces the rate of alcohol metabolism (Mendelson 1970). Caloric levels estimated from food intake were therefore recorded. (See Appendix X)

Cigarettes

The cigarettes were used as inducement and reward for completing the card sort. No chronic alcoholic subjects were encountered who did not smoke and for whom this would not be regarded as a reward.

The daily schedule for alcohol, breathalyzer test, card sorting and cigarettes was as follows:

TABLE V. Daily Temporal Sequence of Research Design

(Programmed Drinking)

Alcohol	Breathalyzer	Card Sorting	Cigarettes	
7:00 a.m.				
	9:00 a.m.			
		10:00-10:30 a.m.		
	10:30-11:00 a.m.		10	
11:00 a.m.				
		11:30-12:00 Noon		
	12:00-12:30 p.m.		10	
				12:30-1:00 p.m. Lunch
		1:00-1:30 p.m.		
	1:30-2:00 p.m.		10	
3:00 p.m.				
	5:00 p.m.			
7:00 p.m.				
11:00 p.m.				
3:00 a.m.				

Additional control breathalyzer readings were obtained morning (9:00 a.m.) and evening (5:00 p.m.).

Following each sorting, the cards and the duplicates which are individually numbered were recorded and counted according to the bins in which they have been assigned using a numerical value assigned to each bin; namely, "not at all" = 0, "a little" = 1, "quite a bit"= 2, and "extremely" =3. A template for each mood factor was used to obtain a composite socre on each factor according to the items endorsed on the scoring sheet (Appendix VI).

In addition to the aforementioned assessments, a diary was kept of events on the ward which might have affected the mood ratings.

(2) Free-Choice Drinking (See Appendix III for Research Protocols)

For this study the subjects were on the ward for 18 days which time was divided into: (a) a baseline period of eight days during which similar physical and mental status examinations, laboratory, Breathalyzer, and mood assessments were made as in the programmed drinking study; (b) a drinking period of five days, during which time at 11 a.m. each day each subject was given three chips to be inserted into an alcohol dispenser* (for which he had his own individual key) to obtain three ounces of 50% grain ethyl alcohol which was consumed by 11:30 a.m., each chip being worth one ounce of alcohol. At 1:00 p.m. a further 21 chips were given to be used for free-choice drinking until 3:00 a.m. This was repeated daily and all drinking ceased between 3:00 a.m. and 11:00 a.m. each day. Unused chips from the previous day were collected each day just prior to 11:oo a.m.

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*See Appendix XI for illustration.

allotment; (c) a withdrawal period of five days. The dispensing machine was used to minimize the interaction between staff and subjects relative to the administration of the alcohol during free-choice drinking.

TABLE VI. Schedule of Research Design

(Free-Choice Drinking)

	Baseline	Drinking	Withdrawal
Days	8	5	5

Breathalyzer readings and the card sort were performed in this study just before the 11:00 a.m. drink (at 10:00 a.m.), just after (at 12:oo noon), midway through the drinking period (night reading at 10:15 p.m.), and midway through the non-drinking period (morning reading at 7:15 a.m.) as in the following schedule.

TABLE VII. Daily Temporal Sequence of Research Design

(Free-Choice Drinking)

Breathalyzer	Card Sort	Cig. Chips	Alcohol Chips
			Bar closes 3:00 a.m. No drinking Chip count
	7:15 a.m. to 7:45 a.m.		
7:45 a.m. to 8:15 a.m.		7	
	10:00 a.m. to 10:30 a.m.		
10:30 a.m. to 10:55 a.m.		7	Collect chips owed 10:55 a.m Bar opens 11:00 a.m. 3 Chips Must drink 11:00-11:30 a.m.
	12:00 Noon to 12:30 p.m.		
12:30 p.m. to 1:00 p.m.		7	21 chips
	10:15 p.m. to 10:45 p.m.		
10:45 p.m. to 11:15 p.m.			
Totals 4 Times	4 Times	28	24

Seven chips worth one cigarette each to be used in a cigarette dispenser were given to each subject after each card sorting where the instructional cards were placed in the appropriate bins, for a total of 28 cigarettes per day each.

D. TREATMENT OF DATA

From the raw data total histograms for each of the subjects were compiled (See Appendices VIII and IX). The data were further keypunched on to cards and using an IBM computer 360/50, the data were subjected to an Analysis of Variance and the Duncan Multiple Range Test. Some of the scores on the mood factors were compared using the t-test for correlated differences while a comparison of blood alcohol levels for the programmed and free-choice drinking periods was made using the t-test for non-correlated differences. The computations for all of these are attached (See Appendix XII).

The 51 mood cards divide up into eight factors; namely, depression (nine cards); carefree (nine cards); friendliness (six cards); hostility (five cards); anxiety (seven cards); cognitive gain (five cards); guilty-ashamed (three cards); and fatigue (three cards). The present report relates specifically to these mood cards; the "special complaint" group of nine cards has been analysed separately for use in further study. The items constituting each factor are as follows:

TABLE VIII. Items and Factors of the Mood Scale

Depression	Carefree	Friendliness	Hostility	Anxiety
Sad	Happy	Goodnatured	Angry	Tense
Downhearted	Full of Pep	Friendly	Irritable	On edge
Worthless	Carefree	Kind	Annoyed	Fearful
Unhappy	At ease	Warmhearted	Rude	Impatient
Useless	Active	Pleasant	Sarcastic	Restless
Depressed	Cheerful	Considerate		Nervous
Blue	Satisfied			Jittery
Troubled	Lively			
Lonely	Efficient			

Cognitive Gain	Guilty-Ashamed	Fatigued	Special Complaint
Confused	Troubled by conscience	Tired	Suspicious
Able to think clearly	Sorry for things done	Sleepy	Feel sexy
Forgetful	Weary	Worn out	Need a cigarette
Able to concentrate			Need a drink
Alert			Taken advantage of
			Hungry
			Headache
			Stomach upset
			Trouble seeing

In the programmed drinking study the analysis of variance and Duncan Multiple Range Test compared the nine subjects, five conditions (baseline, drinking 7 ml/kg, withdrawal 1, drinking 10 ml/kg, withdrawal 2), three times (before, after, between drinking) and five days.

In the free-choice drinking study the comparisons included eight subjects, three conditions (baseline, drinking, withdrawal), four times (before, after, midway through the drinking period, midway through the non-drinking period) and five days.

The dependent and independent variables on which the analysis was based are listed in the following table:

TABLE IX. Dependent and Independent Variables

DEPENDENT VARIABLES			
MOOD FACTORS -	1. Depression (D)		
	2. Carefree (C)		
	3. Friendliness (Fr)		
	4. Hostility (H)		
	5. Anxiety (A)		
	6. Cognitive Gain (Cog)		
	7. Guilty-Ashamed (G)		
	8. Fatigued (F)		
INDEPENDENT VARIABLES - LEVELS			
(PROG'D) SUBJECTS (Ss)	1. NE	(FREE)	1. RN
	2. PH		2. KA
	3. RA		3. DO
	4. WR		4. PU
	5. BR		5. DA
	6. FA		6. MK
	7. PA		7. OW
	8. TR		8. WI
	9. WE		
CONDITIONS (C)	1. Sober		1. Sober
	2. Drink 1 (7 ml/kg)		2. Drink
	3. Withdraw 1		3. Withdraw
	4. Drink 2 (10 ml/kg)		
	5. Withdraw 2		
TIMES (T)	1. Before		1. Before
	2. After		2. After
	3. Between		3. Between (Night)
			4. Early a.m.
DAYS (D)	1.		1.
	2.		2.
	3.		3.
	4.		4.
	5.		5.

CHAPTER III.

Results

III. RESULTS

(1) Programmed Drinking

I. Effect of Alcohol on Self-Reported Mood Scores

Comparison of baseline ("sober") scores with those in the second drinking period (10 ml/kg/day) for all subjects using the t-test for correlated differences (DF8 2-tailed) shows that there is a decrease in the carefree score ($p < 0.01$) and an increase in the fatigue score ($p < 0.02$) during that drinking period. Comparison of the second drinking period with the second withdrawal period shows that hostility scores are increased ($p < 0.05$) and the depression score ($p < 0.05$) significant for the inverse ratio 1/F, meaning that the subjects indicated even less depression than one would expect by chance during that drinking period.

The number of subjects showing increase (+) or decrease (-) in mood scores during the first drinking period (7 ml/kg/day) and the second drinking period (10 ml/kg/day) for some of the scales are shown in the accompanying table.

TABLE X. Increase and Decrease in Mood Scores During 1st and 2nd Drinking Periods of Programmed Drinking Study

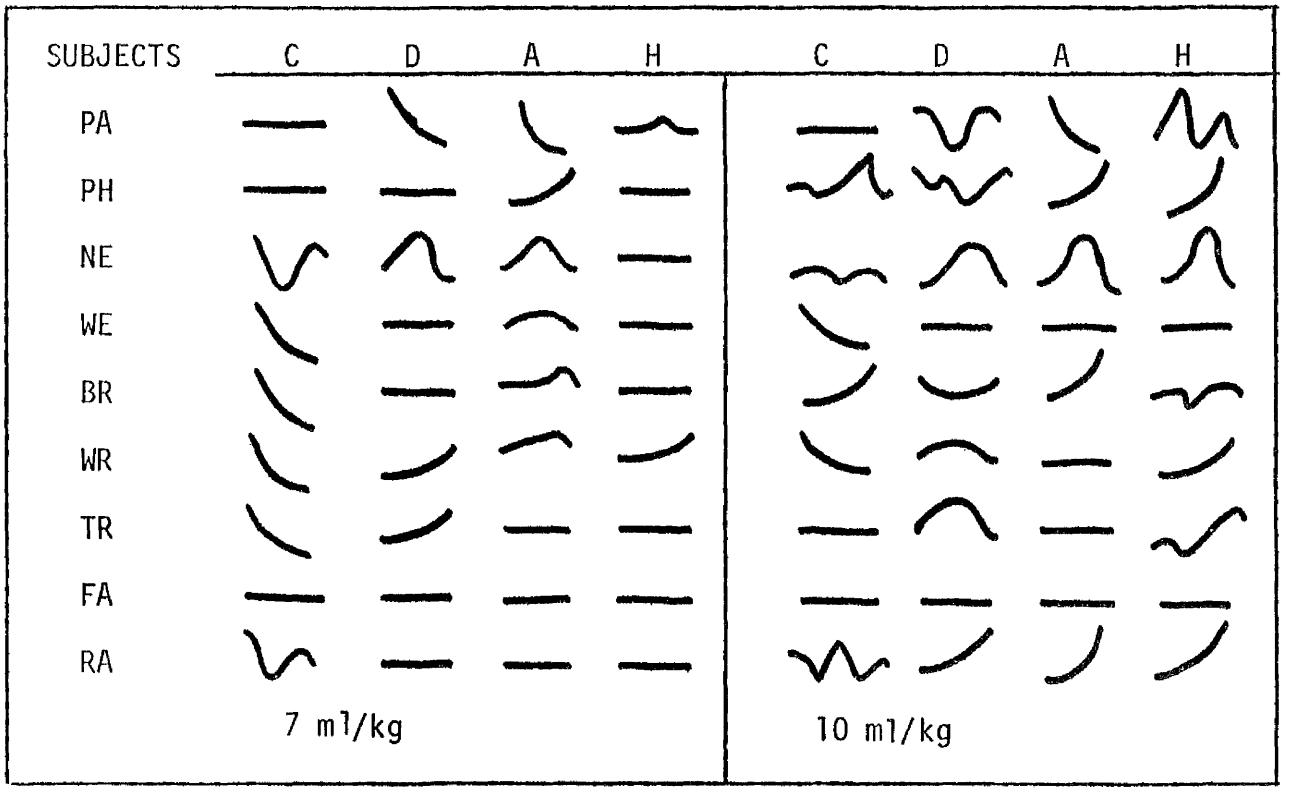
	1st drinking period (7 ml/kg)	2nd drinking period (10 ml/kg)
Carefree	3-	3-
Anxiety	2-	2+
Hostility	0	3-
Friendliness	1-	3+
Depression	2-	1-

The analysis of variance shows a difference among subjects ($p < .01$) on all scales and a difference among all conditions (baseline, drinking, and withdrawal periods) ($p < .01$) on all scales except anxiety and cognitive gain. The second order comparison subjects X conditions was significant ($p < .01$). The Duncan Multiple Range Test indicates that all the conditions were significantly different at 5% level (error term 1151, df for group = 1) for all carefree scores, the baseline was significantly different for the depression score and the fatigue score was significantly different for the two drinking periods. The final withdrawal period was significantly different for friendliness and guilt scores. For example, with reference to the histogram of mood scores of one subject (NE) (Appendix VIII [i]), the profiles during programmed drinking tend to be flatter than with free-choice drinking, and the decrease in depression and anxiety scores after drinking on the second day at 7 ml/kg compared to the increase in depression scores at 10 ml/kg is evident.

II. Mood Trends Over Five Days Drinking

These tend to be less marked than with free-choice drinking, varying from histograms which are essentially without change to differences between the first and second drinking periods. The following table of trends indicates the variety of profiles found.

TABLE XI. Mood Trends During Five Days Programmed Drinking



The analysis of variance indicates that the difference among days, however, is significant for depression ($p < 0.01$), friendliness (p 05), anxiety (p 0.05), guilt (p 0.05), and fatigue scores ($p < 0.01$). Conditions X days was significant ($p < 0.01$) for all scales except guilt. Subjects X days showed significant differences for carefree (p 0.05), hostility ($p < 0.01$), anxiety ($p < 0.01$), guilt ($p < 0.01$) and fatigue scores (p 0.05). The Duncan Multiple Range Test points to a difference in anxiety on the second day.

III. Effect of Anticipation of First Drink on Mood

The accompanying table shows that depression scores are increased just before the 11:00 a.m. drink in five out of nine subjects during the second drinking period (10 ml/kg).

TABLE XII. Anticipation of 1st Drink - (Programmed Drinking)

Mood Scales	C		D		A		H		Fr		Cog	
	ml/kg											
Subjects	7	10	7	10	7	10	7	10	7	10	7	10
BR	+	-		+		+		+	-	+		+
WE	-	-										
FA			-									
TR			+	+	+				-			
PA		+		+				+	+	+		
PH	+			+	-	+			+			
WR		-	-	+							-	
RA	-											-
NE	-		+	-					+	-		

+ = Increase

- = Decrease

For example, with reference to the histogram of mood scores of one subject (WR) (Appendix VIII [4]), comparison of baseline and first drinking period shows a decrease in the carefree score in anticipation of drinking (compared to the score of the day before) and in the same subject comparison of baseline and second drinking shows an increase in the depression score in anticipation of drinking, but in both instances there was no change in anxiety or hostility scores.

IV. Effect of the 11:00 a.m. Dose of Alcohol Daily over Five Days

The same subject (WR) (Appendix [4]) showed an initial peak on carefree scores during both first and second drinking periods. On comparing the mood score before a drink to that just after at 11:00 a.m. each day of the five day period the following table shows the direction of scores (increase + or decrease -) from before to after and the number of subjects for each change.

TABLE XIII. Direction of Scores on Comparing Mood Scores Before Drink to After - (Programmed Drinking)

	First Drinking	Second Drinking
Carefree	1+	2+
Depression	1-	2-
Anxiety	2-	2-

The analysis of variance, however, indicates that the difference among times (before and after and between drinks) was significant only

for fatigue ($p < .01$). The Duncan Multiple Range Test shows that the fatigue score is different after drinking than before or between at the 5% level of significance.

V. Relation Blood Alcohol Level to Mood Scores

One subject (RA) showed that as level of blood alcohol rose carefree scores went down and the scores on depression, hostility, and fatigue rose. (Appendix VIII. (3))

VI. Difference in Mood Scores Between Subjects

The subjects appeared to fall into two groups with high depression and anxiety scores occurring in three subjects (PH, PA, TR) and low depression and anxiety in six. (Appendix VIII. (2), (7), (8))

(2) Free-Choice Drinking

I. Effect of Alcohol on Self-Reported Mood Scores

Comparison of the non-drinking and drinking periods for all subjects using the t-test for correlated differences (DF7, 2-tailed) shows that during drinking there is a decrease in the scores on carefree ($p < .05$), friendliness ($p < .10$) and cognitive gain ($p < .01$) while there is an increase in hostility ($p < .05$) for all subjects.

Comparison of baseline and drinking period shows that in eight subjects the carefree score is decreased, in seven subjects the friendliness score is decreased, in eight subjects the cognitive gain score is

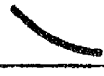
decreased, while in seven subjects the hostility score is increased; in five subjects the depression score is increased and dour subjects reported an increase in fatigue.

The analysis of variance indicates a difference among all subjects ($p < 0.01$) on all scales except cognitive gain. The difference among all conditions is significant as is subjects X conditions ($p < 0.01$). The Duncan Multiple Range Test for all subjects reveals the baseline to be different from the other conditions on depression, hostility and cognitive gain scores and all three conditions differ from each other on carefree, friendliness, anxiety and fatigue scores. Guilt is different during withdrawal. A histogram of mood changes of one subject (OW) (Appendix IX [7]), shows the changes in mood scores (which are more marked than those in the programmed drinking study).

II. Mood Trends Over Five Days Drinking

These are shown schematically in Table XIV.

TABLE XIV. Mood Trends During Five Days Free-Choice Drinking

SUBJECTS	C	D	A	H
DO				
RN				
KA				
PU				
MK				
DA				
WI				
OW				

Six subjects show a decrease in carefree scores while depression and hostility scores increase in six and seven subjects respectively. However, on analysis of variance the difference among days for all scales is significant for hostility and anxiety only. Subjects X days is significant for all scales except friendliness and guilt, while conditions X days is significant for all scales ($p < 0.01$), guilt ($p < 0.05$). Among days the Duncan Multiple Range Test indicates that hostility is different on the first day and anxiety is different on the second.

III. Effect of Anticipation of First Drink on Mood

Table XV demonstrates the changes in mood scores compared to earlier the same morning and to the same time the day before for the first drink of each day of the experimental five day drinking period. In five subjects the carefree score was decreased just before each 11:00 a.m. drink each day, in three subjects the friendliness score was increased and in three subjects the anxiety score was increased.

TABLE XV. Anticipation of 1st Drink - (Free-Choice Drinking)

Mood Scales	C	D	A	H	Fr	Cog
Subjects						
KA						
AM					(+)	
DB					(+)	
DA						
AM	(+)			+	(+)	
DB	(+)				(+)	(+)
DO						
AM					(+)	
DB	(-)				(+)	
MK						
AM	(-)	-	(-)			
DB	(-)	+	(-)			
WI						
AM	+	(-)	+	(-)	+	(+)
DB	-	(-)	-	(-)	-	(+)
OW						
AM	+	-	(+)		+	
DB	-		(+)		-	
PU						
AM	-		(+)	+	-	-
DB		(-)	(+)			
RN						
AM	(-)		(+)			(-)
DB	(-)		(+)			(-)

AM -- 11:00 a.m. mood measurement compared to 7:15 a.m. measurement of same day.

DB -- 11:00 a.m. mood measurement compared to 11:00 a.m. measurement of day before.

IV. Effect of 11:00 a.m. Dose of Alcohol Daily Over Five Days - Before Versus After Measurements

The histogram of mood changes (Appendix IX [4]) in one subject (PU) shows following each 11:00 a.m. dose a daily peak of increase in carefree and friendliness accompanied by a decrease in depression, anxiety, hostility and fatigue scores. Where on more than three days out of five the change in mood score occurred in the same direction (ie. all increased or decreased) following the daily 11:00 a.m. dose, this same subject showed an increase in carefree and a decrease in depression, hostility, and anxiety scores. Applying the same criteria to the total group of subjects it can be shown that during the drinking period three subjects showed an increase in carefree, four showed a decrease in depression, four showed decrease in hostility and three showed a decrease in anxiety scores. However, when applied to the baseline period four showed an increase in carefree, four showed a decrease in depression, three a decrease in hostility and four a decrease in anxiety scores!

The analysis of variance indicates that the difference among times is nevertheless significant for carefree ($p < .05$), anxiety ($p < .01$), cognitive gain ($p < .01$) and fatigue ($p < .001$). Subjects X times is significant for fatigue ($p < .05$) and conditions X times significant for carefree ($p < .01$), friendliness ($p < .05$), and cognitive gain ($p < .01$). The Duncan Multiple Range Test shows the anxiety score to be different from other times for the morning reading and cognitive gain different for the night reading.

V. Relation of Blood Alcohol Level to Mood Scores

Five out of eight subjects seemed to show a relation of top alcohol blood levels to marked mood score increase or decrease.

VI. Night Versus Day Mood Scores

This relationship is difficult to demonstrate since highest blood levels tended to occur at night when more marked mood scores were evident and in at least one subject there was a decrease in depression, anxiety and fatigue scores in association with high blood alcohol levels at night.

VII. Difference Between Subjects

High depression and anxiety profiles tended to occur in four subjects (KA, PU, MK, WI) while low depression and anxiety profiles occurred in four subjects.

Comparison of Free-Choice and Programmed Drinking

VIII. Difference in Mood Scores Between Free-Choice and Programmed Drinking

The least squares analysis of variance indicates a significant difference between the two groups on all mood scales at the $p < .001$ level except for cognitive gain which was at the $p < 0.05$ level (error term 1151 df for groups = 1). The Multiple Range Test at the 5% level shows the two groups different on all scales.

IX. Difference in Alcohol Level Between Free-Choice and Programmed Drinking

Comparison of free-choice and second programmed drinking period for blood alcohol levels using t-test for non-correlated differences is statistically non-significant although the graphic shape of the alcohol levels is different in the two groups tending to be higher and more peaked in free-choice drinking.

The following table summarizes the major statistical results.

TABLE XVI. Summary of Major Statistical Results

	PROGRAMMED	FREE-CHOICE
	EFFECT OF ALCOHOL ON MOOD SCORES	
t-Test (correlated differences)	Sober vs 2nd drinking period - Carefree ↓, Fatigue ↑ 2nd drinking period vs 2nd withdrawal - Hostility ↑, Depression ↓	Sober vs Drinking - Carefree ↓, Friendliness ↓, Cognitive Gain ↓, Hostility ↑
Analysis of Variance (Anova)	Differences among Ss on all scales Differences among C on all scales except Cognitive Gain and Anxiety S x C significant	Differences among Ss on all scales except Cognitive gain Differences among C on all scales S x C significant
Duncan Multiple Range Test	All C different for all carefree scores Baseline different for depression score Fatigue score different for the 2 drinking periods Final withdrawal different for friendliness and guilt	All Ss - Baseline different from others on - Depression, Hostility, Cognitive Gain All 3C different from each other on - Carefree, Friendliness, Anxiety, Fatigue Guilt is different during withdrawal

continued ...

	PROGRAMMED	FREE-CHOICE
	MOOD TRENDS OVER 5 DAYS	
Anova	Difference among D significant for Depression, Friendliness, Guilt, Fatigue C x D - Significant for all scales except guilt S x D - Significant for Carefree, Hostility, Anxiety, Guilt, Fatigue	Difference among D significant for hostility and anxiety only C x D - Significant for all scales S x D - Significant except for friendliness and Guilt
Duncan	Difference in anxiety on 2nd day	Days - Hostility different on 1st day Anxiety different on 2nd day
	EFFECT OF ANTICIPATION OF 1st DRINK	
	5/9 Ss - Depression ↑ just before 11 a.m. drink	5 Ss - Carefree ↓ just before 11 a.m. drink 3 Ss - Friendliness ↑ 3 Ss - Anxiety ↑
	EFFECT OF 11 a.m. DOSE OVER 5 DAYS	
		Baseline 4 Ss Carefree ↑ 4 Ss Depression ↓ 3 Ss Hostility ↓ 4 Ss Anxiety ↓ **Drinking** 3 Ss Carefree ↑ 4 Ss Depression ↓ 4 Ss Hostility ↓ 3 Ss Anxiety ↓

continued ...

	PROGRAMMED	FREE-CHOICE
	EFFECT OF 11 a.m. DOSE OVER 5 DAYS	
Anova	T significant for fatigue	T significant for carefree $p<0.05$ anxiety, cognitive gain, fatigue $p<0.01$ S x T Significant for fatigue $p<0.05$ C x T Significant for friendliness, carefree, cognitive gain $p<0.01$
Duncan	Fatigue different for T	Anxiety different from other times for morning reading Cognitive gain different for the night reading
	RELATION TO BLOOD ALCOHOL LEVEL TO MOOD SCORES	
	One subject-as blood alcohol ↑ then carefree ↓, depression ↑, hostility ↑, fatigue ↑	5/8 Ss show relationship
	DIFFERENCE BETWEEN SUBJECTS	
	High depression and anxiety - 3 Ss Low depression and anxiety - 6 Ss	High depression and anxiety - 4 Ss Low depression and anxiety - 4 Ss
	NIGHT VS DAY SCORES	
		Highest blood levels at night

COMPARISON OF PROGRAMMED AND FREE

Mood - Anova - Significant difference on all mood scales at <0.01 level (except cognitive gain at <0.05 level
Alcohol Level - -Test non-correlated differences - non-significant.

CHAPTER IV.

Discussion

IV. DISCUSSION

This is an attempt to look at self-reported mood changes as they occur in alcoholics during experimental drinking. Previous investigations have measured such mood changes either once during the experimental drinking period or at most once each day during the drinking period. This study was focused, in addition to the total drinking period, on the individual drink, that is, the change in mood occurring just prior to a drink, just after, and between drinks, with a breathalyzer reading obtained as close to the mood estimation as possible.

The assessment of mood because of its subjective nature is as difficult as the assessment of the sense of smell. Due to the lack of reliability among observers and the difficulty of continuous observation by the same personnel it was felt that self-report would be more suitable and since each subject would act as his own control this would be sufficient. The instrument chosen was a modification of the Lorr-McNair mood adjective checklist. The Q-sort arrangement was set up as being easier for the intoxicated subject to handle. One item, "anxious", was changed to "fearful" on a preliminary use of the instrument when it was found that "anxious" tended to be equated by subjects with "eager to". As a check on reliability and validity, the duplicate and instructional cards were introduced. Inspection of the sorting of the four duplicate cards showed that they fell either in the same bin as the original or in an adjacent bin. The four instructional cards in each set had to be correctly read and placed.

Observation of the subjects during sorting showed that even during extreme intoxication, they appeared to make a real effort to place the cards in the category in which they felt they belonged. Sorting also appeared consistent with the predominant mood being expressed verbally at the time of sorting to the occasional observer. Inspection of histograms of the mood changes in each scale often shows reciprocal changes consistent with accurate sorting, e.g., carefree and depression, hostility and friendliness. Finally, the consistency of responses in some instances which may indicate a practice effect may, however, be taken to show at least an orderly rather than random sorting of the cards even in the course of intoxication.

A. LIMITATIONS

Experiments of this kind are fraught with technical difficulties. The experimenter has to contend with various obstacles in getting a subject to drink (when it is programmed), getting him to consume drinks within prescribed time limits, detecting and avoiding the secreting of drinks or the sharing of drinks, avoiding pacts among the subjects to get drunk in turn, not drinking the entire drink, saving alcohol for withdrawal, avoiding attempts to beat the alcohol dispensing machine, dealing with complaints about the grain alcohol, complaints of insufficient alcohol, not eating in an attempt to increase the blood alcohol level, and the occurrence of gastritis with consequent reduced intake of alcohol or vomiting.

The initial fantasy on the part of some subjects of expectation of therapy rather than investigation, even although carefully explained and agreed to, has to be redispelled. As the period of baseline sobriety extends on, subjects may express wishes to leave in order to obtain liquor. Loss of a member of the group of subjects during the baseline period for medical reasons may stimulate fear of similar findings in some of the others. Difficulties in card-sorting can arise from passive aggression at the time of the card sort, and irritation at repeating the test may occur. The ability to achieve the "optimal" level of intoxication (not so little as to have no effect, not so much that the subject is unable to sort the cards) may be a problem, as well as the feeling at the end of the physical workup that all is well, so that the subject may want really to let go in his drinking, the effect of the anticipation of the second drinking period in programmed drinking, the effect of the boredom of being on the ward, and the artificialty of the ward and the drinking situation in general, including the "weekend" when subject may feel that they should not be expected to work (i.e., sort cards). Staff problems also play their part, such as the reaction of the staff to regression and passivity in the subjects and the staff conflict over the observer versus therapist role.

Since the effect of alcohol often times depends on the social situation in which it is consumed and as Schachter and Singer (1962) indicated, cognitive factors may be the major determinants of emotional states, its effect on mood may tend to vary. It is sometimes difficult to determine whether the results of a card sort might be due to perceptual distortion

caused by the alcohol or to a true mood change. Repeating the 10 ml/kg dosage period in the programmed drinking study may have helped clarify this. Further, one has to guard against the results being contaminated by the effects of minor or partial withdrawal symptoms occurring during the drinking period. Of course, larger number of subjects would be desirable but in terms of the large amount of current data to be dealt with, replication has to be left to a later time. Thus, the results may be influenced by the subjects' responses as well as staff attitudes, the ward setting, the assessment procedures and the alcohol itself.

B. INTERPRETATION OF RESULTS

Mello and Mendelson (1970) describe the differences between programmed and spontaneous drinking, subjects being able to drink more alcohol with less adverse reactions in the free than during the programmed drinking period. In the two studies presented here, greater changes in mood occurred with free-choice drinking for similar blood levels of alcohol.

Nathan et al. (1970) described heightened anxiety, depression and hostility with a lowered energy level by the second or third day of drinking. They also report that when subjects were sober they said they drank to decrease anxiety and depression; after a few hours of drinking they acted as though anxiety and depression had increased. Changes in the first two days are more evident in the free-choice drinking study. Considerable variation, however, occurred among the subjects. It had been hoped to demonstrate a clear pattern of cifference in mood response to the individual drink. Some

evidence of anticipation effects and consequent effects did occur in some subjects. Again this was more marked in the free-choice drinking sequence although individual responses tended to differ.

It does seem from the data that anxiety reduction is not an effect of the alcohol except in very low doses. The individuality of mood response might indicate the advisability of attempting to use a subject's mood profile obtained from experimental drinking to tailor a treatment plan for him.

It may be hypothesized that the initial euphoric effect is important for those who experience it, in that, having experienced it, the alcoholic attempts to sustain it or regain it by continued drinking. The data suggest that anticipation of drinking may cause a decrease in this mood factor in some instances. If the initial euphoric effect is of any significance it would be of interest to know what effect a drug-induced reduction of this initial mood would have on continued drinking.

C. FUTURE RESEARCH AND PRAGMATIC IMPLICATIONS

The first effort at expansion on the findings of this investigation should be a refined replication with a larger number of subjects, in view of the probability of clusters of subjects exhibiting similar mood effects. This may further clarify the nature of the anticipation effects displayed and the increased possibility of alteration of these effects and its consequent prophylactic influence on the drinking process. As such specific types of mood profiles among alcoholics are recognized, it will

become increasingly feasible to devise individualized therapeutic programs, in which laternative drive-reducing measures (other than alcohol) are prescribed.

D. CONCLUSIONS

1. Two studies of programmed and free-choice experimental drinking with chronic alcoholics indicated significant differences in degree of mood change between the two subject groups.
2. In both groups there was a significant decrease in "carefree" and "friendliness" scores and an increase in "hostility" scores during the drinking periods, as well as other mood score changes peculiar to each group. The data also suggest that a decrease in the score on the "carefree" scale may have been a more sensitive indicator of lowering of mood than an increase on the "depression" scale.
3. These mood changes tended to increase or decrease as drinking progressed, with the levels of "hostility" and "anxiety" being altered significantly in the first two days of free-choice drinking.
4. For the total subjects, differences before, after, and between drinking for "carefree", "anxiety", "cognitive gain" and "fatigue" scores in free-choice drinking were significant, while change in the "fatigue" scores was the major difference during programmed drinking.

5. The increase in depression and anxiety which occurred in most subjects in anticipation of drinking may have clinically significant implications.
6. The variation of mood patterns among subjects emphasizes the importance of an individualized interpretation of the findings. Clustered patterns indicate the high probability that mood profiles among alcoholics are definable, with potential value in formulating therapeutic programs.

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APPENDIX I.

Volunteer's Agreement for Participation in Alcohol Studies

National Center for Prevention and
Control of Alcoholism, NIMH

Volunteer's Agreement for Participation
in Alcohol Studies

I, _____, agree to participate as a volunteer in experimental studies relating to the effects of alcohol. The experimental procedure has been explained to me and I agree to the conditions specified. I understand that I am to receive no visitors and that I will not be permitted to mail letters or complete phone calls during the period of the experiment.

Date _____

_____
(Signature)

_____
(Witness)

APPENDIX II.

Protocols for Programmed Drinking Study

PROTOCOL

FEB 1970

1. Subjects are to be admitted on Monday, February 2, 1970.

2. Baseline assessments are to be completed as described in the protocol book* by Wednesday, February 4th. The baseline period for mood scale ratings will be from Thursday, February 5th through Monday, February 9th. During this baseline period (as well as experimental and withdrawal periods) subjects will complete ratings three times daily as described under No. 9.

3. Start alcohol February 10th at 7 a.m. and discontinue following the 3 a.m. dose on Sunday, February 15th. Start alcohol again on Friday, February 20th at 7 a.m. and discontinue Wednesday, February 25th after 3 a.m. dose. Alcohol (50% grain ethyl alcohol) will be administered by staff every four hours according to the following schedule:

   The dosage of alcohol (50% grain ethyl) will be 7 ml/kg per day, (e.g., if a subject weighs 70 kg, his total daily dosage would be 490 ml or 80.6 ml every four hours). All alcohol should be measured in a graduated cylinder and kept in a stoppered container if the individual doses are poured more than a few minutes prior to consumption (to prevent loss from evaporation).

   Alcohol is to be given at 7 a.m., 11 a.m., 3 p.m., 7 p.m., 11 p.m., and 3 a.m. and should be consumed within ten minutes. Mixes with alcohol may be used. The 11 a.m. dose must be consumed immediately. The number of CC's administered for each dose should be entered on the special programmed alcohol dosage form. If subjects, for any reason, do not consume their total dosage, notations should be made on the form.

4. No drugs are to be administered during the course of the study or during withdrawal.

5. Withdrawal charts, using standard forms will be recorded during withdrawal.

6. All standard forms should be completed during the course of the experiment as specified in the protocol book. This includes daily physical assessments, sleep records, withdrawal sheets, physical and mental status examinations.

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* The Protocol Book specifies the physical examination, mental status, laboratory tests, psychological tests and breathalyzer tests.

7. Subjects will be on a house diet during the study. All caloric intake should be recorded. It is most important that subjects be strongly encouraged to maintain adequate caloric intake during the drinking period (otherwise alcohol intake may have to be reduced).

8. Breathalyzer readings are to be obtained for all subjects in the same order at 9 a.m.; between 10:30 and 11 a.m.; 12 noon and 12:30 p.m.; 1:30 and 2:00 p.m.; and 5 p.m. daily. The recordings and time for each subject are to be entered on the programmed alcohol dosage form. It is important that the machine be warmed up for at least 1/2 hour prior to obtaining breathalyzer readings.

9. Each subject will be given, to keep in his room, a special green card-sorting box which will be labeled with his name. This box is divided into four bins, labeled 1 (not at all), 2 (a little), 3 (quite a bit) and 4 (extremely).

   Each subject will be given a set of 68 cards to be sorted into the four compartments. Each subject will sort the cards in his own room three times daily starting at 10:00 a.m., 11:30 a.m., and 1 p.m. (i.e., just before an alcohol dose, just after, and between doses).

   Each card has a set of numbered holes around the border and the left bottom corner of each card is cut off.

   Mood Cards: Each set of cards consists of 60 cards with a statement, plus 4 duplicate and 4 instructional cards. (Three packs of cards, A, B, and C are provided for each subject. The duplicate and instructional cards differ in each pack).

   Duplicate Cards: Four (4) cards are duplicates.

   Instructional Cards: Four (4) instructional cards are included (these contain instructions, e.g., place in bin one face down, place in bin two face down, place in bin three upside down, and place in bin four upside down.)

   When an instructional card is placed face down, the blank side will show in the pack. When it is placed upside down the left bottom corner of the card will stick out.

   The subject will be given a set of cards which have been shuffled. Each card will be placed face up in the bin unless the card has instructions to do otherwise. After the subject has sorted the cards in each bin, the staff will do the following:

A) Look for cards with left bottom corner protruding, (e.g., there should be one in bin three and one in bin four, using set A).

B) Sorting should be completed by the subjects in about 15 minutes. If the instructional cards are in their appropriate bin, the subject is given ten cigarettes. If the cards are not in their appropriate bin, he must sort again correctly in order to receive the cigarettes. Only one repeat sorting is permitted.

C) Record the number located on the back lower right hand corner, of each card, including duplicates, on the special recording form. (The cards from the bins may be gathered together in respective piles, labeled with bin number, time and subject's name and recorded later the same day).

This procedure will be carried out during each day of the study. It is most important that subjects sort in their own room, alone. Staff should check and record cards in paris in the control room.

The three packs of cards A, B, and C will be used according to the attached schedule.

On set A face down cards should appear in boxes on and two, and upside down cards should appear in boxes three and four.

On set B face down cards should appear in boxes three and four, and upside down cards should appear in boxes one and two.

On set C face down cards should appear in boxes one and four, and upside down cards should appear in boxes two and three.

10. Lunch will be served between 12:30 and 1 p.m.

11. One subject (the same one) will be interviewed on videotape by Dr. Davis during the 3 p.m. dose of alcohol each day of the drinking period.

SCHEDULE FOR CARD PACKS

Subject	DAY 1			2			3			4			5		
	10	11:30	1	10	11:30	1	10	11:30	1	10	11:30	1	10	11:30	1
1	A	B	C	B	C	A	C	A	B	B	A	C	A	C	B
2	A	B	C	B	C	A	C	A	B	B	A	C	A	C	B
3	B	C	A	C	A	B	A	B	C	C	B	A	B	A	C
4	B	C	A	C	A	B	A	B	C	C	B	A	B	A	C
5	C	A	B	A	B	C	B	C	A	A	C	B	C	B	A
6	C	A	B	A	B	C	B	C	A	A	C	B	C	B	A

SCHEDULE

Alcohol	Breathalyzer	Card Sorting	Cigarettes	
7 a.m.				
	9:00 a.m.			
		10:00-10:30 a.m.		
	10:30-11:00 a.m.		10	
11 a.m.				
		11:30-12:00		
	12:00-12:30		10	
		1:00-1:30		12:30-1:0(Lunch
	1:30-2:00 p.m.		10	
3 p.m.				
	5 p.m.			
7 p.m.				
11 p.m.				
3 a.m.				

Baseline	Drinking	Withdrawal	Drinking	Withdrawal
8 days	5 days	5 days	5 days	5 days

CARD RECORDING SHEET

	BIN 1			BIN 2			BIN 3			BIN 4		
	10:00	11:30	1:00	10:00	11:30	1:00	10:00	11:30	1:00	10:00	11:30	1:00
	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20
	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30
	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40
	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50
	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60
DUPLICATES	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
INSTRUCTIONAL	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P
SET	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C
CIGARETTES	10	10	10									

SUBJECT: DATE: EXP. DAY:

PROTOCOL

March, 1970

1. Subjects are to be admitted on Saturday, March 7, 1970.

2. Baseline assessments are to be completed as described in the protocol book. The baseline period for mood scale ratings will be from Tuesday, March 10 through Saturday, March 14. During this baseline period (as well as experimental and withdrawal periods) subjects will complete ratings three times daily as described under No. 9.

3. Start alcohol March 15 at 7 a.m. and discontinue following the 3 a.m. dose on Friday, March 20. Start alcohol again on Wednesday, March 25 at 7 a.m. and discontinue Monday, March 30 after 3 a.m. dose. Alcohol (50% grain ethyl alcohol) will be administered by staff every four hours according to the following schedule:

   The dosage of alcohol (50% grain ethyl) will be 7 ml/kg per day for the first drinking period, (e.g., if a subject weights 70 kg, his total daily dosage would be 490 ml or 80.6 ml every four hours). All alcohol should be measured in a graduated cylinder and kept in a stoppered container if the individual doses are poured more than a few minutes prior to consumption (to prevent loss from evaporation). The dosage for 2nd drinking period will be 10 ml/kg per day.

   Alcohol is to be given at 7 a.m., 11 a.m., 3 p.m., 7 p.m., 11 p.m., and 3 a.m. and should be consumed within ten minutes. Mixes with alcohol may be used. The 11 a.m. dose must be consumed immediately. The number of CC's administered for each dose should be entered on the special programmed alcohol dosage form. If subject, for any reason, does not consume his total dosage, notations should be made on the form.

4. No drugs are to be administered during the course of the study or during withdrawal.

5. Withdrawal charts, using standard forms will be recorded during withdrawal.

6. All standard forms should be completed during the course of the experiment as specified in the protocol book. This includes daily physical assessments, sleep records, withdrawal sheets, physical and mental status examinations.

7. Subjects will be on a house diet during the study. All caloric intake should be recorded. It is most important that subjects be strongly encouraged to maintain adequate caloric intake during the drinking period (otherwise alcohol intake may have to be reduced.

8. Breathalyzer readings are to be obtained for all subjects in the same order at 9 a.m.; between 10:30 and 11 a.m.; 12 noon and 12:30 p.m.; 1:30 and 2:00 p.m.; and 5 p.m. daily. The recordings and time for each subject are to be entered on the programmed alcohol dosage form. It is important that the machine be warmed up for at least 1/2 hour prior to obtaining breathalyzer readings.

9. Each subject will be given, to keep in his room, a special green card-sorting box which will be labeled with his name. This box is divided into four bins, labeled 1 (not at all), 2 (a little), 3 (quite a bit) and 4 (extremely).

   Each subject will be given a set of 68 cards to be sorted into the four compartments. Each subject will sort the cards in his own room three times daily starting at 10:00 a.m., 11:30 a.m., and 1 p.m. (i.e., just before an alcohol dose, just after, and between doses).

   Each card has a set of numbered holes around the border and the left bottom corner of each card is cut off.

   Mood Cards: Each set of cards consists of 60 cards with a statement, plus 4 duplicate and 4 instructional cards. (Three packs of cards, A, B, and C are provided for each subject. The duplicate and instructional cards differ in each pack).

   Duplicate Cards: Four (4) cards are duplicates.

   Instructional Cards: Four (4) instructional cards are included (these contain instructions, e.g., place in bin one face down, place in bin two face down, place in bin three upside down, and place in bin four upside down.)

   When an instructional card is placed face down, the blank side will show in the pack. When it is placed upside down the left bottom corner of the card will stick out.

   The subject will be given a set of cards which have been shuffled. Each card will be placed face up in the bin unless the card has instructions to do otherwise. After the subject has sorted the cards in each bin, the staff will do the following:

A) Look for cards with left bottom corner protruding, (e.g., there should be one in bin three and one in bin four, using set A).

B) Sorting should be completed by the subjects in about 15 minutes. If the instructional cards are in their appropriate bin, the subject is given ten cigarettes. If the cards are not in their appropriate bin, he must sort again correctly in order to receive the cigarettes. Only one repeat sorting is permitted.

C) Record the number located on the back lower right hand corner, of each card, including duplicates, on the special recording form. (The cards from the bins may be gathered together in respective piles, labeled with bin number, time and subject's name and recorded later the same day.)

This procedure will be carried out during each day of the study. It is most important that subjects sort in their own room, alone. Staff should check and record cards in pairs in the control room.

The three packs of cards A, B, and C will be used according to the attached schedule.

On set A face down cards should appear in boxes one and two,
and upside down cards should appear in boxes three and four.

On set B face down cards should appear in boxes three and four,
and upside down cards should appear in boxes one and two.

On set C face down cards should appear in boxes one and four,
and upside down cards should appear in boxes two and three.

10. Lunch will be served between 12:30 and 1:00 p.m.

11. One subject (the same one) will be interviewed on videotape by Dr. Davis during the 3:00 p.m. dose of alcohol each day of the drinking period.

SCHEDULE FOR CARD PACKS

SUBJECT	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY			SATURDAY			SUNDAY		
	10	11:30	1	10	11:30	1	10	11:30	1	10	11:30	1	10	11:30	1	10	11:30	1	10	11:30	1
	A	B	C	B	C	A	C	A	B	B	A	C	A	C	B	C	B	A	B	A	C
	A	B	C	B	C	A	C	A	B	B	A	C	A	C	B	C	B	A	B	A	C
	B	C	A	C	A	B	A	B	C	C	B	A	B	A	C	A	C	B	C	B	A
	B	C	A	C	A	B	A	B	C	C	B	A	B	A	C	A	C	B	C	B	A
	C	A	B	A	B	C	B	C	A	A	C	B	C	B	A	B	A	C	A	C	B
	C	A	B	A	B	C	B	C	A	A	C	B	C	B	A	B	A	C	A	C	B

APPENDIX III.

Protocols for Free-Choice Drinking Study

PROTOCOL

April, 1970

1. Subjects are to be admitted on Tuesday, April 7, 1970.

2. Baseline assessments are to be completed as described in the protocol book. The baseline period for mood scale ratings will be from Friday, April 10 through Tuesday, April 14. During this period (as well as experimental and withdrawal periods) subjects will complete ratings four times daily as described under No. 9.

3. The drinking period will begin April 15 at 11 a.m. and end at 3 a.m. Monday, April 20th. During this time the following procedure should be followed:

   On April 15th at 11 a.m., and each day of the drinking period thereafter, each subject is to be given 3 chips to be inserted in the alcohol dispenser for 3 oz. 50% grain ethyl alcohol which must be consumed by 11:30 a.m.

   At 1 p.m. a further 21 chips are to be given for free drinking. All drinking will cease between 3 a.m. and 11 a.m. Beginning April 16th at 3 a.m., and thereafter, each day a chip count will be done and entered in the special form and at 10:55 a.m. each day chips owed by each subject will be collected from each subject (to a total of 24 chips each) and recorded on the form before dispensing the 3 chips at 11 a.m.

4. No drugs are to be administered during the course of the study or during withdrawal.

5. Withdrawal charts, using standard forms will be recorded during withdrawal.

6. All standards forms should be completed during the course of the experiment as specified in the protocol book. This includes daily physical assessments, sleep records, withdrawal sheets, physical and mental status examinations.

7. Subjects will be on a house diet during the study. All caloric intake should be recorded. <u>It is important</u> that subjects be strongly encouraged to maintain adequate caloric intake during the drinking period.

8. Breathalyzer readings are to be obtained for all subjects in the same order between 7:45 and 8:15 a.m.; between 10:30 and 10:55 a.m.; 12:30 and 1 p.m.; 10:45 and 11:15 p.m. daily. The recordings and time for each subject are to be entered on the breathalyzer form. It is important that the machine be warmed up for at least 1/2 hour prior to obtaining breathalyzer readings.

9. Each subject will be given, to keep in his room, a special green card-sorting box which will be labeled with his name. This box is divided into four bins, labeled 1 (not at all), 2 (a little), 3 (quite a bit) and 4 (extremely).

   Each subject will be given a set of 68 cards to be sorted into the four compartments. Each subject will sort the cards in his own room four times daily starting at 7:15 a.m., 10:00 a.m., 12:00 noon and 10:15 p.m.

   Each card has a set of numbered holes around the border and the left bottom corner of each card is cut off.

   Mood Cards: Each set of cards consists of 60 cards with a statement, plus 4 duplicate and 4 instructional cards. (Three packs of cards, A, B, and C are provided for each subject. The duplicate and instructional cards differ in each pack).

   Duplicate Cards: Four (4) cards are duplicates.

   Instructional Cards: Four (4) instructional cards are included (these contain instructions, e.g., place in bin one face down, place in bin two face down, place in bin three upside down, and place in bin four upside down).

   When an instructional card is placed face down, the blank side will show in the pack. When it is placed upside down the left bottom corner of the card will stick out.

   The subject will be given a set of cards which have been shuffled. Each card will be placed face up in the bin unless the card has instructions to do otherwise. After the subject has sorted the cards in each bin, the staff will do the following:

   A) Look for cards with left bottom corner protruding, (e.g., there should be one in bin three and one in bin four, using set A).

   B) Sorting should be completed by the subjects in about 15 minutes. If the instructional cards are in their appropriate bin, the subject is given 7 cigarette chips. If the cards are not in their

appropriate bin, he must sort again correctly in order to receive the cigarette chips. Only one repeat sorting is permitted.

C) Record the number located on the back lower right hand corner, of each card, including duplicates, on the special recording form. (The cards from the bins may be gathered together in respective piles, labeled with bin number, time and subject's name and recorded later the same day).

This procedure will be carried out during each day of the study. It is most important that subjects sort in their own room, alone. Staff should check and record cards in pairs in the control room.

The three packs of cards A, B, and C will be used according to the attached schedule. Each day the 7:15 a.m. pack for each subject will be given to him again at 10:15 p.m. It is necessary, therefore, to have recorded the 7:15 a.m. sorting early in the day.

On set A face down cards should appear in boxes one and two, and upside down cards should appear in boxes three and four.

On set B face down cards should appear in boxes three and four, and upside down cards should appear in boxes one and two.

On set C face down cards should appear in boxes one and four, and upside down cards should appear in boxes two and three.

10. Lunch will be served between 1 p.m. and 1:30 p.m.

CHIP RECORDING SHEET

ALCOHOL

CHIP COLOR

NAME											
EXP. DAY	TIME	SPENT	OWED	SPENT	OWED	SPENT	OWED	SPENT	OWED	SPENT	OWED
6	11am		0		0		0		0		0
7	3am	X		X		X		X		X	
	11am		X		X		X		X		X
8	3am	X									
	11am		X								
9	3am	X									
	11am		X								
10	3am	X									
	11am		X								
11	3am	X									

BREATHALYZER READINGS

Subject's Name	Exp. Day	Reading	Time
7:45-8:15 a.m.			
10:30-10:55 a.m.			
12:30-1:00 p.m.			
10:45-11:15 p.m.			

	BIN 1			BIN 2			BIN 3			BIN 4		
	7:15	10:00	12:00	7:15	10:00	12:00	7:15	10:00	12:00	7:15	10:00	12:00
CARD RECORDING SHEET	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10	1 6 2 7 3 8 4 9 5 10
	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20	11 16 12 17 13 18 14 19 15 20
	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30	21 26 22 27 23 28 24 29 25 30
	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40	31 36 32 37 33 38 34 39 35 40
	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50	41 46 42 47 43 48 44 49 45 50
	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60	51 56 52 57 53 58 54 59 55 60
DUPLICATES	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
INSTRUCTIONAL	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P
SET	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C
CIGARETTE CHIPS	7	7	7									

SUBJECT: DATE: EXP. DAY:

	BIN 1			BIN 2			BIN 3			BIN 4		
	10:15	~~11:00~~	~~1:00~~	10:15	~~11:00~~	~~1:00~~	10:15	~~11:00~~	~~1:00~~	10:15	~~11:00~~	~~1:00~~
CARD RECORDING SHEET	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20
	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30
	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40
	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50
	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60
DUPLICATES	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
INSTRUCTIONAL	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P
SET	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C
CIGARETTES	7	7	7									

SUBJECT: DATE: EXP. DAY:

SCHEDULE FOR CARD PACKS

SUBJECT	MONDAY 715 10 12 1015	TUESDAY 715 10 12 1015	WEDNESDAY 715 10 12 1015	THURSDAY 715 10 12 1015	FRIDAY 715 10 12 1015	SATURDAY 715 10 12 1015	SUNDAY 715 10 12 1015
	A B C A	B C A B	C A B C	B A C B	A C B A	C B A C	B A C B
	A B C A	B C A B	C A B C	B A C B	A C B A	C B A C	B A C B
	B C A B	C A B C	A B C A	C B A C	B A C B	A C B A	C B A C
	B C A B	C A B C	A B C A	C B A C	B A C B	A C B A	C B A C
	C A B C	A B C A	B C A B	A C B A	C B A C	B A C B	A C B A

Tues April Admit	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Exp Day	(1)	(2)	(3)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Physical Work-up

Card Sort

Baseline

Drinking

Withdrawal

PROTOCOL

May, 1970

1. Subjects are to be admitted on Friday, May 22, 1970.

2. Baseline assessments are to be completed as described in the protocol book. The baseline period for mood scale ratings will be from Tuesday, May 26 through Saturday, May 30. During this baseline period (as well as experimental and withdrawal periods) subjects will complete ratings four times daily as described under No. 9.

3. The drinking period will begin Sunday, May 31 at 11 a.m. and end at 3 a.m. Friday, June 5th. During this time the following procedure should be followed:

   On May 31st at 11 a.m., and each day of the drinking period thereafter, each subject is to be given 3 chips to be inserted in the alcohol dispenser for 3 oz 50% grain ethyl alcohol which must be consumed by 11:30 a.m.

   At 1 p.m. a further 21 chips are to be given for free drinking. All drinking will cease between 3 a.m. and 11 a.m. Beginning June 1st at 3a.m., and thereafter, each day a chip count will be done and entered in the special form and at 10:55 a.m. each day chips owed by each subject will be collected from each subject (to a total of 24 chips each) and recorded on the form before dispensing the 3 chips at 11 a.m.

4. No drugs are to be administered during the course of the study or during withdrawal.

5. Withdrawal charts, using standard forms will be recorded during withdrawal.

6. All standard forms should be completed during the course of the experiment as specified in the protocol book. This includes daily physical assessments, sleep records, withdrawal sheets, physical and mental status examinations.

7. Subjects will be on a house diet during the study. All caloric intake should be recorded. It is most important that subjects be strongly encouraged to maintain adequate caloric intake during the drinking period.

8. Breathalyzer readings are to be obtained for all subjects in the same order between 7:45 and 8:15 a.m.; between 10:30 and 10:55 a.m.; 12:30 and 1 p.m.; 10:45 and 11:15 p.m. daily. The recordings and time for

each subject are to be entered on the breathalyzer form. It is important that the machine be warmed up for at least 1/2 hour prior to obtaining breathalyzer readings.

9. Each subject will be given, to keep in his room, a special green card-sorting box which will be labeled with his name. This box is divided into four bines, labeled 1 (not at all), 2 (a little), 3 (quite a bit) and 4 (extremely).

Each subject will be given a set of 68 cards to be sorted into the four compartments. Each subject will sort the cards in his own room four times daily starting at 7:15 a.m., 10:00 a.m., 12:00 noon and 10:15 p.m.

Each card has a set of numbered holes around the border and the left bottom corner of each card is cut off.

Mood Cards: Each set of cards consists of 60 cards with a statement, plus 4 duplicate and 4 instructional cards. (Three packs of cards, A, B, C are provided for each subject. The duplicate and instructional cards differ in each pack).

Duplicate Cards: Four (4) cards are duplicates.

Instructional Cards: Four (4) instructional cards are included (these contain instructions, e.g., place in bin one face down, place in bin two face down, place in bin three upside down, and place in bin four upside down).

When an instructional card is placed face down, the blank side will show in the pack. When it is placed upside down the left bottom corner of the card will stick out.

The subject will be given a set of cards which have been shuffled. Each card will be placed face up in the bin unless the card has instructions to do otherwise. After the subject has sorted the cards in each bin, the staff will do the following:

A) Look for cards with left bottom corner protruding (e.g., there should be one in bin three and one in bin four, using set A).

B) Sorting should be completed by the subjects in about 15 minutes. If the instructional cards are in their appropriate bin, the subject is given 7 cigarette chips. If the cards are not in their appropriate bin, he must sort again correctly in order to receive the cigarette chips. Only one repeat sorting is permitted.

C) Record the number located on the back lower right hand corner, of each card, including duplicates, on the special recording form. (The cards from the bins may be gathered together in respective piles, labeled with bin number, time and subject's name and recorded later the same day).

This procedure will be carried out during each day of the study. It is most important that subjects sort in their own room, alone. Staff should check and record cards in pairs in the control room.

The three packs of cards A, B, and C will be used according to the attached schedule. Each day the 7:15 a.m. pack for each subject will be given to him again at 10:15 p.m. It is necessary, therefore, to have recorded the 7:15 a.m. sorting early in the day.

On set A face down cards should appear in boxes one and two, and upside down cards should appear in boxes three and four.

On set B face down cards should appear in boxes three and four, and upside down cards should appear in boxes one and two.

On set C face down cards should appear in boxes one and four, and upside down cards should appear in boxes two and three.

10. Lunch will be served between 1 p.m. and 1:30 p.m.

Baseline	Drinking	Withdrawal
8 days	5 days	5 days

Scoring-
Shifts a.m. 7-7:30
p.m. 10-10:30
11:30-12:00
night 10:30-11

5 Subjects 1 Drinking Period 5 Days

	BREATHALYZER	CARD SORT	CIG. CHIPS	ALCOHOL CHIPS
				Bar closes 3 a.m. No Drinking Chip Count
		7:15 a.m. to 7:45 a.m.		
	7:45 a.m. to 8:15 a.m.		7	
		10:00 a.m. to 10:30 a.m.		
	10:30 a.m. to 10:55 a.m.		7	Collect chips owed 10:55 Bar opens 11:00 3 Chips Must drink 11:00-11:30
		12:00 noon to 12:30 p.m.		
	12:30 p.m. to 1:00 p.m.		7	21 chips
		10:15 p.m. to 10:45 p.m.		
	10:45 p.m. to 11:15 p.m.		7	
TOTALS	4	4	28	24

SCHEDULE FOR CARD PACKS

SUBJECTS	MONDAY 715 10 12 1015	TUESDAY 715 10 12 1015	WEDNESDAY 715 10 12 1015	THURSDAY 715 10 12 1015	FRIDAY 715 10 12 1015	SATURDAY 715 10 12 1015	SUNDAY 715 10 12 1015
	A B C A	B C A B	C A B C	B A C B	A C B A	C B A C	B A C B
	A B C A	B C A B	C A B C	B A C B	A C B A	C B A C	B A C B
	B C A B	C A B C	A B C A	C B A C	B A C B	A C B A	C B A C
	B C A B	C A B C	A B C A	C B A C	B A C B	A C B A	C B A C
	C A B C	A B C A	B C A B	A C B A	C B A C	B A C B	A C B A

Tues April	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Admit																			
Exp Day	(1)		(2)	(3)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Physical Work-up

Card Sort

Baseline

Drinking

Withdrawal

CARD RECORDING SHEET

	BIN 1			BIN 2			BIN 3			BIN 4		
	7:15	10:00	12:00	7:15	10:00	12:00	7:15	10:00	12:00	7:15	10:00	12:00
	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20
	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30
	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40
	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50
	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60
DUPLICATES	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
INSTRUCTIONAL	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P
SET	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C
CIGARETTE CHIPS	7	7	7									

SUBJECT: DATE: EXP. DAY:

CARD RECORDING SHEET

	BIN 1			BIN 2			BIN 3			BIN 4		
	10:15	~~11:30~~	~~1:00~~	10:15	~~11:30~~	~~1:00~~	10:15	~~11:30~~	~~1:00~~	10:15	~~11:30~~	~~1:00~~
	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20
	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30
	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40	31 32 33 34 35 36 37 38 39 40
	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50	41 42 43 44 45 46 47 48 49 50
	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60	51 52 53 54 55 56 57 58 59 60
DUPLICATES												
INSTRUCTIONAL	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P	M N O P
SET	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C
CIGARETTES	7	7	7									

SUBJECT: DATE: EXP. DAY:

APPENDIX IV.

Illustrations of Sorting Box and Mood Cards


NOT AT ALL
A LITTLE
QUITE A BIT
EXTREMELY
1
2
3
4

RELAXED
UNHAPPY
PLACE IN
BIN 4
FACE DOWN
NEED A
DRINK

APPENDIX V.

Recording of Duplicate Cards During Programmed and Free-Choice Drinking Studies

PROGRAMMED DRINKING

Subjects Day	Duplicates																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
BR	8	11	11	11	12	12	11	12	11	11	12	12	12	11	12	9	12	11	11	11	8	8	11	11	11
FA	11	11	11	11	12	11	12	12	12	12	11	11	12	12	12	11	12	12	12	12	11	11	12	12	12
PA	10	9	11	11	11	9	11	9	9	12	11	10	9	12	10	8	8	11	11	11	10	8	11	12	11
TR	11	11	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	12	12
WE	10	9	11	11	11	12	12	12	12	12	10	12	12	11	11	12	12	12	7*	12	11	12	12	12	12
NE	11	10	10	11	8	12	7*	10	10	12	10	12	11	12	10	9	4+	10	11	12	12	11	12	-	-
PH	8	7*	8	11	11	11	11	12	11	12	12	12	9	10	11	7*	12	9	3+	10	11	9	11	-	12
RA	10	12	12	12	10	9	11	11	10	11	10	12	12	12	12	12	11	12	11	12	9	10	11	-	10
WR	9	11	10	11	12	10	12	12	12	8	9	10	10	9	12	11	7*	3+	9	11	11	10	9	-	12

* Adjacent Bins.
\+ Sorting Not Done.

4 duplicate cards
3 sortings per day
maximum accuracy = 12

FREE DRINKING

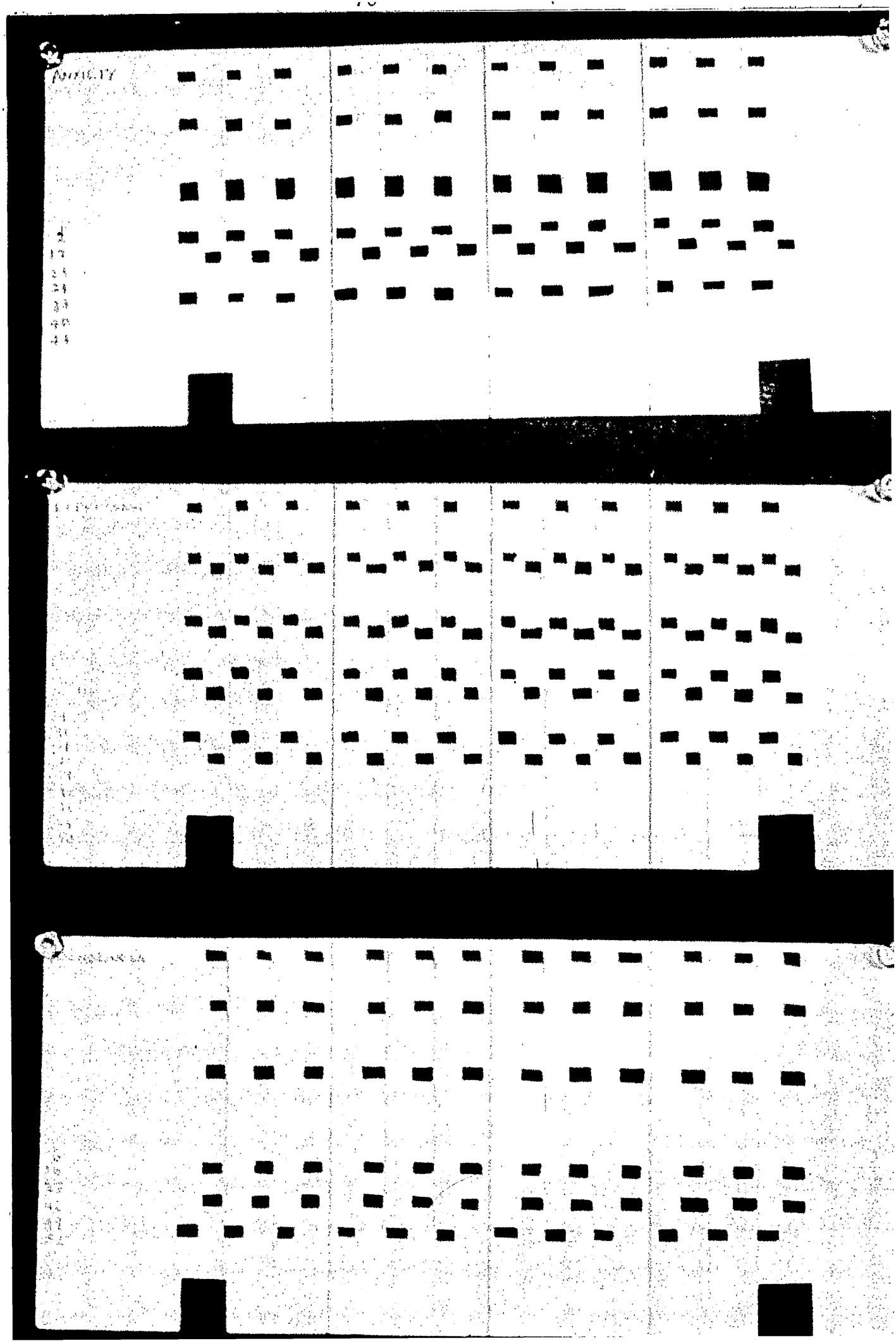
Subjects / Day	Duplicates														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RN	13	15	14	15	16	13	13	12	15	12	12	14	13	14	15
KA	15	15	15	14	16	16	14	14	13	12	12	15	16	16	15
DO	14	16	15	16	15	15	16	15	14	16	16	16	14	15	16
PU	14	14	13	13	15	12	8	13	8*	10	11	11*	13	13	14
DA	14	15	15	14	15	13	16	15	14	11	16	16	16	16	14
MK	8	11	13	12	14	10	11	13	12	10	12	12	14	14	14
OW	16	14	16	14	16	15	12	16	16	13	15	15	12	13	15
WI	9	15	16	10	11	12	11	14	13	16	14	13	13	12	10

* Out of 12.

4 duplicate cards
4 sortings per day
Maximum accuracy = 16

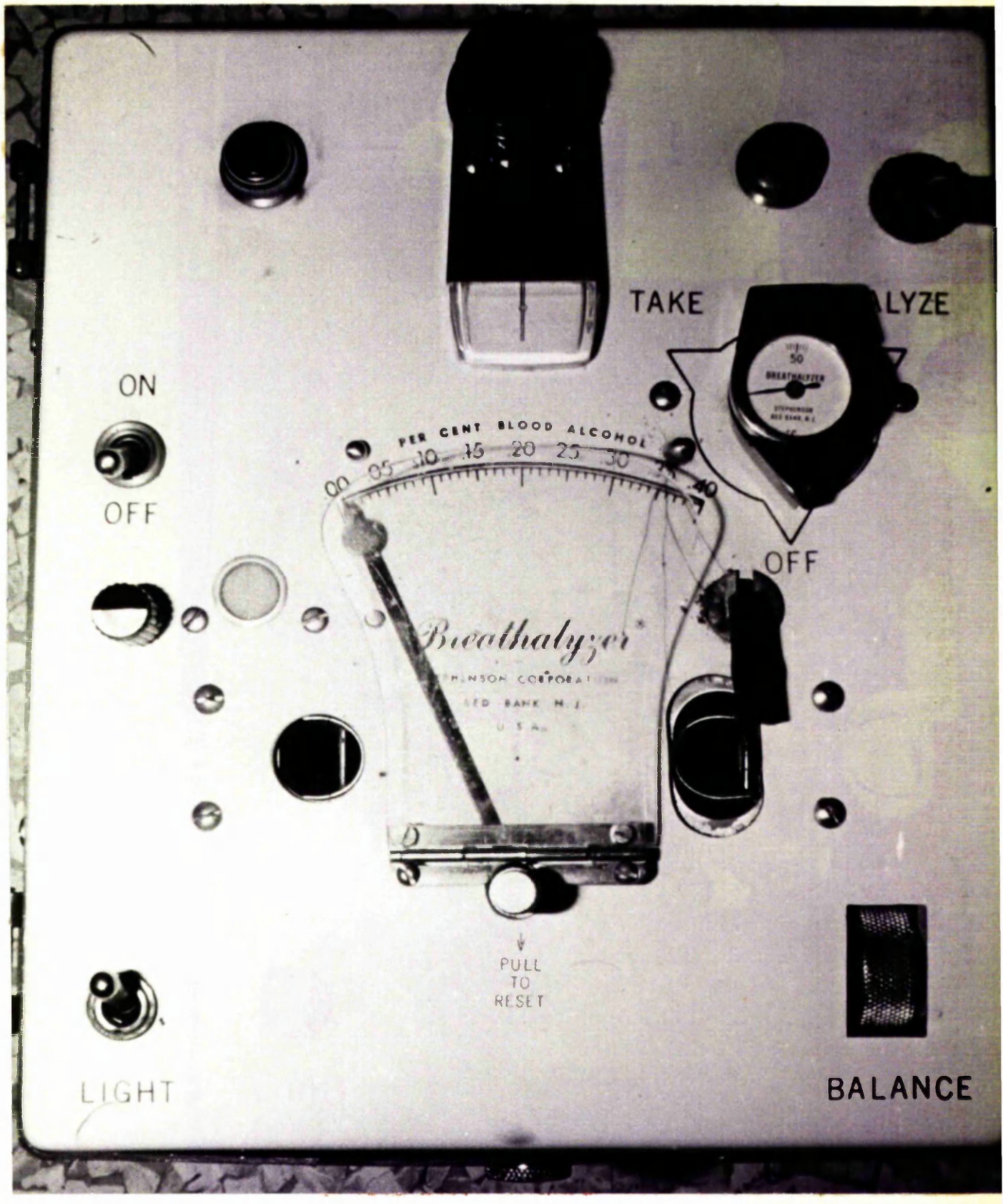
APPENDIX VI.

Illustration of Template for Recording of Mood Factors



APPENDIX VII.

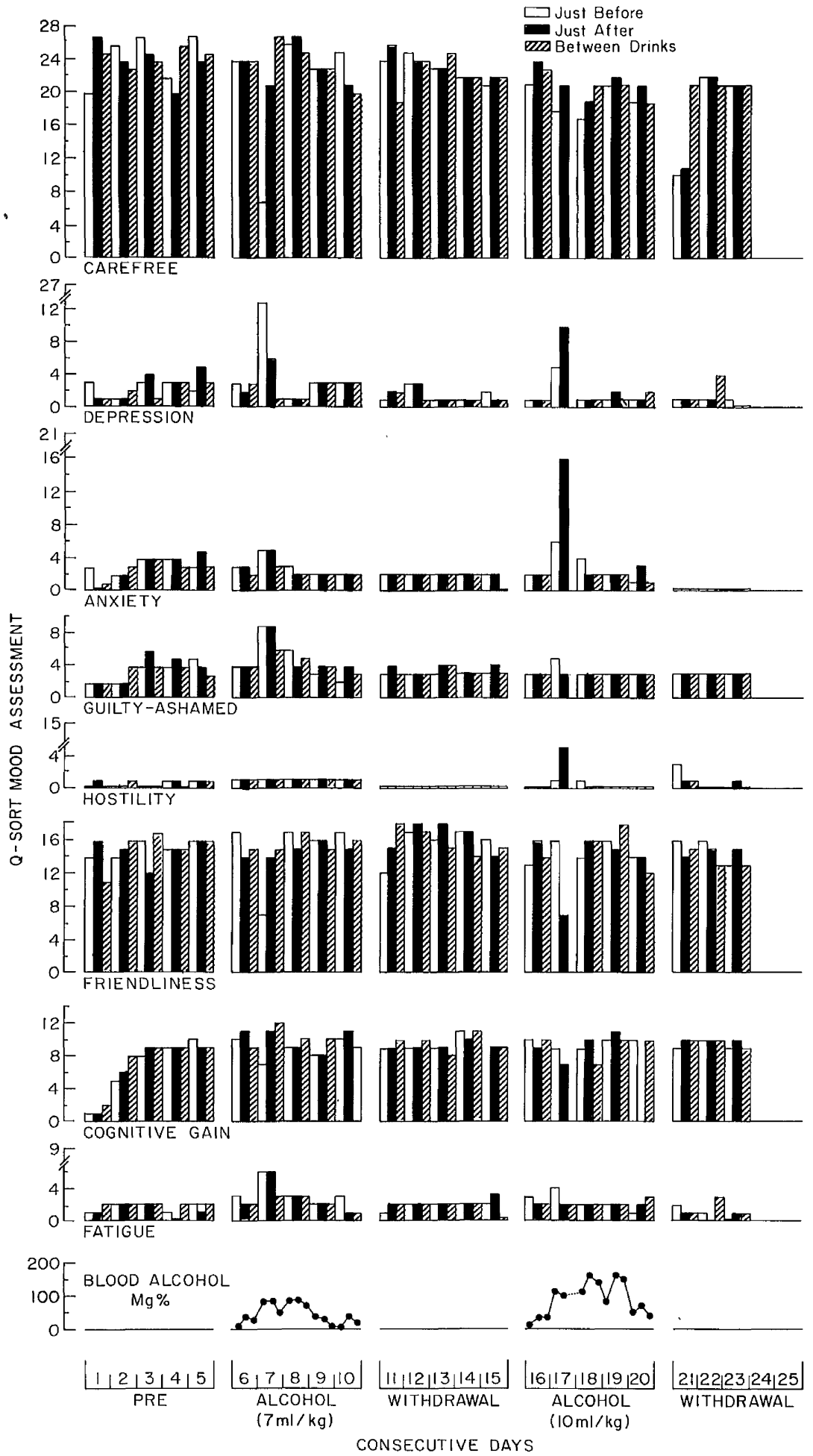
Illustration of Breathalyzer

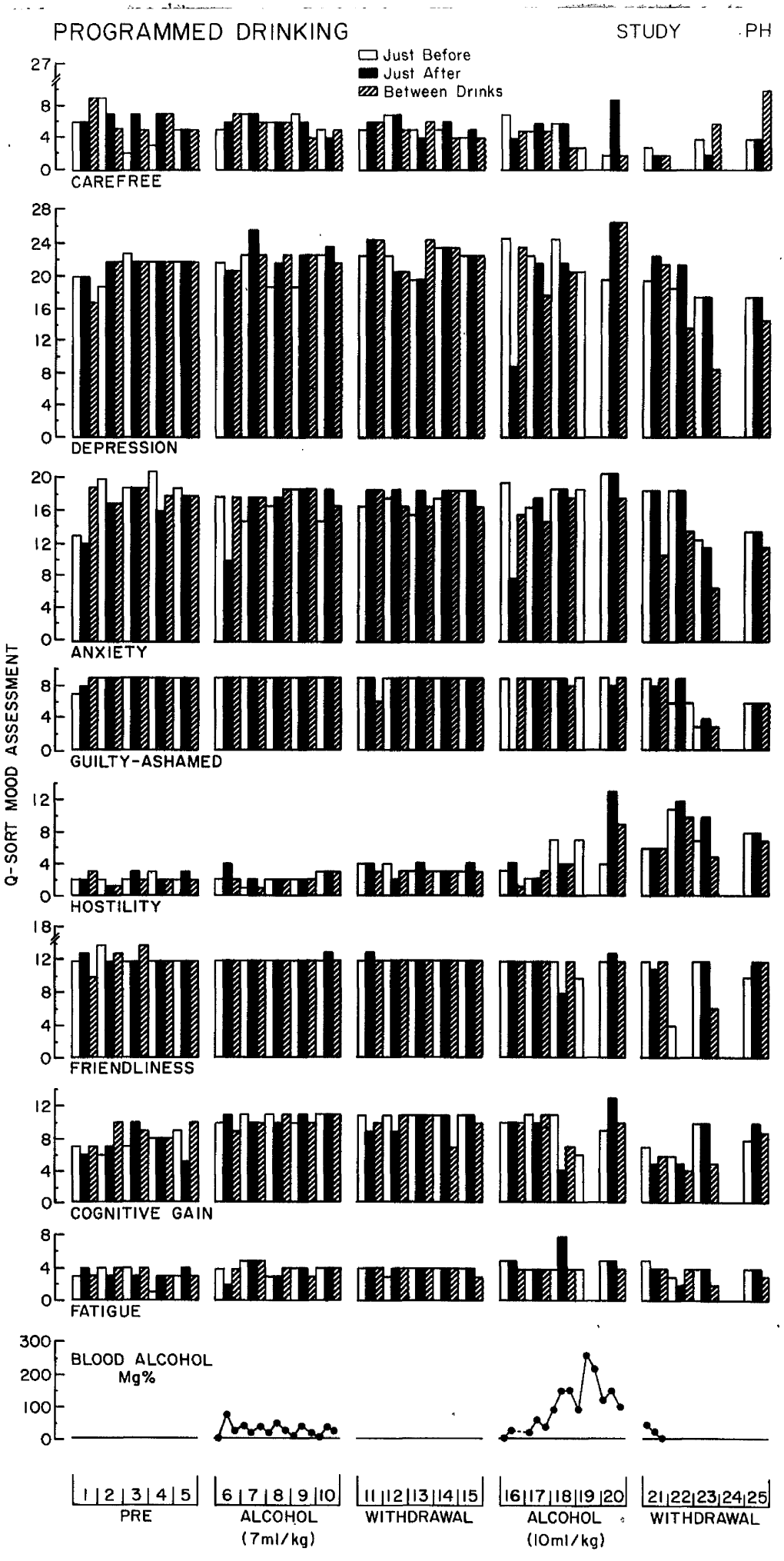

TAKE
LYZE
ON
OFF
PER CENT BLOOD ALCOHOL
00 05 10 15 20 25 30 40
OFF
Breathalyzer
PULL
TO
RESET
LIGHT
BALANCE

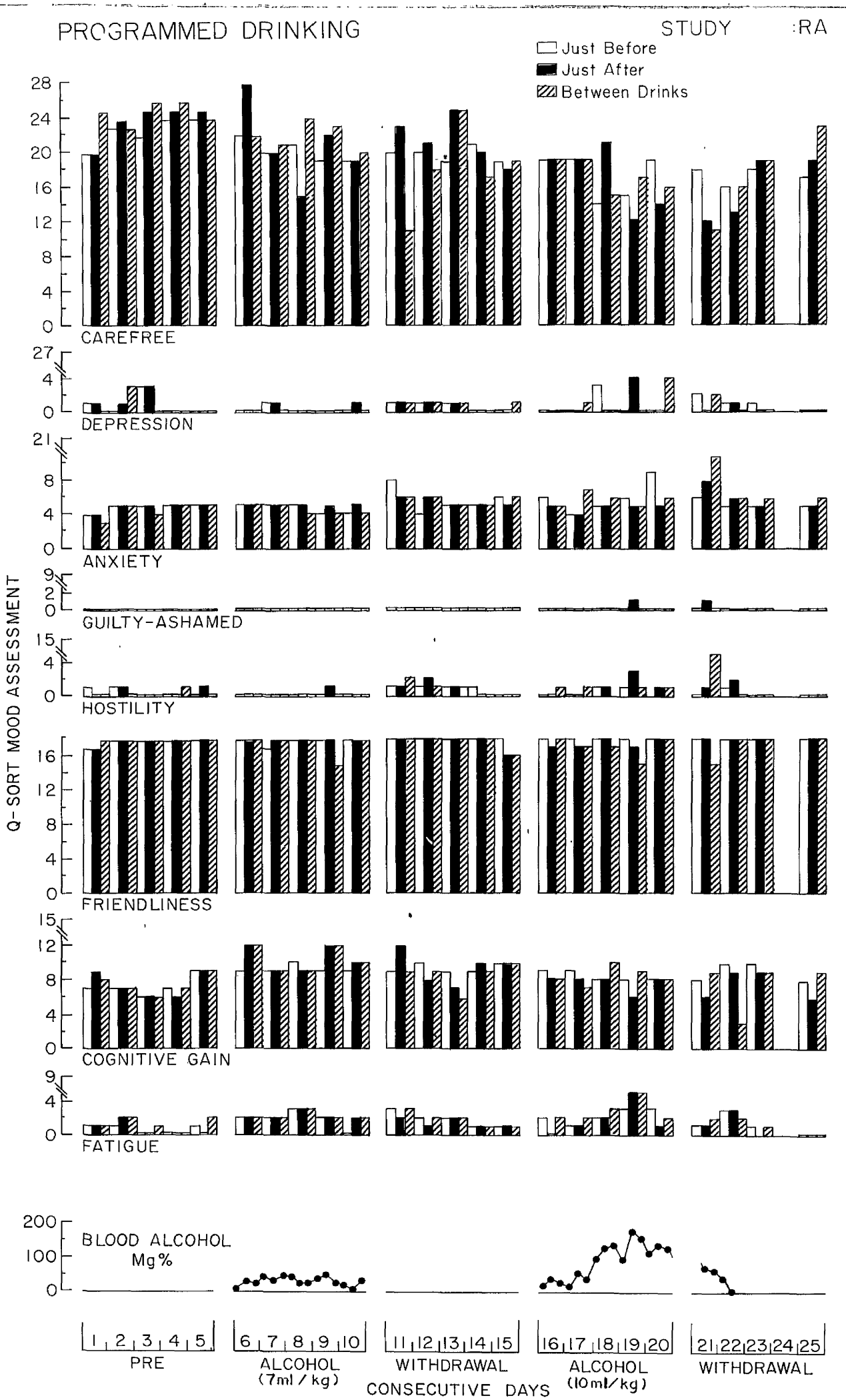
APPENDIX VIII.

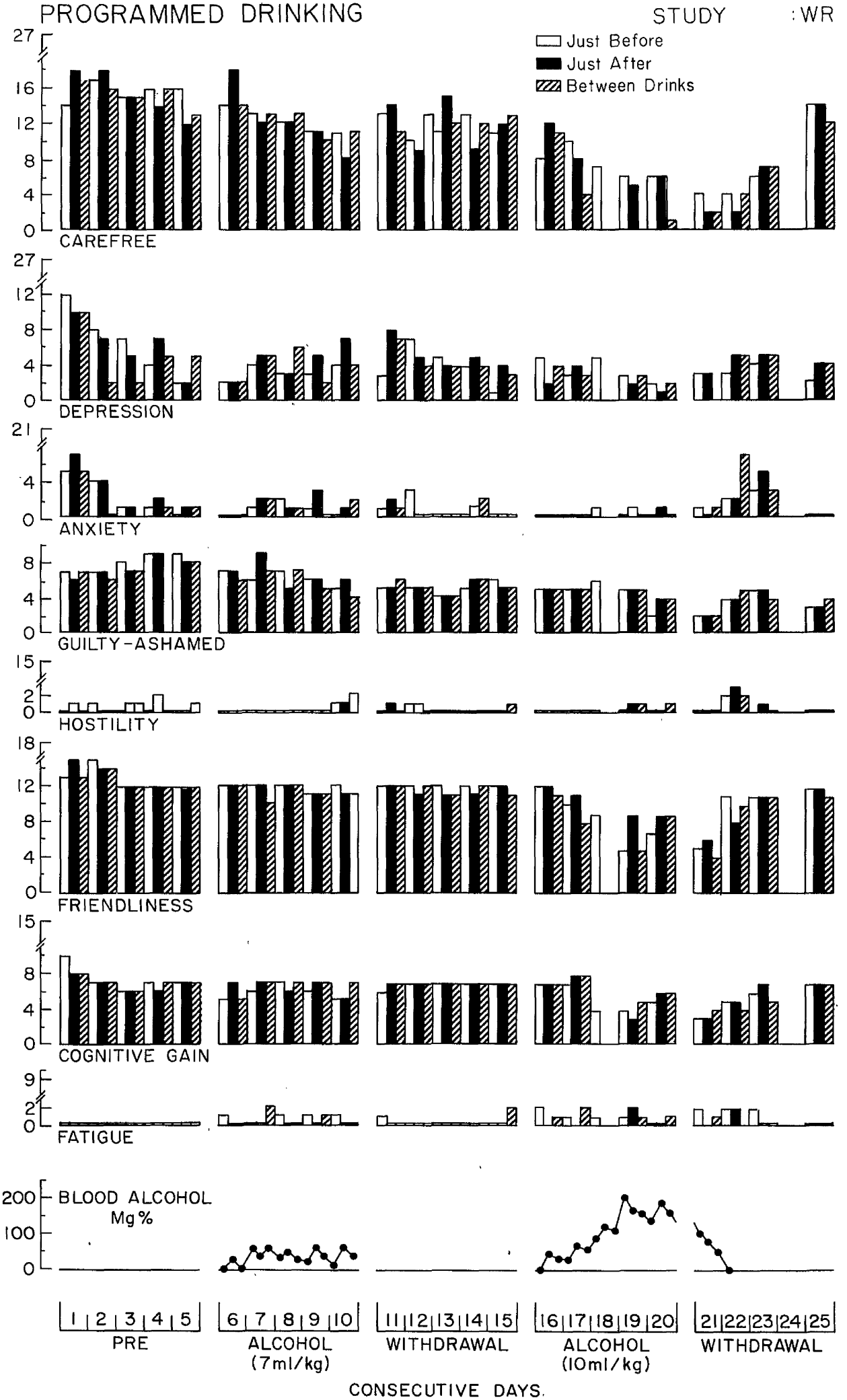
Histograms of Mood Profiles on Individual Subjects During Programmed Drinking

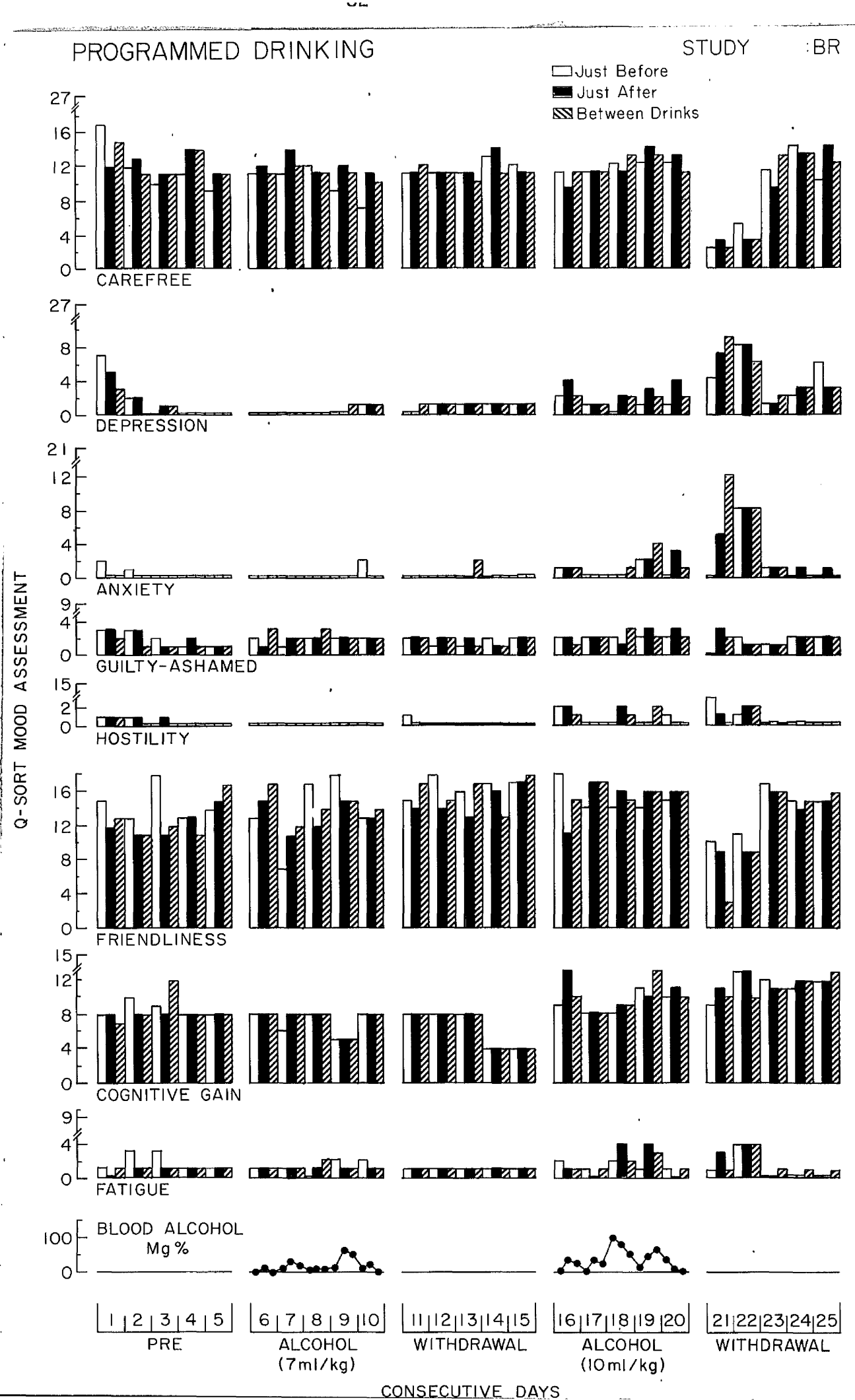
(1) NE
(2) PH
(3) RA
(4) WR
(5) BR
(6) FA
(7) PA
(8) TR
(9) WE

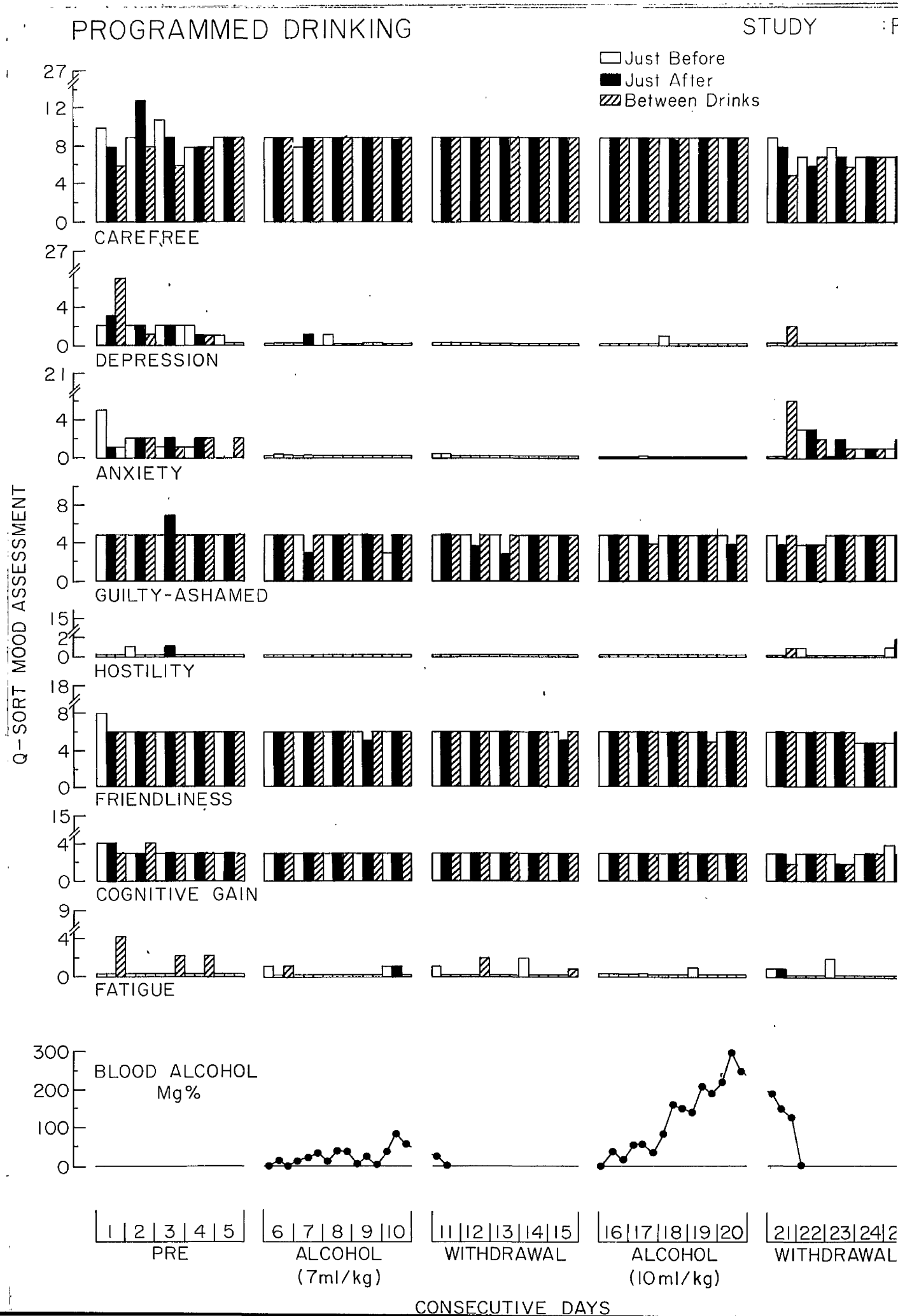

PROGRAMMED DRINKING
STUDY : NE
Just Before
Just After
Between Drinks
Q-SORT MOOD ASSESSMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
(7ml/kg)
11 12 13 14 15
WITHDRAWAL
16 17 18 19 20
ALCOHOL
(10ml/kg)
21 22 23 24 25
WITHDRAWAL
CONSECUTIVE DAYS

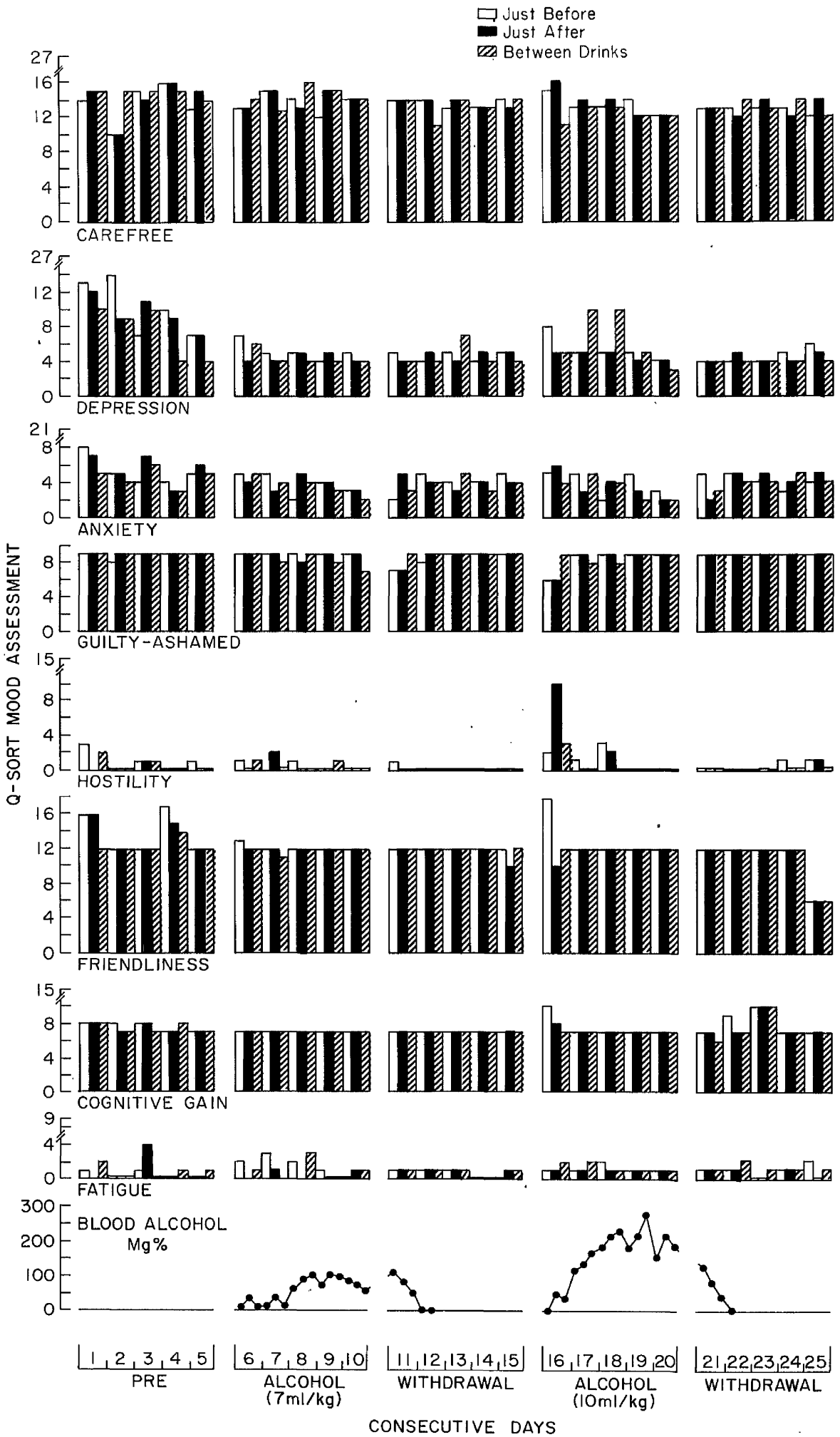

PROGRAMMED DRINKING
STUDY PH
Just Before
Just After
Between Drinks
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL Mg%
Q-SORT MOOD ASSESSMENT
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL (7ml/kg)
11 12 13 14 15
WITHDRAWAL
16 17 18 19 20
ALCOHOL (10ml/kg)
21 22 23 24 25
WITHDRAWAL
CONSECUTIVE DAYS

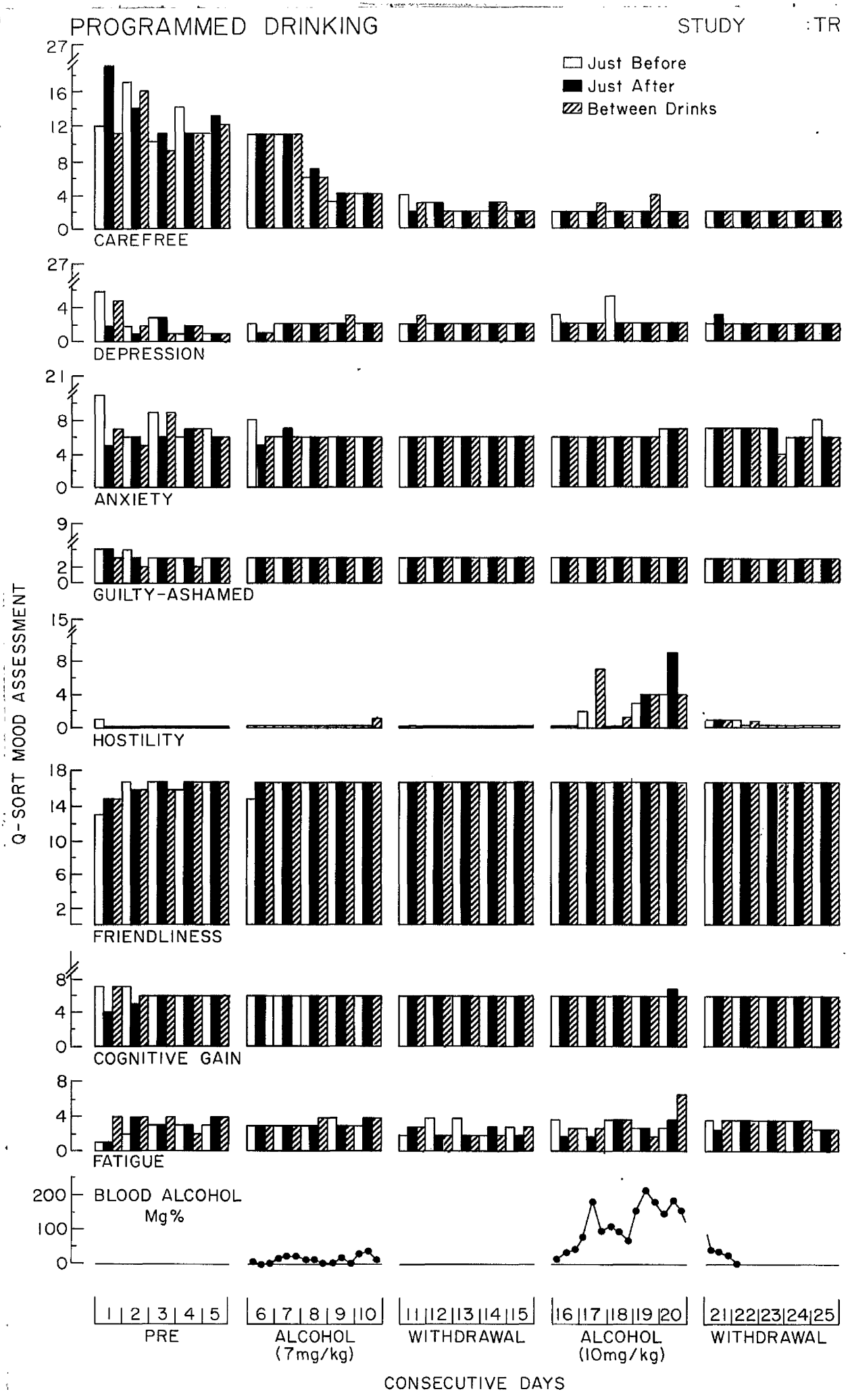

PROGRAMMED DRINKING
STUDY :RA
Just Before
Just After
Between Drinks
Q-SORT MOOD ASSESSMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
(7ml / kg)
11 12 13 14 15
WITHDRAWAL
16 17 18 19 20
ALCOHOL
(10ml/kg)
21 22 23 24 25
WITHDRAWAL
CONSECUTIVE DAYS

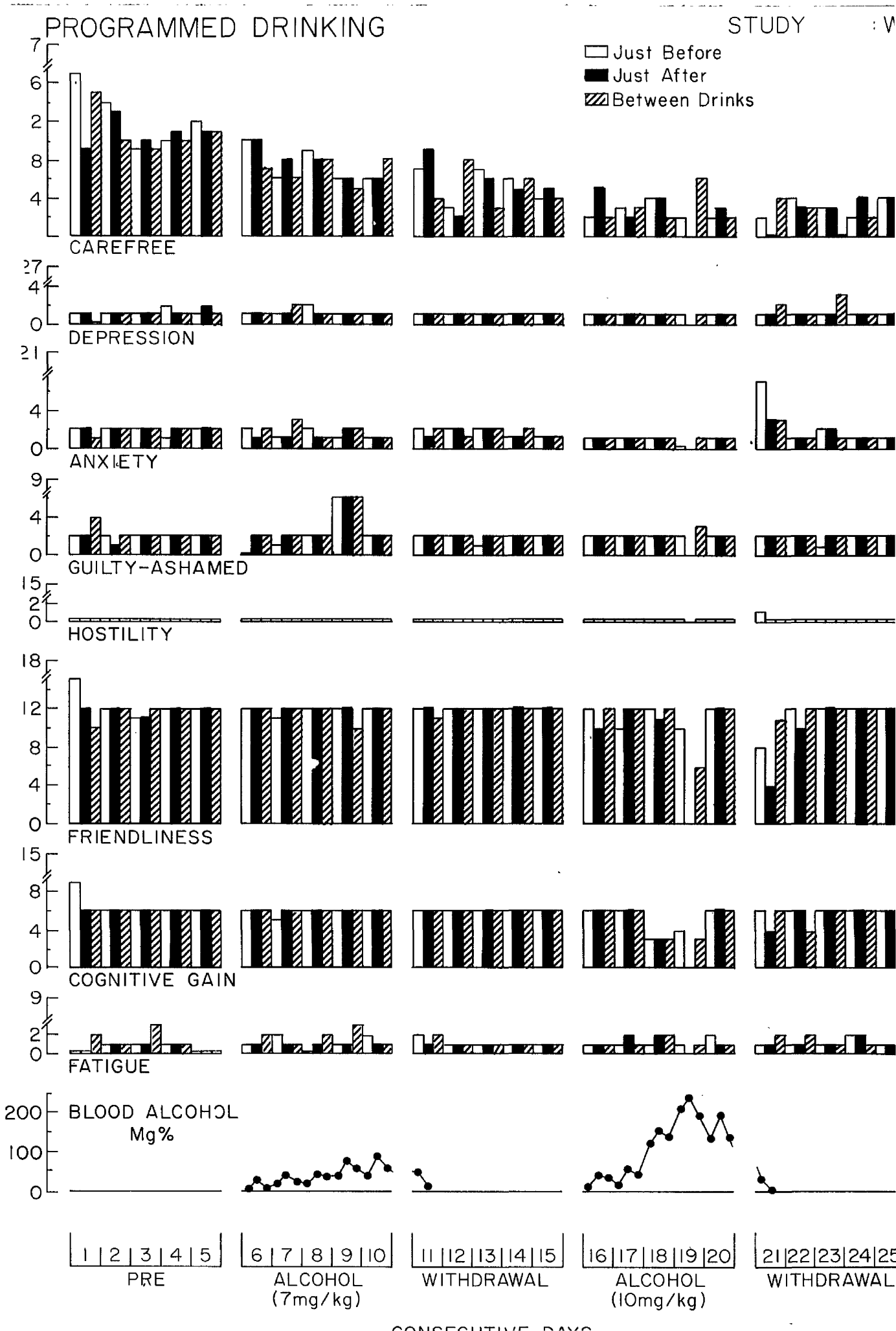

PROGRAMMED DRINKING
STUDY :WR
Just Before
Just After
Between Drinks
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL Mg%
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL (7ml/kg)
11 12 13 14 15
WITHDRAWAL
16 17 18 19 20
ALCOHOL (10ml/kg)
21 22 23 24 25
WITHDRAWAL
CONSECUTIVE DAYS.


PROGRAMMED DRINKING
STUDY :BR
Just Before
Just After
Between Drinks
Q-SORT MOOD ASSESSMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg %
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
(7ml/kg)
11 12 13 14 15
WITHDRAWAL
16 17 18 19 20
ALCOHOL
(10ml/kg)
21 22 23 24 25
WITHDRAWAL
CONSECUTIVE DAYS


PROGRAMMED DRINKING
STUDY
Just Before
Just After
Between Drinks
Q-SORT MOOD ASSESSMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
(7ml/kg)
11 12 13 14 15
WITHDRAWAL
16 17 18 19 20
ALCOHOL
(10ml/kg)
21 22 23 24
WITHDRAWAL
CONSECUTIVE DAYS


PROGRAMMED DRINKING
STUDY : PA
Just Before
Just After
Between Drinks
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
Q-SORT MOOD ASSESSMENT
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
(7ml/kg)
11 12 13 14 15
WITHDRAWAL
16 17 18 19 20
ALCOHOL
(10ml/kg)
21 22 23 24 25
WITHDRAWAL
CONSECUTIVE DAYS

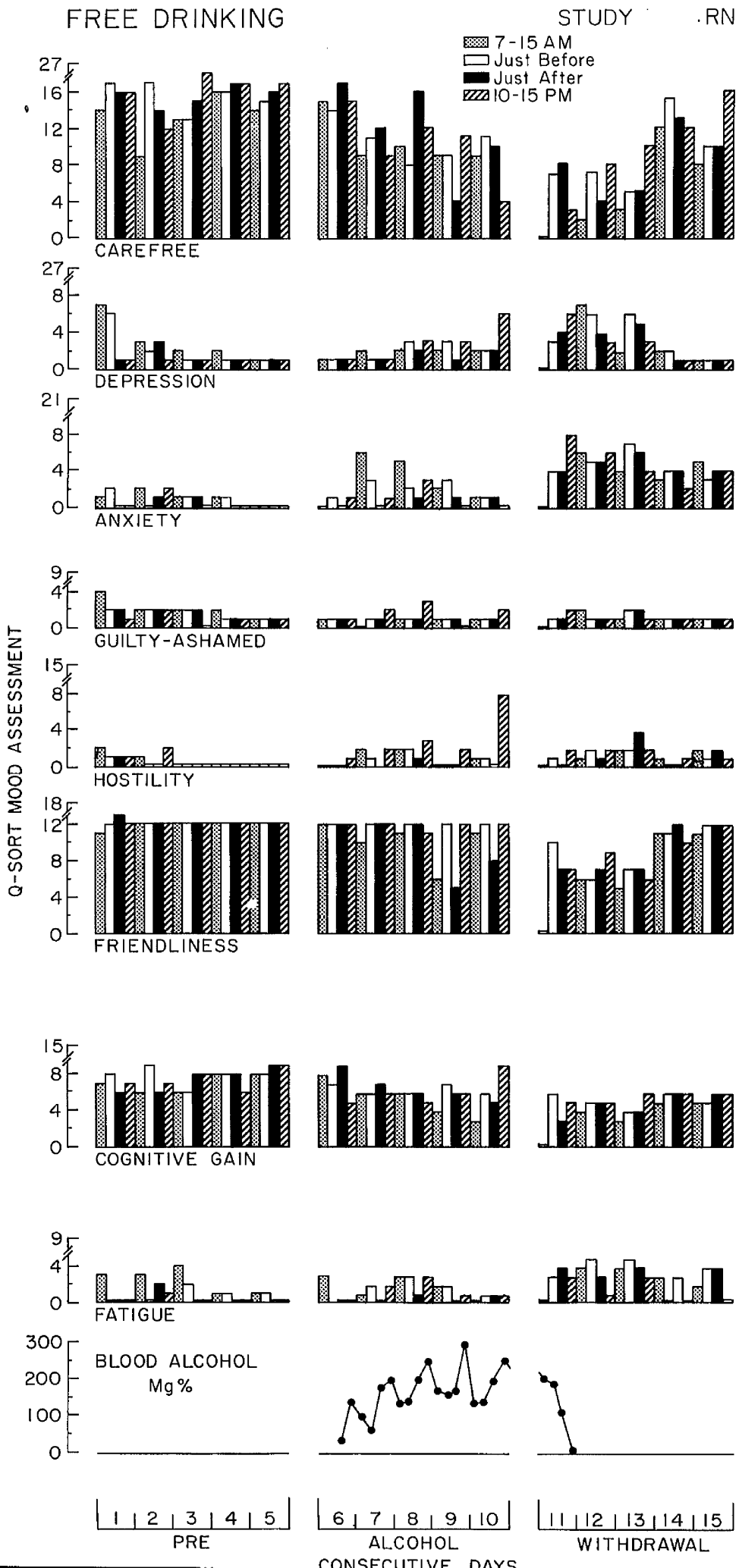

PROGRAMMED DRINKING
STUDY :TR
Just Before
Just After
Between Drinks
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
Q-SORT MOOD ASSESSMENT
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL (7mg/kg)
11 12 13 14 15
WITHDRAWAL
16 17 18 19 20
ALCOHOL (10mg/kg)
21 22 23 24 25
WITHDRAWAL
CONSECUTIVE DAYS

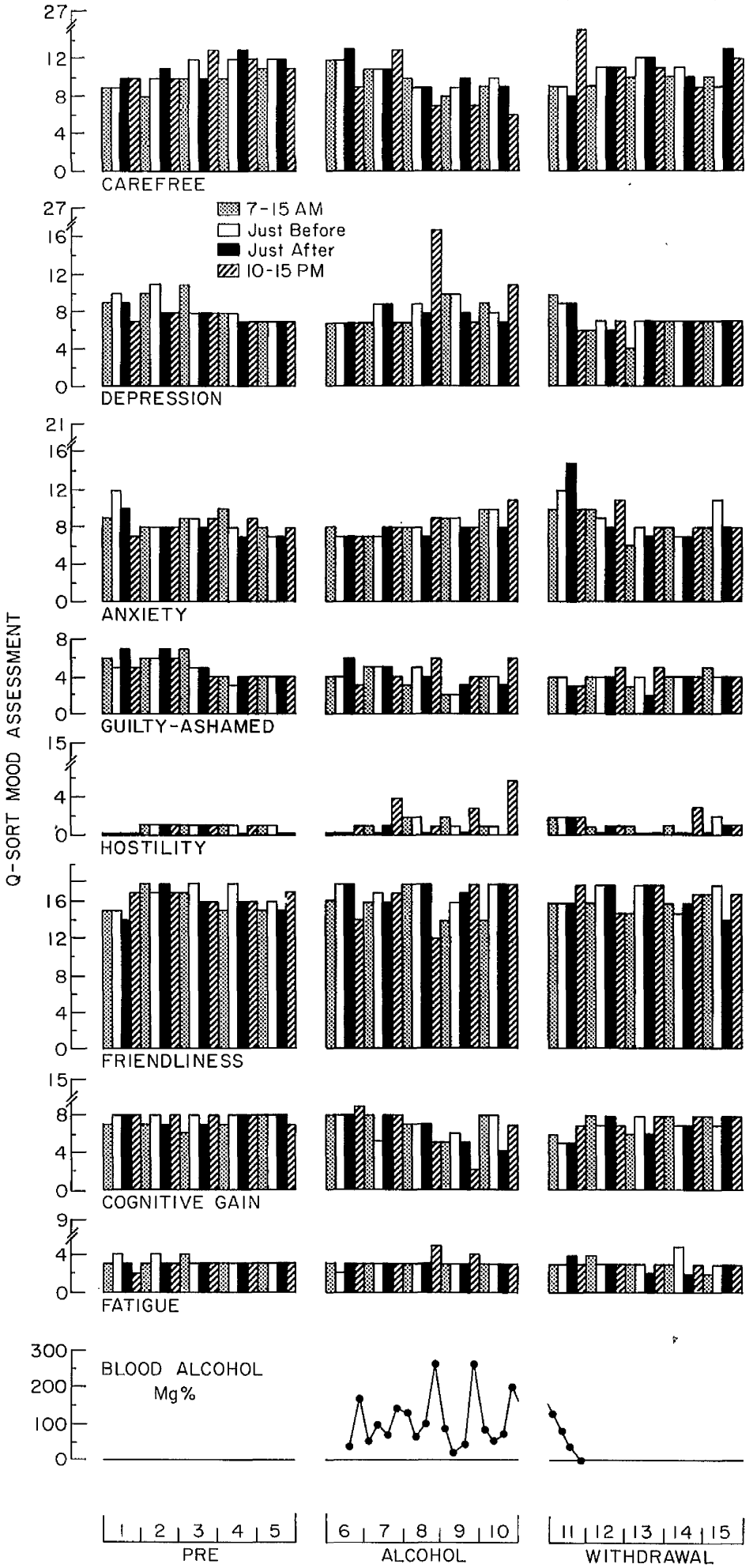

PROGRAMMED DRINKING
STUDY
Just Before
Just After
Between Drinks
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
1 | 2 | 3 | 4 | 5
PRE
6 | 7 | 8 | 9 | 10
ALCOHOL
(7mg/kg)
11 | 12 | 13 | 14 | 15
WITHDRAWAL
16 | 17 | 18 | 19 | 20
ALCOHOL
(10mg/kg)
21 | 22 | 23 | 24 | 25
WITHDRAWAL

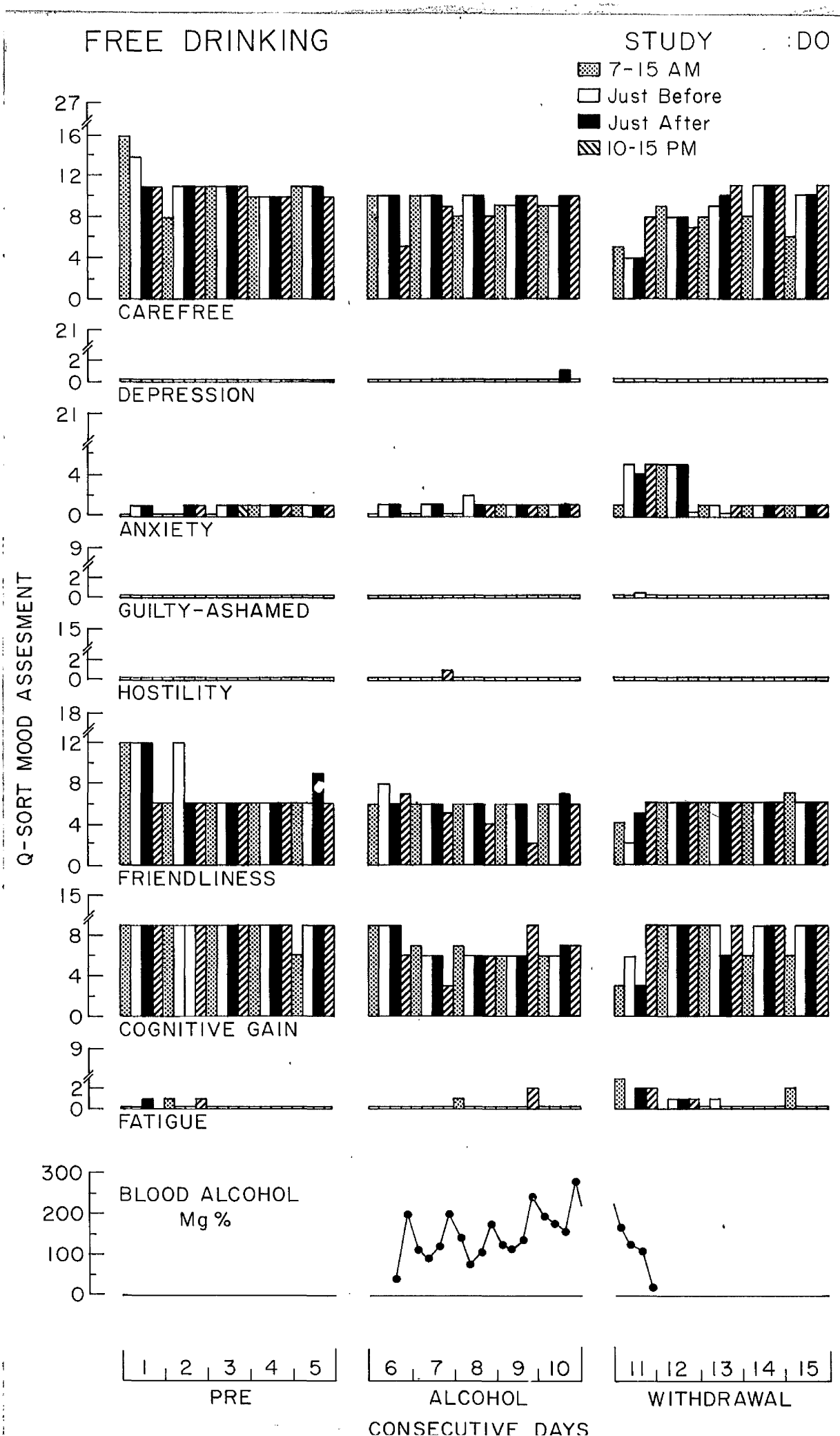
APPENDIX IX.

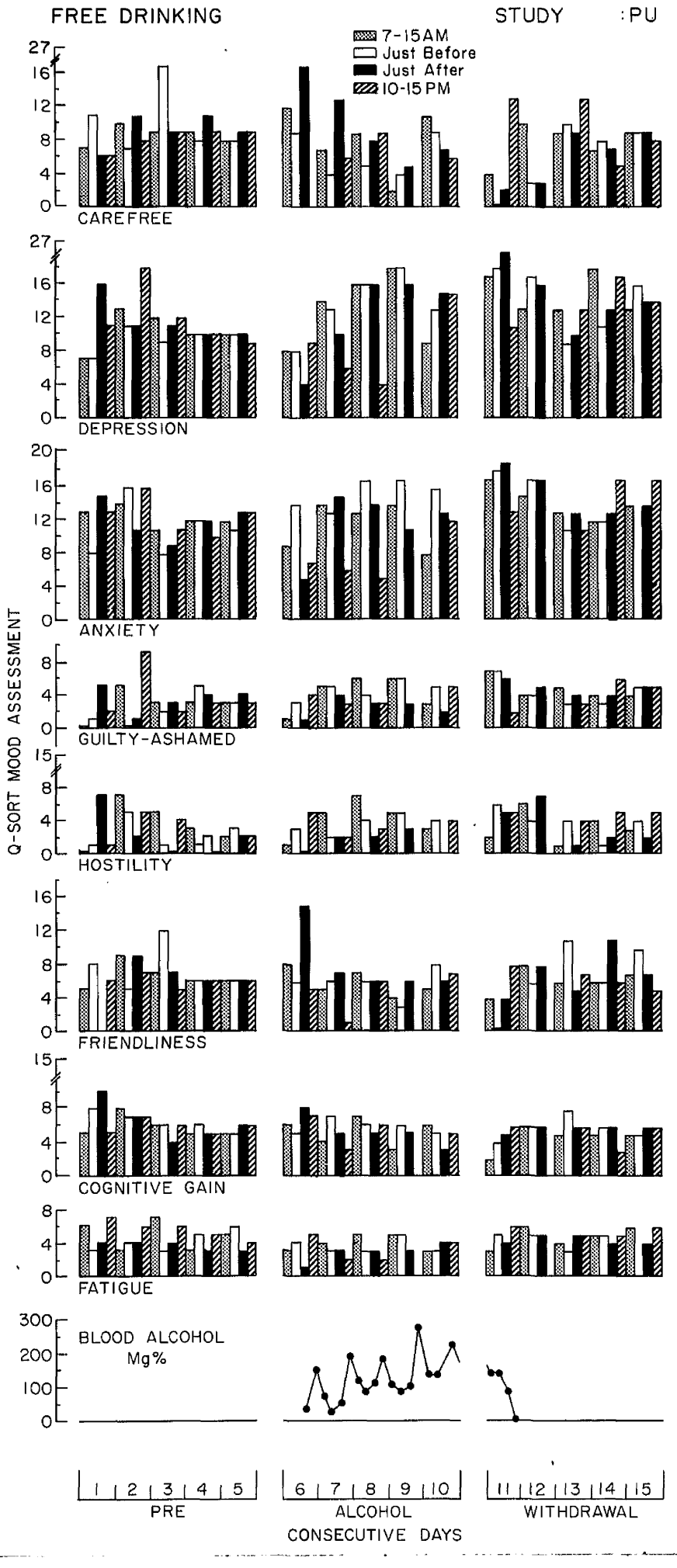
Histograms of Mood Profiles on Individual Subjects During Free-Choice Drinking

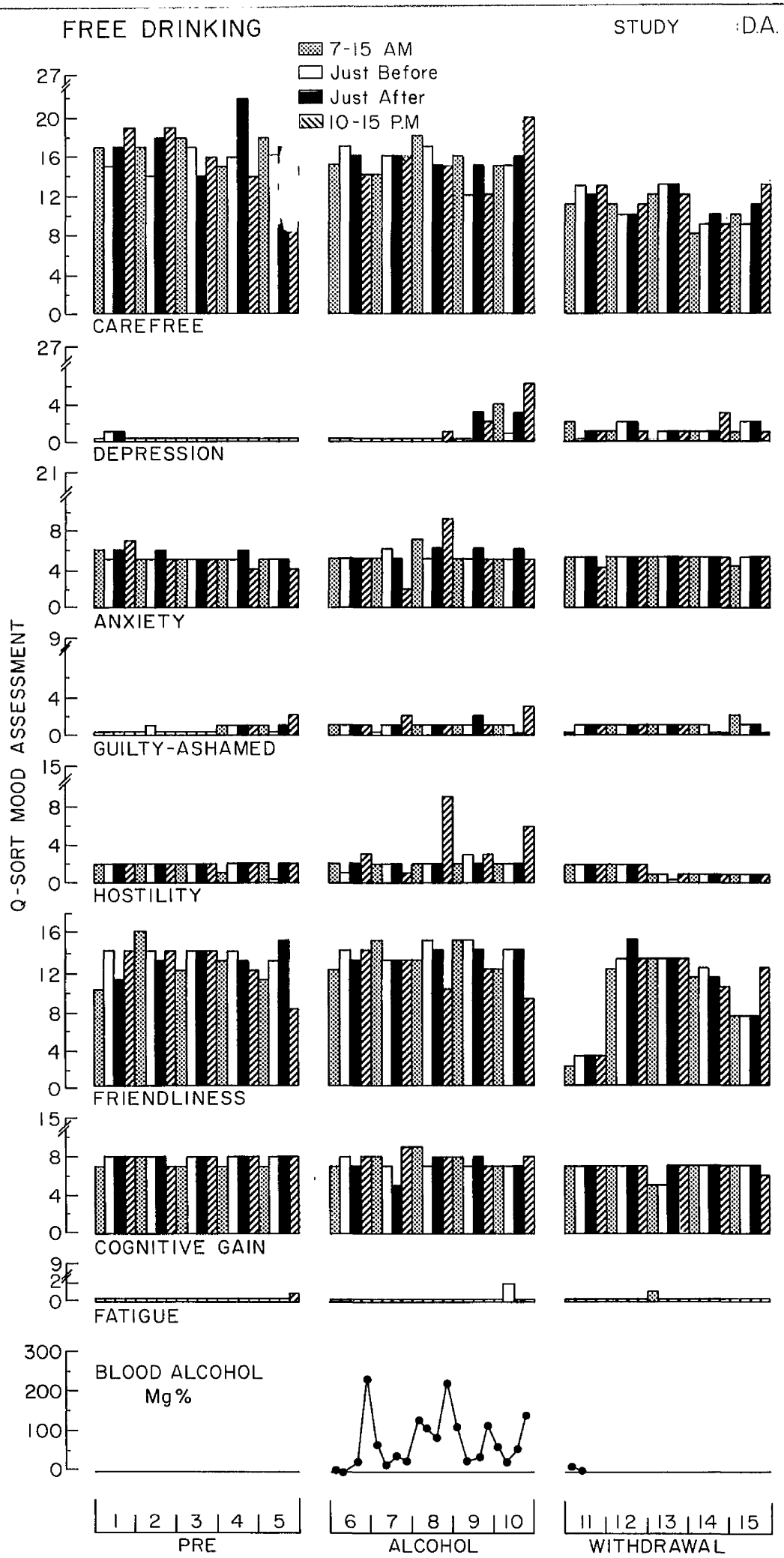
(1) RN
(2) KA
(3) DO
(4) PU
(5) DA
(6) MK
(7) OW
(8) WI

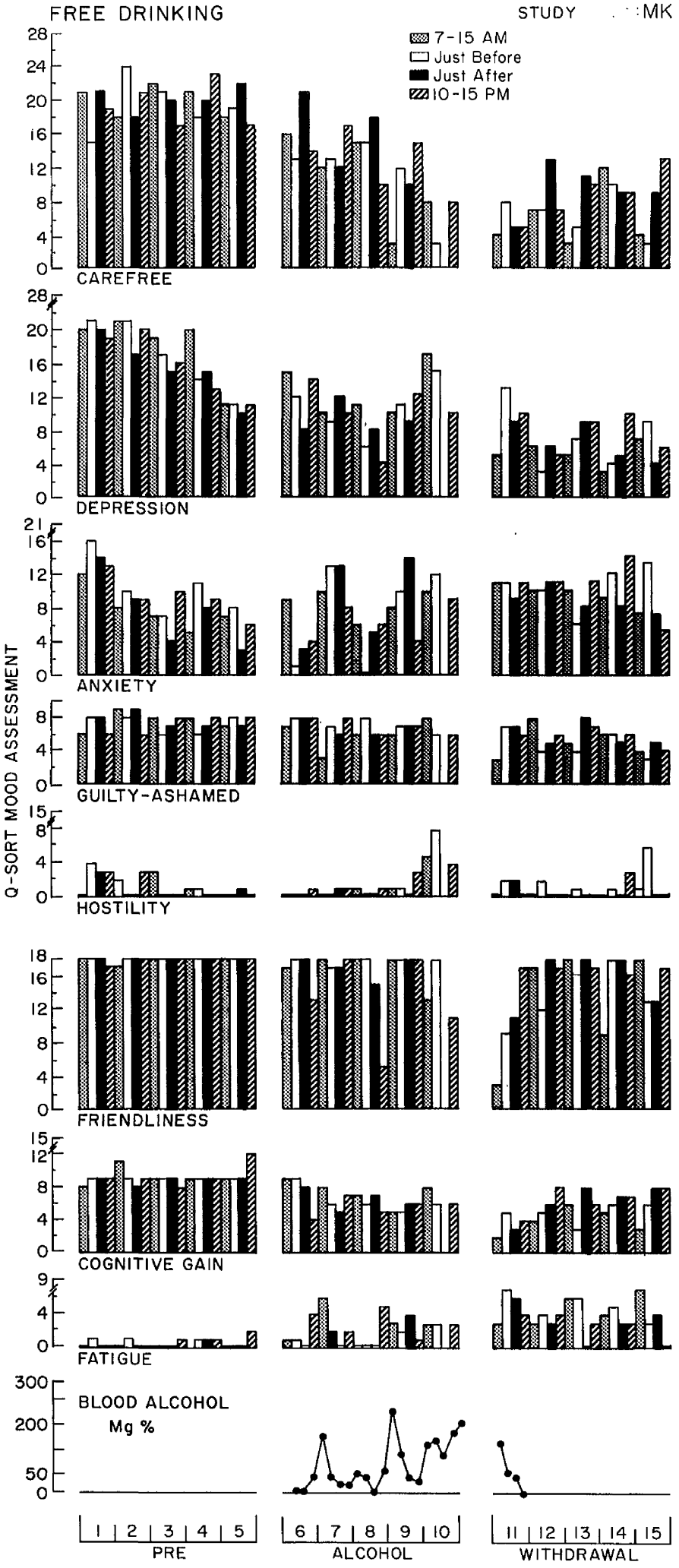

FREE DRINKING
STUDY .RN
7-15 AM
Just Before
Just After
10-15 PM
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
Q-SORT MOOD ASSESSMENT
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
11 12 13 14 15
WITHDRAWAL
CONSECUTIVE DAYS

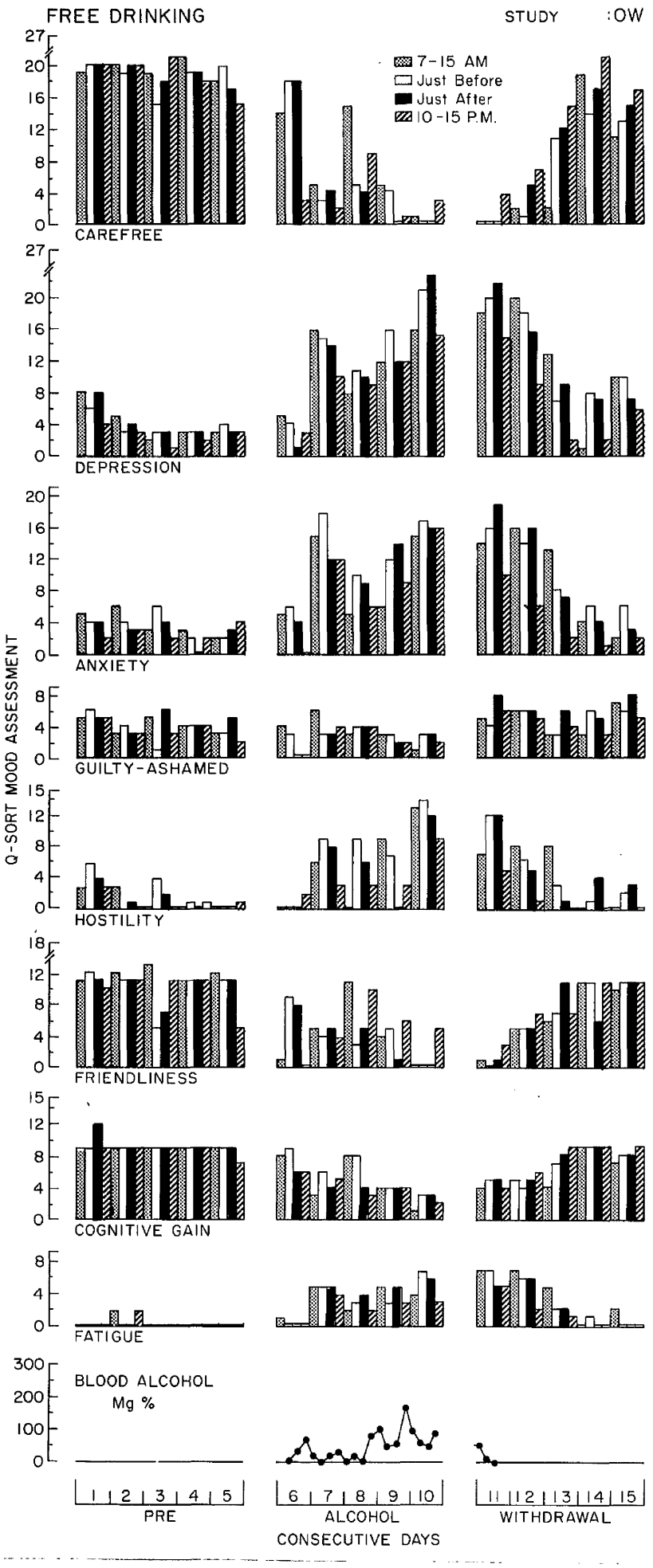

FREE DRINKING
STUDY : KA
Q-SORT MOOD ASSESSMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
7-15 AM
Just Before
Just After
10-15 PM
PRE
ALCOHOL
WITHDRAWAL

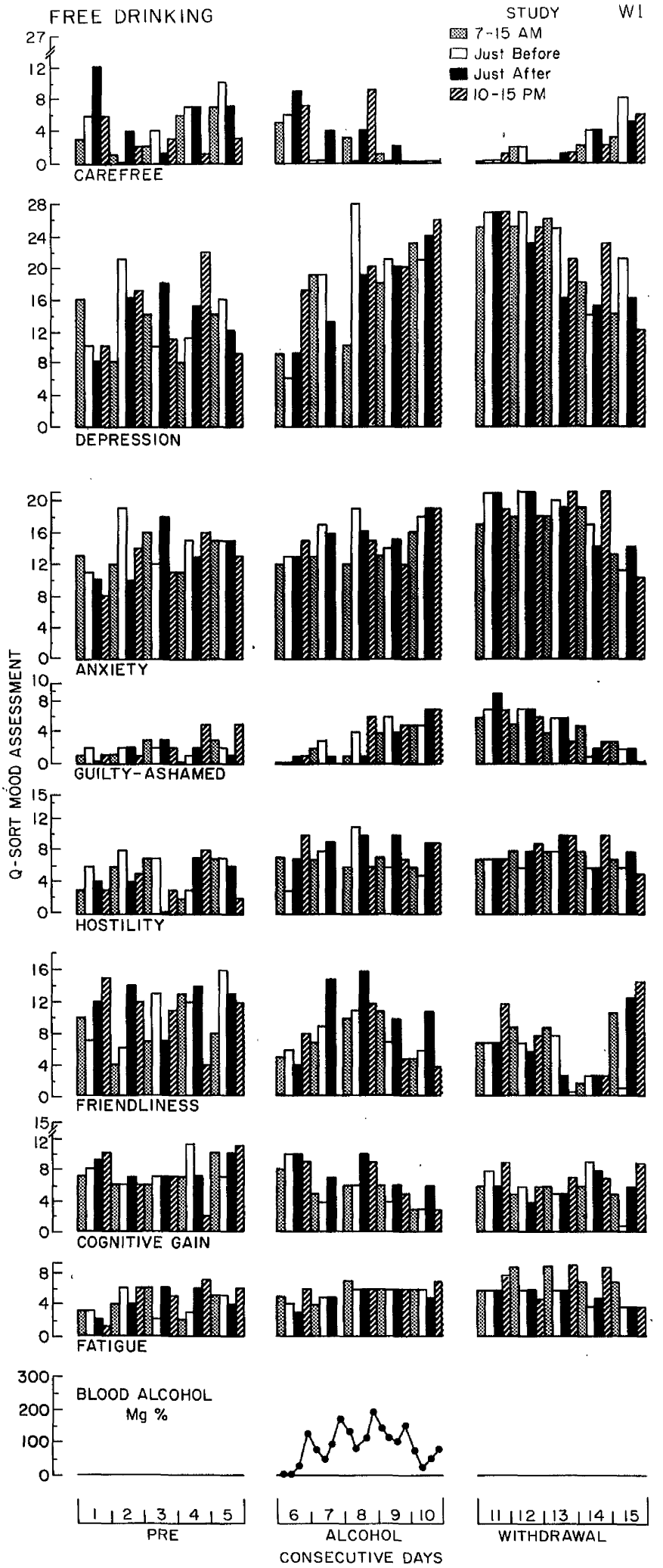

FREE DRINKING
STUDY : DO
7-15 AM
Just Before
Just After
10-15 PM
Q-SORT MOOD ASSESMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg %
PRE
ALCOHOL
WITHDRAWAL
CONSECUTIVE DAYS


FREE DRINKING
STUDY :PU
7-15AM
Just Before
Just After
10-15PM
Q-SORT MOOD ASSESSMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
11 12 13 14 15
WITHDRAWAL
CONSECUTIVE DAYS


FREE DRINKING
STUDY D.A.
7-15 AM
Just Before
Just After
10-15 P.M
Q-SORT MOOD ASSESSMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg%
PRE
ALCOHOL
WITHDRAWAL


FREE DRINKING
STUDY MK
7-15 AM
Just Before
Just After
10-15 PM
Q-SORT MOOD ASSESSMENT
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg %
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
11 12 13 14 15
WITHDRAWAL


FREE DRINKING
STUDY :OW
7-15 AM
Just Before
Just After
10-15 P.M.
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
BLOOD ALCOHOL
Mg %
Q-SORT MOOD ASSESSMENT
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
11 12 13 14 15
WITHDRAWAL
CONSECUTIVE DAYS


FREE DRINKING
STUDY W1
7-15 AM
Just Before
Just After
10-15 PM
CAREFREE
DEPRESSION
ANXIETY
GUILTY-ASHAMED
HOSTILITY
FRIENDLINESS
COGNITIVE GAIN
FATIGUE
Q-SORT MOOD ASSESSMENT
BLOOD ALCOHOL
Mg %
1 2 3 4 5
PRE
6 7 8 9 10
ALCOHOL
11 12 13 14 15
WITHDRAWAL
CONSECUTIVE DAYS

APPENDIX X.

Data on Breathalyzer Readings, Caloric Intake, Weight and Alcohol Consumption

(PROGRAMMED DRINKING) SOBER

DAY	1		2		3		4		5	
SUBJECT	BREATHALYZER (B)	CALORIC INTAKE (C)	B	C	B	C	B	C	B	C
BR	.00 .00	1018	.00 .00	1755	.00 .00	3060	.00 .00	2166	.00 .00	2670
FA	.00 .00	1230	.00 .00	3235	.00 .00	1428	.00 .00	1631	.00 .00	2608
PA	.00 .00	741	.00 .00	2111	.00 .00	2365	.00 .00	2022	.00 .00	2155
TR	.00 .00	1039	.00 .00	1611	.00 .00	3485	.00 .00	1289	.00 .00	2166
WE	.00 .00	1484	.00 .00	2418	.00 .00	2197	.00 .00	1265	.00 .00	1855
NE	.00 .00	2695	.00 .00	2422	.00 .00	2290	.00 .00	1887	.00 .00	2102
PH	.00 .00	1625	.00 .00	2042	.00 .00	1923	.00 .00	2162	.00 .00	2067
RA	.00 .00	2130	.00 .00	3037	.00 .00	2173	.00 .00	1863	.00 .00	2107
WR	.00 .00	2246	.00 .00	2337	.00 .00	2201	.00 .00	1905	.00 .00	2006

PROGRAMMED DRINKING

DRINK 1 (7ml/kg)

DAY	6				7				8				9				10			
SUBJECT	BREATH-ALYZER (B)	CALORIC INTAKE (C)	WEIGHT IN LB (W)	ALCOHOL INTAKE ML. (A)	B	C	W	A	B	C	W	A	B	C	W	A	B	C	W	A
BR	.01 .00 .01 .00 .00	2458	162	85.9 x 6	.03 .015 .03 .02 .01	2836	165	87.5 x 6	.02 .01 .01 .01 .01	1896	163	86.4 x 6	.04 .02 .06 .05 .08	1293	162	85.9 x 6	.02 .01 .02 .00 .01	2245	162	85.9 x 6
FA	.01 .00 .01 .00 .00	4113	185	98.1 x 6	.03 .01 .02 .03 .01	2633	185	99.6 x 6	.03 .01 .04 .04 .02	2467	189	100.1 x 6	.01 .00 .02 .00 .05	1130	189	100.1 x 6	.06 .03 .08 .06 .06	2516	189	99.6 x 6
PA	.00 .00 .03 .01 .00	2573	214	95.9 x 6	.01 .01 .03 .01 .00	3065	181	95.9 x 6	.05 .06 .09 .10 .10	1717	181	95.9 x 6	.09 .07 .10 .10 .09	1113	181	95.9 x 6	.15 .09 .08 .06 .14	1725	178	94.3 x 6
TR	.00 .00 .00 .00 .00	3797	181	91.2 x 6	.02 .015 .02 .02 .00	3451	175	92.8 x 6	.02 .01 .01 .00 .04	2440	179	94.9 x 6	.02 .00 .02 .01 .07	1890	174	92.2 x 6	.07 .03 .04 .01 .01	2342	176	93.3 x 6
WE	.00 .00 .02 .00 .00	3127	172	102.3 102.3 102.3 102.3 -	.02 .01 .03 .01 .00	2824	194	102.8 102.8 102.8 102.8 102.8	.02 .01 .03 .03 .00	1405	198	104.9 x 6	.04 .03 .07 .05 .09	1432	196	103.9 x 6	.04 .03 .09 .05 .04	1338	196	103.9 x 6
NE	.03 .01 .04 .03 .02	1890	171	90.5 x 6	.07 .08 .05 .04 .06	162	171	90.6 x 6	0.11 .09 .09 .07 .08	1412	171	90.6 x 6	.05 .04 .03 .00 .04	1857	169	89.5 x 6	.03 .01 .04 .02 .01	1764	172	91.1 x 6
PH	.02 .00 .08 .03 .02	1429	155	82 x 6	.04 .02 .04 .03 .02	1857	163	86.3 x 6	.04 .02 .05 .03 .03	1425	165	87.4 x 6	.03 .01 .04 .03 .03	1355	164	86.9 x 6	.01 .01 .04 .03 .02	2251	163	84.1 x 6
RA	.02 .00 .03 .02 .02	1460	165	87.45 x 6	.04 .03 .04 .03 .02	2578	163	86.3 x 6	.04 .02 .02 .01 .01	2115	165	87.4 x 6	.05 .03 .04 .02 .05	1110	162	85.8 x 6	.01 .00 .03 .02 .01	2302	163	86.4 x 6

DRINK 1 (7ml/kg) (CONTINUED)

DAY	6				7				8				9				10			
SUBJECT	BREATH-ALYZER (B)	CALORIC INTAKE (C)	WEIGHT IN LB (W)	ALCOHOL INTAKE (A)	B	C	W	A	B	C	W	A	B	C	W	A	B	C	W	A
	.02				.06				.05				.04			90.1	.02			
	.01			92	.04			91.1	.04			89	.02			-	.01			87.9
WR	.03	2350	174	x	.06	1931	172	x	.05	2039	168	x	.06	188	170	90.1	.07	884	166	x
	.01			6	.04			6	.03			6	.04			90.1	.04			6
	.02				.04				.00				.04			90.1	.03			

(PROGRAMMED DRINKING) WITHDRAW 1

DAY	11		12		13		14		15	
SUBJECT	B	C	B	C	B	C	B	C	B	C
BR	.00 .00	2469	.00 .00	2537	.00 .00	2348	.00 .00	2189	.00 .00	1952
FA	.03 .02 .00 - .00	2133	.00 .00	2205	.00 .00	2025	.00 .00	2045	.00 .00	2635
PA	.15 .11 .09 .05 .01	620	.00 .00	1298	.00 .00	2526	.00 .00	1526	.00 .00	1880
TR	.00 .00	2037	.00 .00	2578	.00 .00	2517	.00 .00	2195	.00 .00	1960
WE	.06 .03 .00 - .00	1992	.00 .00	2300	.00 .00	1472	.00 .00	1910	.00 .00	2243
NE	.00 .00 .00 .00 .00	1769	.00 .00	1082	.00 .00	1785	.00 .00	3233	.00 .00	2756

(PROGRAMMED DRINKING) WITHDRAW 1 (continued)

DAY	11		12		13		14		15	
SUBJECT	B	C	B	C	B	C	B	C	B	C
PH	.00 .00 .00 .00 .00	857	.00 .00	1247	.00 .00	1760	.00 .00	1547	.00 .00	1937
RA	.00 .00 .00 .00 .00	1398	.00 .00	1621	.00 .00	3195	.00 .00	1986	.00 .00	3203
WR	.00 .00 .00 .00 .00	1290	.00 .00	2740	.00 .00	3938	.00 .00	2745	.00 .00	2116

PROGRAMMED DRINKING

DRINK 2 (10ml/kg)

DAY	16				17				18				19				20			
SUBJECT	B	C	W	A	B	C	W	A	B	C	W	A	B	C	W	A	B	C	W	A
BR	.01 .00 .03 .02 .04	1683	166.9	126.5 x 6	.00 .00 .03 .02 .02	2110	166	125.8 x 6	.12 .10 .08 .06 .11	1005	167.6	127 x 6	.02 .02 .05 .07 .07	1482	165	125 x 6	.05 .04 .01 .01 .00	2005	165	125 x 6
FA	.02 .00 .03 .02 .01	1165	180.9	137.1 x 6	.06 .05 .05 .03 .04	1756	194	147 x 6	.09 .08 .16 .15 .16	1150	194	147 x 6	.13 .14 .21 .19 .18	1613	192	145.5 145.5 145.5 145.5 145.5	.22 .22 .30 .25 .24	2079	194	147 147 147 147 147
PA	.02 .00 .05 .04 .03	1753	182	137.9 x 6	.14 .12 .14 .17 .17	0	180.9	137.1 137.1 137.1 137.1 - 137.1	.24 .19 .22 .23 .20	770	178	134.9 134.9 134.9 134.9 - -	.23 .18 .22 .28 .25	373	175.9	- 133.3 - 133.3 133.3	.18 .15 .22 .19 .20	635	184.6	139.9 x 6
TR	.03 .01 .04 .05 .04	2058	175	132.6 x 6	.12 .08 .19 .10 .15	600	179.9	131.8 x 6	.17 .11 .10 .08 .13	505	171.9	130.3 - 130.3 130.3 130.3 130.3	.15 .16 .22 .19 .19	231	171	129.6 x 6	.13 .15 .19 .16 .18	235	171	129.6 x 6
WE	.03 .01 .04 .03 .03	2440	194	147 147 147 147 147 -	.03 .01 .05 .04 .02	1360	194.9	147.7 x 6	.15 .12 .15 .14 .18	630	196.9	149.2 149.2 149.2 149.2 149.2 -	.22 .21 .24 .19 .20	2030	196	148.5 148.5 - 148.5 -	.15 .13 .19 .13 .15	2005	195.3	148 x 6
NE	.03 .01 .03 .03 .05	3927	168.9	128 x 6	.14 .11 .10 - .07	2465	170	128.8 - - 128.8 128.8 -	.13 .11 .16 .14 .12	1535	170	128.8 128.8 128.8 128.8 - -	.09 .08 .16 .15 .11	820	163.9	- 124.2 124.2 124.2 124.2 -	.06 .05 .07 .04 .06	1380	166	125.8 125.8 125.8 - 125.8 -
PH	.02 .00 .03 - .03	1575	163	123.5 x 6	.04 .02 .06 .04 .06	1090	163	123.5 x 6	.10 .09 .15 .15 .13	1125	164	124.2 124.2 124.2 124.2 - 124.2	.10 .09 .26 .22 -	125	159.9	- 121.2 - 121.2 121.2 121.2	.16 .12 .15 .10 .10	975	163.9	121.2 x 6
RA	.02 .01 .03 .02 .04	1810	163	123.5 x 6	.02 .01 .05 .03 .05	865	164	124.2 x 6	.11 .09 .12 .13 .09	835	164	124.2 x 6	.11 .09 .17 .15 .16	680	161.9	122.7 x 6	.08 .11 .13 .12 .19	405	161	122 122 122 - 122 122

DRINK 2 (10ml/kg) (CONTINUED)

DAY	16				17				18				19				20			
SUBJECT	B	C	W	A	B	C	W	A	B	C	W	A	B	C	W	A	B	C	W	A
	.02				.05				.12			127.3	.19			-	.16			
	.00			129.6	.03			129.6	.11			127.3	.17			-	.14			125
WR	.05	1351	171	x	.07	1335	171	x	-	100	168	-	.18	1280	166	125.8	.20	490	165	x
	.03			6	.06			6	-			127.3	.18			125.8	.17			6
	.05				.09				.21			127.3	.20			125.8	.22			
												-				125.8				

(PROGRAMMED DRINKING) WITHDRAW 2

DAY	21		22		23		24		25	
SUBJECT	B	C	B	C	B	C	B	C	B	C
BR	.00 .00	620	.00 .00	2305		3027		2265		
FA	.20 .19 .15 .13 .09	1706	.00 .00	2133		1821				
PA	.15 .12 .08 .04 .00	225	.00 .00	2520		1756		1737		
TR	.09 .05 .04 .03 .00	606	.00 .00	1669		2226		2338		
WE	.03 .02 .00 .00	2151	.00 .00	1951		770				
NE	.00 .00	1150	.00 .00	1731		2546		2881		

(PROGRAMMED DRINKING) WITHDRAW 2 (continued)

DAY	21		22		23		24		25	
SUBJECT	B	C	B	C	B	C	B	C	B	C
PH	.07 .04 .02 .00 .00	815	.00 .00	2000		1989		945		
RA	.11 .07 .06 .04 .00	125	.00 .00	1700		1875		2111		
WR	.14 .10 .08 .05 .00	500	.00 .00	1555		2155		1215		

	(FREE DRINKING)						SOBER			
DAY	1		2		3		4		5	
SUBJECT	B	C	B	C	B	C	B	C	B	C
RN	.00 .00	1991	.00 .00	2907	.00 .00	2581	.00 .00	2606	.00 .00	3066
KA	.00 .00	1092	.00 .00	2537	.00 .00	2508	.00 .00	2411	.00 .00	2482
DO	.00 .00	1326	.00 .00	1645	.00 .00	3245	.00 .00	1763	.00 .00	1515
PU	.00 .00	3868	.00 .00	2596	.00 .00	2775	.00 .00	3585	.00 .00	2346
DA	.00 .00	4482	.00 .00	2473	.00 .00	3740	.00 .00	2506	.00 .00	1570
MK	.00 .00	2129	.00 .00	1785	.00 .00	2223	.00 .00	2336	.00 .00	3101
OW	.00 .00	2755	.00 .00	2252	.00 .00	2871	.00 .00	2210	.00 .00	2627
WI	.00 .00	1290	.00 .00	2345	.00 .00	2467	.00 .00	2142	.00 .00	3179

(FREE DRINKING)

DAY	6			DRINK 7			8			9			10		
SUBJECT	B	C	ALC CHIPS	B	C	A	B	C	A	B	C	A	B	C	A
RN	- - .03 .14	1150	18	.10 .06 .18 .20	760	14	.13 .14 .20 .25	815	24	.17 .16 .17 .30	560	23	.13 .14 .20 .25	300	23
KA	- - .04 .17	1513	21	.05 .01 .07 .14	1193	24	.13 .06 .10 .26	422	20	.08 .02 .04 .26	2000	24	.08 .05 .07 .20	1266	24
DO	- - .03 .19	1874	24	.10 .08 .11 .19	1740	23	.13 .06 .09 .16	1190	24	.11 .10 .12 .23	1765	24	.18 .16 .14 .26	300	24
PU	- - .03 .15	1330	21	.07 .02 .05 .19	1210	23	.11 .08 .11 .18	1115	19	.10 .08 .10 .27	1228	24	.13 .13 .18 .22	739	24
DA	- - .03 .24	3340	24	.07 .02 .04 .03	3158	24	.13 .11 .09 .23	675	23	.12 .06 .07 .12	1754	25	.07 .03 .06 .15	1215	22
MK	- - .04 .16	1576	24	.04 .02 .02 .05	2663	21	.04 .00 .06 .24	1750	25	.11 .04 .03 .14	1450	28	.15 .11 .18 .21	820	24

(FREE DRINKING) DRINK (continued)

DAY	6			7			8			9			10			
SUBJECT	B	C	ALC CHIPS	B	C	A	B	C	A	B	C	A	B	C	A	
OW	- - .03 .07	2994	24	.02 .00 .02 .03	3955	24	.00 .02 .00 .08	3666	24	.10 .05 .06 .17	600	15	.10 .06 .05 .09	435	21	
WI	- - .03 .13	2182	24	.08 .05 .10 .18	1680	22	.14 .09 .12 .20	1063	17	.15 .12 .11 .16	535	17	.08 .03 .06 .09	907	13	

(FREE DRINKING) WITHDRAW

DAY	11		12		13		14		15		
SUBJECT	B	C	B	C	B	C	B	C	B	C	
RN	.20 .19 .11 .00	1225	.00	2035	.00						
KA	.12 .08 .03 .00	1195	.00	4951	.00						
DO	.15 .11 .09 .00	300	.00	2365	.00						
PU	.13. .13 .08 .00	665	.00	1975	.00						
DA	.02 .00 .00 .00	1228	.00								
MK	.15 .06 .05 .00	2015	.00								

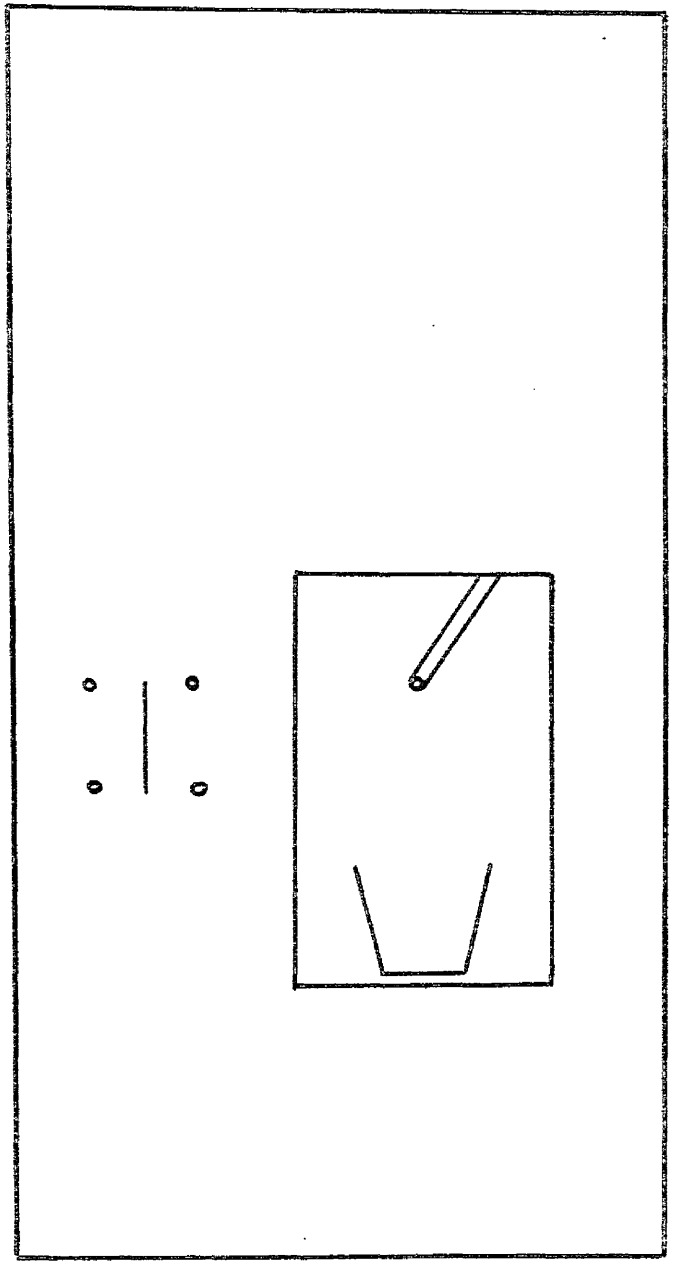
(FREE DRINKING) WITHDRAW (continued)

DAY	11		12		13		14		15		
SUBJECT	B	C	B	C	B	C	B	C	B	C	
OW	.05 .01 .00 .00	1943	.00								
WI	.00 .00 .00 .00	1200	.00								

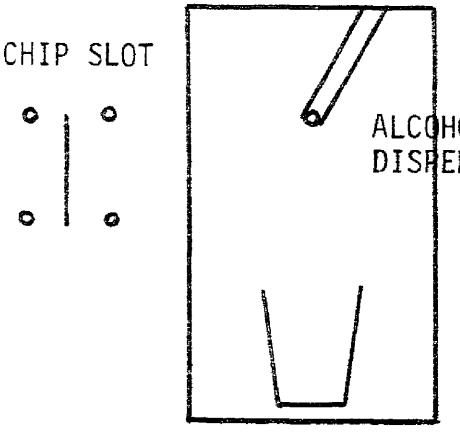
APPENDIX XI.

Illustration of Alcohol Dispenser, from Front and Rear

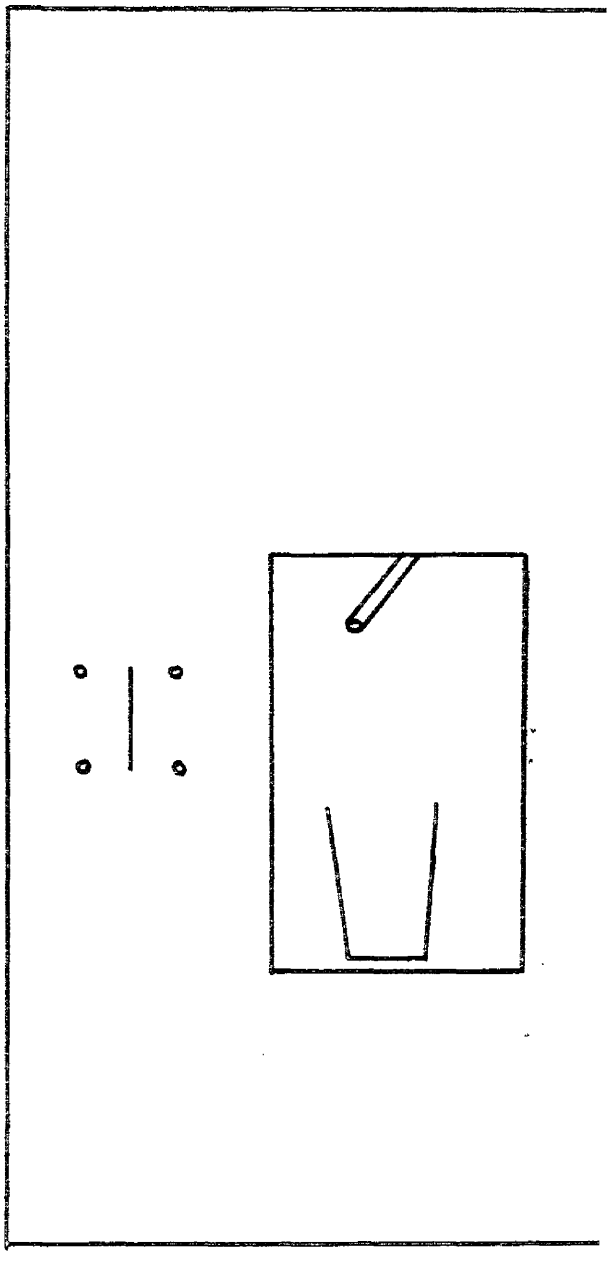
KEY - FRONT



CHIP SLOT

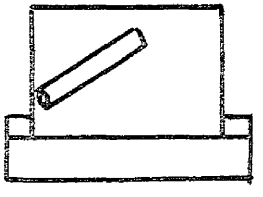


ALCOHOL
DISPENSER

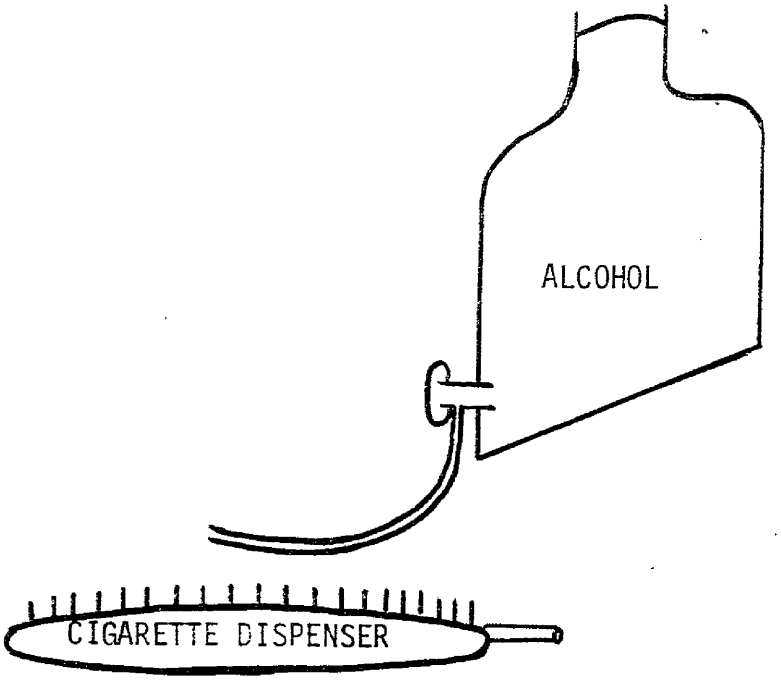


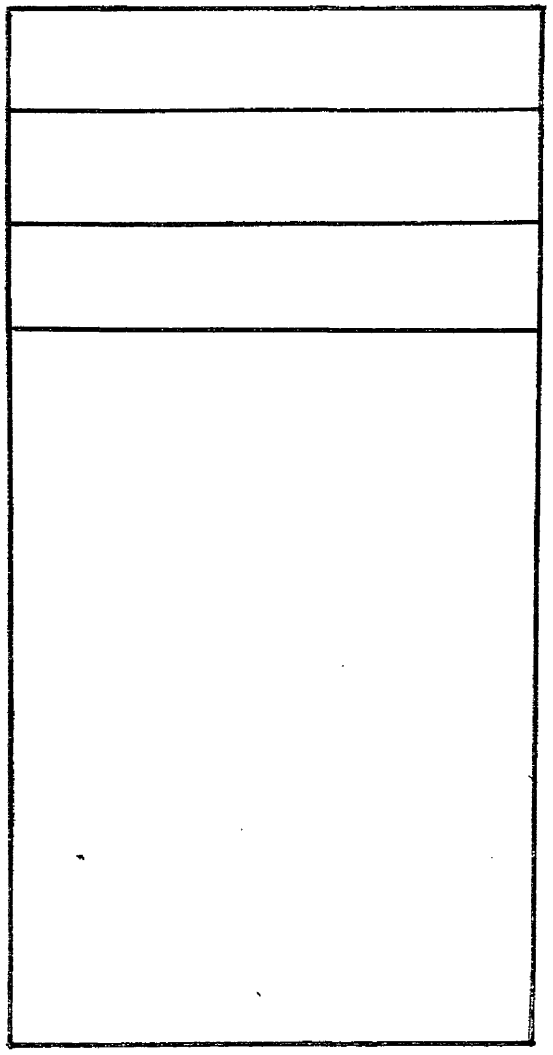
KEYHOLE

CIGARETTE

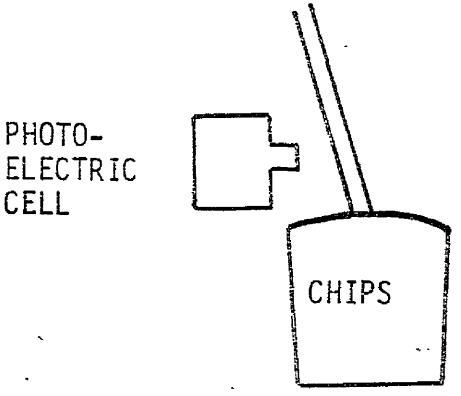


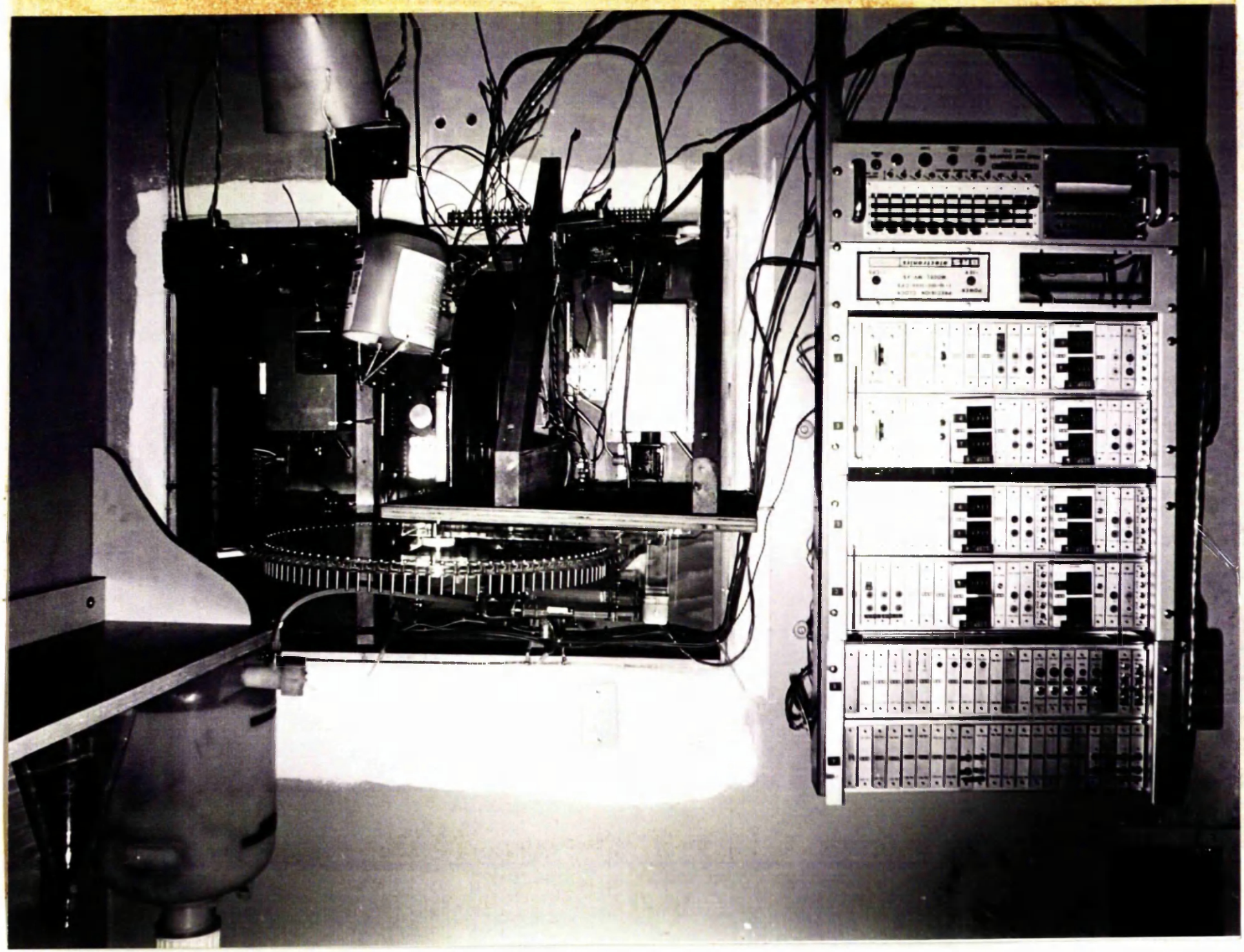
KEY - REAR





CHIP COUNTER - TIME
FREQUENCY
AMOUNT





APPENDIX XII.

Summary Table for Statistical Tests

SUMMARY OF ANALYSIS OF VARIANCE

(p values less than ...)

PROGRAMMED DRINKING	Depression	Carefree	Friendliness	Hostility	Anxiety	Cognitive Gain	Guilty-Ashamed	Fatigued
Subjects (S)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Conditions (C)	0.01	0.01	0.01	0.01	NS	NS	0.01	0.01
Times (T)	NS	NS	NS	NS	NS	NS	NS	0.01
Days (D)	0.01	NS	0.05	NS	0.05	NS	0.05	0.01
S X C	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
S X T	NS	NS	NS	NS	NS	NS	NS	NS
S X D	NS	0.05	NS	0.01	0.01	NS	0.01	0.05
C X T	NS	NS	NS	NS	NS	NS	NS	NS
C X D	0.01	0.01	0.01	0.01	0.01	0.01	NS	0.01
T X D	NS	NS	NS	NS	NS	NS	NS	NS
FREE DRINKING								
Subjects	0.01	0.01	0.01	0.01	0.01	NS	0.01	0.01
Conditions	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01
Times	NS	0.05	NS	NS	0.01	0.01	NS	0.01
Days	NS	NS	NS	0.01	0.01	NS	NS	NS
S X C	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
S X T	NS	NS	NS	NS	NS	NS	NS	0.05
S X D	0.05	0.05	NS	0.01	0.01	0.05	NS	0.01
C X T	NS	0.01	0.05	NS	NS	0.01	NS	NS
C X D	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01
T X D	NS	NS	NS	NS	NS	NS	NS	NS
BOTH GROUPS	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01

Prog. Drinking

ANALYSIS OF VARIANCE (Anova)

Depression	Source	DF	Sum of Squares	Mean Square	F	P
	Tot. SS	674	28408.154			
	Mod. SS	130	27090.975	208.392	86.067	N.S.
	Err. SS	544	1317.179	2.421		
	Subj.	8	25919.914	3239.989	1338.128	< 0.01
	Cond.	4	109.472	27.368	11.303	< 0.01
	Time	2	9.327	4.664	1.926	N.S.
	Days	4	51.324	12.831	5.299	< 0.01
	SxC	32	723.834	22.619	9.342	< 0.01
	SxT	16	22.832	1.427	0.589	N.S.
	SxD	32	113.582	3.549	1.466	N.S.
	CxT	8	14.909	1.864	0.770	N.S.
	CxD	16	101.875	6.367	2.630	< 0.01
	TxD	8	23.902	2.988	1.234	N.S.
Carefree	Tot. SS	674	29872.741			
	Mod. SS	130	27531.090	211.778	49.199	N.S.
	Err. SS	544	2341.650	4.304		
	Subj.	8	22779.167	2847.396	661.492	< 0.01
	Cond.	4	2389.748	597.437	138.793	< 0.01
	Time	2	8.127	4.064	0.944	N.S.
	Days	4	8.755	2.189	0.509	N.S.
	SxC	32	1481.292	46.290	10.754	< 0.01
	SxT	16	42.326	2.645	0.615	N.S.
	SxD	32	222.151	6.942	1.613	< 0.05
	CxT	8	46.998	5.875	1.365	N.S.
	CxD	16	539.422	33.714	7.832	< 0.01
	TxD	8	13.102	1.638	0.380	N.S.
Friendliness	Tot. SS	674	9764.963			
	Mod. SS	130	8269.736	63.613	23.144	N.S.
	Err. SS	544	1495.227	2.748		
	Subj.	8	7322.109	915.264	332.995	< 0.01
	Cond.	4	150.178	37.544	13.660	< 0.01
	Time	2	12.465	6.232	2.268	N.S.
	Days	4	32.163	8.041	2.925	< 0.05
	SxC	32	391.342	12.229	4.449	< 0.01
	SxT	16	22.148	1.384	0.504	N.S.
	SxD	32	204.557	6.392	2.326	N.S.
	CxT	8	4.987	0.623	0.227	N.S.
	CxD	16	118.918	7.432	2.704	< 0.01
	TxD	8	10.868	1.358	0.494	N.S.

Prog. Drinking (Cont.)

	Source	DF	Sum of Squares	Mean Square	F	P
Hostility						
	Tot. SS	674	2119.549			
	Mod. SS	130	1606.969	12.361	13.119	N.S.
	Err. SS	544	512.581	0.942		
	Subj.	8	963.763	120.470	127.855	< 0.01
	Cond.	4	100.305	25.076	26.613	< 0.01
	Time	2	4.358	2.179	2.313	N.S.
	Days	4	3.979	0.995	1.056	N.S.
	SxC	32	398.148	12.442	13.205	< 0.01
	SxT	16	12.148	0.759	0.806	N.S.
	SxD	32	78.474	2.452	2.603	< 0.01
	CxT	8	6.797	0.849	0.902	N.S.
	CxD	16	35.784	2.236	2.374	< 0.01
	TxD	8	3.212	0.401	0.426	N.S.
Anxiety						
	Tot. SS	674	17599.505			
	Mod. SS	130	15969.644	122.843	41.002	N.S.
	Err. SS	544	1629.861	2.996		
	Subj.	8	14890.492	1861.311	621.252	< 0.01.
	Cond.	4	10.824	2.706	0.903	N.S.
	Time	2	6.492	3.246	1.083	.N.S.
	Days	4	32.779	8.195	2.735	< 0.05
	SxC	32	545.523	17.047	5.690	< 0.01.
	SxT	16	46.841	2.927	0.977	.N.S.
	SxD	32	267.034	8.345	2.785	< 0.01
	CxT	8	8.901	1.112	0.371	.N.S.
	CxD	16	137.902	8.619	2.877	< 0.01
	TxD	8	22.563	2.857	0.954	N.S.
Cognitive Gain						
	Tot. SS	674	3791.280			
	Mod. SS	130	3142.175	24.170	20.257	N.S.
	Err. SS	544	649.105	1.193		
	Subj.	8	2536.773	317.097	265.751	< 0.01
	Cond.	4	2.598	0.649	0.544	N.S.
	Time	2	0.062	0.031	0.026	N.S.
	Days	4	5.887	1.471	1.234	N.S.
	SxC	32	465.241	14.539	12.185	< 0.01
	SxT	16	10.604	0.663	0.555	N.S.
	SxD	32	40.619	1.269	1.064	N.S.
	CxT	8	12.708	1.588	1.331	N.S.
	CxD	16	63.238	3.952	3.312	< 0.01
	TxD	8	4.441	0.555	0.465	N.S.

Prog. Drinking (Cont.)

Guilty-Ashamed	Source	DF	Sum of Square	Mean Square	F	P
	Tot. SS	674	5677.280			
	Mod. SS	130	5249.772	40.383	51.387	N.S.
	Err. SS	544	427.508	0.786		
	Subj.	8	4885.493	610.687	777.093	< 0.01
	Cond.	4	53.354	13.338	16.973	< 0.01
	Time	2	0.275	0.138	0.175	N.S.
	Days	4	8.450	2.112	2.688	< 0.05
	SxC	32	210.299	6.572	8.363	< 0.01
	SxT	16	4.631	0.289	0.368	N.S.
	SxD	32	50.536	1.579	2.010	< 0.01
	CxT	8	3.117	0.389	0.496	N.S.
	CxD	16	30.216	1.888	2.403	N.S.
	TxD	8	3.398	0.428	0.541	N.S.
Fatigued						
	Tot. SS	674	1366.667			
	Mod. SS	130	1027.718	7.905	12.688	N.S.
	Err. SS	544	338.948	0.623		
	Subj.	8	817.707	102.213	164.049	< 0.01
	Cond.	4	38.015	9.504	15.253	< 0.01
	Time	2	6.249	3.124	5.015	< 0.01
	Days	4	10.385	2.596	4.167	< 0.01
	SxC	32	63.612	1.988	3.190	< 0.01
	SxT	16	8.311	0.519	0.834	N.S.
	SxD	32	30.975	0.968	1.554	< 0.05
	CxT	8	8.892	1.111	1.784	N.S.
	CxD	16	36.112	2.257	3.623	< 0.01
	TxD	8	7.455	0.932	1.496	N.S.

ANALYSIS OF VARIANCE

Free Drinking	Source	DF	Sum of Squares	Mean Square	F	P
Depression	Total SS	477	23302.477			
	Mod SS	105	20269.206	193.040	23.674	N.S.
	ERR. SS	372	3033.271	8.154		
	Subj.	7	16074.990	2296.427	281.634	< 0.01
	Cond.	2	155.875	77.938	9.558	< 0.01
	Time	3	24.802	8.267	1.014	N.S.
	Days	4	65.742	16.435	2.016	N.S.
	SXC	14	2437.219	174.087	21.350	< 0.01
	SXT	21	192.505	9.167	1.124	N.S.
	SXD	28	389.013	13.893	1.704	< 0.05
	CXT	6	15.387	2.564	0.315	N.S.
	CXD	8	886.629	110.828	13.592	< 0.01
	TXD	12	30.345	2.529	0.310	N.S.
Carefree	Total SS	477	14203.274			
	Mod SS	105	11233.162	106.982	13.399	N.S.
	ERR SS	372	2970.112	7.984		
	Subj.	7	5093.391	727.627	91.134	< 0.01
	Cond.	2	2370.307	1185.153	148.438	< 0.01
	Time	3	81.675	27.225	3.410	< 0.05
	Days	4	54.565	13.641	1.709	N.S.
	SXC	14	2016.154	144.011	18.037	< 0.01
	SXT	21	107.806	5.134	0.643	N.S.
	SXD	28	343.877	12.281	1.538	< 0.05
	CXT	6	163.118	27.186	3.405	< 0.01
	CXD	8	935.303	121.913	15.269	< 0.01
	TXD	12	31.575	2.631	0.330	N.S.

Free Drinking	Source	DF	Sum of Squares	Mean Square	F	P
Hostility	Total SS	477	21078.161			
	Mod SS	105	12379.941	117.904	5.042	N.S.
	ERR SS	372	8698.219	23.382		
	Subj.	7	4679.488	668.498	28.590	< 0.01
	Cond.	2	397.019	198.509	8.490	< 0.01
	Time	3	8.852	2.951	0.126	N.S.
	Days	4	456.179	114.045	4.877	< 0.01
	SXC	14	2100.649	150.046	6.417	< 0.01
	SXT	21	260.191	12.390	0.530	N.S.
	SXD	28	2816.904	100.604	4.303	< 0.01
	CXT	6	73.257	12.209	0.522	N.S.
	CXD	8	1043.306	175.413	7.502	< 0.01
	TXD	12	62.117	5.176	0.221	N.S.
Anxiety	Total SS	477	13874.111			
	Mod SS	105	11946.414	113.775	21.956	N.S.
	ERR SS	372	1927.697	5.182		
	Subj.	7	9765.916	1395.131	269.227	< 0.01
	Cond.	2	405.193	202.596	39.096	< 0.01
	Time	3	90.384	30.128	5.814	< 0.01
	Days	4	114.593	28.648	5.528	< 0.01
	SXC	14	610.029	43.573	8.409	< 0.01
	SXT	11	135.549	6.455	1.246	N.S.
	SXD	28	268.662	9.595	1.852	< 0.01
	CXT	6	44.349	7.391	1.426	N.S.
	CXD	8	449.007	56.126	10.831	< 0.01
	TXD	12	25.245	2.104	0.406	N.S.

Free Drinking	Source	DF	Sum of Squares	Mean Square	F	P
Cognitive Gain	Total SS	477	1663.238			
	Mod SS	105	1037.709	9.883	5.877	N.S.
	ERR SS	372	625.529	1.681		
	Subj.	7	197.478	28.211	16.777	N.S.
	Cond.	2	292.837	146.418	87.075	< 0.01
	Time	3	22.762	7.587	4.512	< 0.01
	Days	4	5.363	1.341	0.797	N.S.
	SXC	14	176.103	12.579	7.481	< 0.01
	SXT	21	22.894	1.090	0.648	N.S.
	SXD	28	84.396	3.014	1.793	< 0.05
	CXT	6	35.224	5.871	3.491	< 0.01
	CXD	8	173.039	21.629	12.863	< 0.01
	TXD	12	28.989	2.416	1.437	N.S.
Guilty Ashamed	Total SS	477	2873.925			
	Mod SS	105	2261.771	21.541	13.090	N.S.
	ERR SS	372	612.154	1.6456		
	Subj.	7	1937.455	276.779	168.196	< 0.01
	Cond.	2	10.027	5.013	3.047	< 0.05
	Time	3	1.559	0.418	0.254	N.S.
	Days	4	4.695	1.174	0.713	N.S.
	SXC	14	197.487	14.106	8.572	< 0.01
	SXT	21	16.792	0.799	0.486	N.S.
	SXD	28	33.573	1.199	0.729	N.S.
	CXT	6	18.301	3.050	1.854	N.S.
	CXD	8	28.275	3.534	2.148	< 0.05
	TXD	12	9.914	0.826	0.502	N.S.

Free Drinking	Source	DF	Sum of Squares	Mean Square	F	P
Fatigue	Total SS	477	2435.458			
	Mod SS	105	1931.183	18.392	13.568	N.S.
	ERR SS	372	504.275	1.355		
	Subj.	7	1361.059	194.437	143.435	< 0.01
	Cond.	2	137.826	68.913	50.836	< 0.01
	Time	3	17.172	5.724	4.223	< 0.01
	Days	4	11.264	2.816	2.077	N.S.
	SXC	14	204.579	14.613	10.780	< 0.01
	SXT	21	46.957	2.236	1.650	< 0.05
	SXD	28	72.248	2.580	1.903	< 0.01
	CXT	6	10.008	1.668	1.230	N.S.
	CXD	8	60.141	7.517	5.546	< 0.01
	TXD	12	11.438	0.953	0.703	N.S.
Friend-liness	Total SS	477	11196.738			
	Mod SS	105	8870.549	84.481	13.510	N.S.
	ERR SS	372	2326.193	6.253		
	Subj.	7	7054.279	1007.754	161.158	< 0.01
	Cond.	2	307.837	153.919	24.614	< 0.01
	Time	3	34.321	11.440	1.830	N.S.
	Days	4	45.372	11.343	1.814	N.S.
	SXC	14	431.317	30.804	4.927	< 0.01
	SXT	21	122.853	5.850	0.936	N.S.
	SXD	28	190.259	6.795	1.087	N.S.
	CXT	6	97.669	16.278	2.603	< 0.01
	CXD	8	534.398	66.799	10.682	< 0.01
	TXD	12	39.912	2.826	0.452	N.S.

ANALYSIS OF VARIANCE — 2 GROUPS: (PROG'D. & FREE DRINKING)

SOURCE OF VARIATION	DF	SUM OF SQUARES	MEAN SQUARE	F	P
DEPRESSION					
TOTAL SS	1152	54731.266			
MOD SS	1	3020.635	3020.652	67.235	<0.01
ERR SS	1151	51710.631	44.927		
GROUPS	1	3020.635	3020.635	67.234	<0.01
CAREFREE					
TOTAL SS		44431.341			
MOD SS		355.326	355.326	9.279	<0.01
ERR SS		44076.015	38.294		
GROUPS		355.326	355.326	9.279	<0.01
FRIENDLINESS					
TOTAL SS		22233.284			
MOD SS		1271.582	1271.582	69.822	<0.01
ERR SS		20961.701	18.212		
GROUPS		1271.582	1271.582	69.822	<0.01
HOSTILITY					
TOTAL SS		24412.206			
MOD SS		1214.496	1214.496	60.260	<0.01
ERR SS		23197.711	20.154		
GROUPS		1214.496	1214.496	60.260	<0.01
ANXIETY					
TOTAL SS		34662.082			
MOD SS		3188.465	3188.465	116.603	<0.01
ERR SS		31473.616	27.344		
GROUPS		3188.465	3188.465	116.603	<0.01

SOURCE OF VARIATION	DF	SUM OF SQUARES	MEAN SQUARE	F	P
COGNITIVE GAIN					
TOTAL SS	1152	5478.992			
MOD SS	1	24.474	24.474	5.164	<0.05
ERR SS	1152	5454.518	4.739		
GROUPS	1	24.474	24.474	5.164	<0.05
GUILTY-ASHAMED					
TOTAL SS		8910.142			
MOD SS		358.937	358.937	48.313	<0.01
ERR SS		8551.205	7.429		
GROUPS		358.937	358.937	48.313	<0.01
FATIGUE					
TOTAL SS		3977.884			
MOD SS		175.759	175.759	53.207	<0.01
ERR SS		3802.125	3.303		
GROUPS		175.759	175.759	53.207	<0.01

DUNCAN MULTIPLE RANGE TEST AT 5% LEVEL — PROG'D. DRINK

DEPRESSION

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
7	16.936	0.169	21.253	Itself Only (I0)
3	1.296	0.169	5.613	I0
9	0.157	0.169	4.160	I0
4	-2.250	0.169	2.067	6,1
6	-2.357	0.169	1.960	4,1
1	-2.570	0.169	1.747	4,6
5	-3.237	0.169	1.080	I0
8	-3.770	0.169	0.547	2
2	-3.890	0.169	0.427	8
COND.				
1	0.742	0.119	5.059	I0
3	-0.050	0.119	4.267	4,2
4	-0.058	0.119	4.259	3,2
2	-0.154	0.119	4.163	3,4,5
5	-0.480	0.119	3.837	2
TIME				
2	0.092	0.085	4.409	1,3
1	0.074	0.085	4.391	2,3
3	-0.166	0.085	4.151	2,1
DAYS				
1	0.342	0.119	4.659	2
2	0.327	0.119	4.644	1
3	-0.161	0.119	4.155	4,5
4	-0.235	0.119	4.081	3,5
5	-0.272	0.119	4.044	3,4

PROG'D. DRINK

CAREFREE

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
6	10.757	0.226	22.053	Itself Only (IO)
8	8.490	0.226	19.787	IO
3	2.157	0.226	13.453	IO
1	-0.416	0.226	10.880	9
9	-0.709	0.226	10.587	1
2	-2.722	0.226	8.573	IO
5	-5.323	0.226	5.973	IO
4	-6.003	0.226	5.293	7
7	-6.229	0.226	5.067	4
COND.				
1	3.015	0.159	14.311	IO
2	0.926	0.159	12.222	IO
3	0.074	0.159	11.222	IO
4	-1.563	0.159	9.733	IO
5	-2.303	0.159	8.992	IO
TIME				
2	0.148	0.113	11.444	3,1
3	-0.034	0.113	11.262	2,1
1	-0.114	0.113	11.182	2,3
DAYS				
3	0.111	0.159	11.407	1,4,5,2
1	0.104	0.159	11.400	3,4,5,2
4	0.059	0.159	11.356	2,1,5,2
5	-0.118	0.159	11.178	3,1,4,2
2	-0.155	0.159	11.140	3,1,4,5

PROG'D. DRINK

FRIENDLINESS

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
8	4.672	0.180	17.480	Itself Only (IO)
4	4.006	0.180	16.813	IO
6	2.086	0.180	14.893	IO
1	1.206	0.180	14.013	IO
3	-0.781	0.180	12.027	7,5
7	-1.194	0.180	11.613	3,5
5	-1.261	0.180	11.547	3,7
9	-1.901	0.180	10.907	IO
2	-6.834	0.180	5.973	IO
COND.				
3	0.518	0.128	13.326	1
1	0.378	0.128	13.185	3,2
2	0.089	0.128	12.897	1,4
4	-0.170	0.128	12.637	2
5	-0.815	0.128	11.993	IO
TIME				
1	0.184	0.09	12.99	2
2	-0.043	0.09	12.76	1,3
3	-0.141	0.09	12.67	2
DAYS				
3	0.237	0.128	13.044	5,4,1
5	0.133	0.128	12.941	3,4,1
4	0.096	0.128	12.904	3,5,1
1	-0.081	0.128	12.726	3,5,4,2
2	-0.385	0.128	12.422	1

PROG'D. DRINK

HOSTILITY

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
7	3.339	0.106	4.120	Itself Only (IO)
4	-0.194	0.106	0.587	3,8,6,1,9
3	-0.247	0.106	0.533	4,8,6,1,9
8	-0.274	0.106	0.507	4,3,6,1,9
6	-0.314	0.106	0.467	4,3,8,1,9
1	-0.421	0.106	0.360	4,3,8,6,9,2
9	-0.434	0.106	0.347	4,3,8,6,1,2
2	-0.687	0.106	0.093	1,9,5
5	-0.767	0.106	0.013	2
COND.				
4	0.501	0.075	1.281	5
5	0.441	0.075	1.222	4
3	-0.284	0.075	0.496	1,2
1	-0.321	0.075	0.459	3,2
2	-0.336	0.075	0.444	3,1
TIME				
2	0.112	0.053	0.893	1,3
1	-0.043	0.053	0.738	2,3
3	-0.069	0.053	0.711	2,1
DAYS				
5	0.093	0.075	0.874	2,1,4,3
2	0.034	0.075	0.818	5,1,4,3
1	0.027	0.075	0.807	5,2,4,3
4	-0.017	0.075	0.763	5,2,1,3
3	-0.136	0.075	0.644	5,2,1,4

PROG'D. DRINKING

ANXIETY

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
7	12.121	0.189	16.413	Itself Only (IO)
4	2.055	0.189	6.347	IO
8	0.988	0.189	5.280	IO
3	-0.158	0.189	4.133	IO
6	-2.145	0.189	2.147	IO
5	-2.771	0.189	1.520	9
9	-3.065	0.189	1.227	5,1
1	-3.372	0.189	0.920	9,2
2	-3.652	0.189	0.639	1
COND.				
1	0.204	0.133	4.496	5,4,3,2,
5	0.049	0.133	4.341	1,4,3,2
4	0.004	0.133	4.296	1,5,3,2
3	-0.092	0.133	4.2	1,5,4,2
2	-0.166	0.133	4.126	1,5,4,3
TIME				
1	0.09	0.094	4.38	2,3
2	0.046	0.094	4.34	1,3
3	-0.136	0.094	4.15	1,2
DAYS				
2	0.434	0.133	4.726	IO
3	-0.047	0.133	4.244	1,4,5
1	-0.092	0.133	4.200	3,4,5
4	-0.136	0.133	4.155	3,1,5
5	-0.158	0.133	4.133	3,1,4

PROG'D. DRINK

COGNITIVE GAIN

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
6	2.04	0.119	9.16	7,8
7	2.04	0.119	9.16	6,8
8	1.76	0.119	8.88	6,7
1	1.373	0.119	8.493	Itself Only (IO)
3	0.16	0.119	7.28	IO
9	-0.813	0.119	6.307	4
4	-1.107	0.119	6.013	9,5
5	-1.36	0.119	5.76	4
2	-4.093	0.119	3.027	IO
COND.				
2	0.102	0.084	7.222	5,3,4,1
5	0.021	0.084	7.141	2,3,4,1
3	-0.001	0.084	7.118	2,5,4,1
4	-0.004	0.084	7.081	2,5,3,1
1	-0.089	0.084	7.037	2,5,3,4
TIME				
2	0.009	0.059	7.129	1,3
1	0.004	0.059	7.124	2,3
3	-0.013	0.059	7.107	2,1
DAYS				
5	0.139	0.084	7.259	1,3,2,4
1	0.073	0.084	7.192	5,3,2,4
3	-0.024	0.084	7.096	5,1,2,4
2	-0.075	0.084	7.044	5,1,3,4
4	-0.112	0.084	7.007	5,1,3,2

PROG'D. DRINK.

GUILTY-ASHAMED

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
3	4.507	0.096	8.627	Itself Only (IO)
7	3.76	0.096	7.88	IO
9	1.32	0.096	5.44	IO
2	0.72	0.096	4.84	IO
6	-0.587	0.096	3.533	IO
4	-1.16	0.096	2.96	IO
5	-2.16	0.096	1.96	1
1	-2.307	0.096	1.813	5
8	-4.093	0.096	0.027	IO
COND.				
2	0.309	0.068	4.429	1
1	0.243	0.068	4.363	2
3	0.013	0.068	4.133	4
4	-0.083	0.068	4.037	3
5	-0.483	0.068	3.637	IO
TIME				
2	0.022	0.048	4.142	1,3
1	0.004	0.048	4.124	2,3
3	-0.027	0.048	4.093	2,1
DAYS				
2	0.102	0.068	4.222	4,3,5
4	0.087	0.068	4.207	2,3,5
3	0.028	0.068	4.148	2,4,5
5	-0.009	0.068	4.111	2,4,3,1
1	-0.209	0.068	3.911	5

PROG'D DRINK

FATIGUE

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
7	2.182	0.086	3.76	Itself Only (IO)
4	1.542	0.086	3.12	IO
6	0.289	0.086	1.867	IO
8	-0.151	0.086	1.427	1
1	-0.364	0.086	1.213	8,5
5	-0.418	0.086	1.16	1
3	-0.684	0.086	0.893	IO
9	-1.124	0.086	0.453	2
2	-1.271	0.086	0.307	9
COND.				
4	0.378	0.061	1.955	IO
2	0.148	0.061	1.726	IO
3	-0.111	0.061	1.467	5,1
5	-0.111	0.061	1.467	3
1	-0.304	0.061	1.274	3
TIME				
3	0.102	0.043	1.68	1
1	0.027	0.043	1.604	3
2	-0.129	0.043	1.449	IO
DAYS				
2	0.185	0.061	1.763	3,1
3	0.081	0.061	1.659	2,1
1	-0.434	0.061	1.578	2,3,4,5
4	-0.118	0.061	1.459	1,5
5	-0.148	0.061	1.429	1,4

DUNCAN MULTIPLE RANGE TEST AT 5% LEVEL FREE DRINKING

DEPRESSION

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
8	9.946	0.348	17.581	Itself Only (IO)
4	4.731	0.345	12.367	IO
6	3.699	0.348	11.334	IO
7	1.148	0.345	8.783	2
2	0.315	0.345	7.95	7
1	-5.352	0.345	2.283	IO
5	-6.869	0.345	0.767	3
3	-7.619	0.345	0.017	5
COND.				
3	0.458	0.184	8.094	2
2	0.345	0.185	7.981	3
1	-0.804	0.184	6.831	IO
TIME				
1	0.356	0.259	7.991	4,2,3
4	0.023	0.259	7.658	1,2,3
2	-0.126	0.267	7.509	1,4,3
3	-2.530	0.267	7.382	1,4,2
DAYS				
2	0.645	0.262	8.279	1,5
1	0.094	0.261	7.729	2,5,3,4
5	-0.009	0.262	7.626	2,1,3,4
3	-0.354	0.261	7.281	1,5,4
4	-0.375	0.261	7.260	1,5,3

FREE DRINKING

CAREFREE

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
5	4.301	0.341	14.45	Itself Only (IO)
6	3.088	0.344	13.237	IO
7	1.134	0.341	11.283	1,2
1	1.101	0.341	11.25	7,2
2	0.217	0.341	10.367	7,1,3
3	-0.516	0.341	9.633	2
4	-2.232	0.341	7.917	IO
8	-7.094	0.344	3.055	IO
COND.				
1	3.069	0.183	0.132	IO
2	-0.945	0.183	9.204	IO
3	-2.124	0.183	8.025	IO
TIME				
2	0.519	0.224	10.669	3
3	0.262	0.224	10.411	2,1
1	-0.249	0.224	9.9	3,4
4	-0.532	0.224	9.617	1
DAYS				
3	0.278	0.258	10.427	1,4,5
1	0.236	0.258	10.385	3,4,5
4	0.153	0.258	10.302	3,1,5,2
5	-0.021	0.259	10.128	3,1,4,2
2	-0.646	0.259	9.503	4,5

FREE DRINKING

FRIENDLINESS

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
2	5.801	0.302	16.483	6
6	5.612	0.304	16.295	2
5	1.917	0.302	12.6	Itself Only (IO)
1	-0.416	0.302	10.267	8
8	-0.966	0.304	9.717	1
7	-3.283	0.302	7.4	IO
4	-4.283	0.302	6.4	3
3	-4.383	0.302	6.3	4
COND.				
1	1.048	0.162	11.731	IO
2	-0.153	0.162	10.529	IO
3	-0.895	0.162	9.787	IO
TIME				
2	0.389	0.198	11.072	1,3
1	0.092	0.198	10.775	2,3,4
3	-0.166	0.198	10.517	2,1,4
4	-0.316	0.198	10.367	1,3
DAYS				
3	0.328	0.228	11.01	4,2,5
4	0.192	0.228	10.875	3,2,5,1
2	0.150	0.229	10.833	3,4,5,1
5	-0.134	0.229	10.549	3,4,2,1
1	-0.537	0.228	10.146	4,2,5

FREE DRINKING

HOSTILITY

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
8	7.689	0.589	10.55	Itself Only (IO)
7	1.155	0.584	4.017	4
4	0.339	0.584	3.2	7,5
5	-0.928	0.584	1.933	4,6,1,2,3
6	-1.706	0.589	1.155	5,1,2,3
1	-1.844	0.584	1.017	5,6,2,3
2	-1.861	0.584	0.999	5,6,1,3
3	-2.844	0.584	0.017	5,6,1,2
COND.				
3	1.051	0.312	3.912	2
2	0.116	o.314	2.977	3
1	-0.117	0.312	1.694	IO
TIME				
1	0.18	0.383	3.042	4,2,3
4	0.022	0.383	2.883	1,2,3
2	-0.084	0.384	2.861	1,4,3
3	-0.203	0.384	2.658	1,4,2
DAYS				
1	1.92	0.442	4.781	IO
5	-0.295	0.444	2.566	2,3,4
2	-0.351	0.444	2.510	5,3,4
3	-0.486	0.442	2.375	5,2,4
4	-0.788	0.442	2.073	5,2,3

FREE DRINKING

ANXIETY

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
8	7.675	0.277	15.358	Itself Only (IO)
4	4.934	0.275	12.617	IO
6	1.357	0.277	9.039	2
2	0.850	0.275	8.533	4
7	-0.349	0.275	7.333	IO
5	-2.533	0.275	5.15	IO
1	-5.466	0.275	2.217	IO
3	-6.466	0.275	1.217	IO
COND.				
3	1.111	0.147	8.794	IO
2	0.028	0.147	7.711	IO
1	-1.139	0.147	6.544	IO
TIME				
1	0.669	0.180	8.35	IO
2	-0.005	0.181	7.678	4,3
4	-0.163	0.180	7.567	2,3
3	-0.546	0.181	7.137	2,4
DAYS				
2	0.895	0.209	8.578	IO
1	0.161	0.208	7.848	5,3,4
5	-0.304	0.209	7.379	1,3,4
3	-0.329	0.208	7.354	1,5,4
4	-4.226	0.208	7.260	1,5,3

FREE DRINKING

COGNITIVE GAIN

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
3	0.948	0.157	7.767	5
5	0.514	0.157	7.333	3,2,6,7
2	0.298	0.157	7.117	5,6,7,8
6	0.203	0.158	7.022	5,2,7,8
7	1.144	0.157	6.933	5,2,6,8
8	-0.156	0.158	6.662	2,6,7
1	-0.719	0.157	6.1	10
4	-1.202	0.157	5.617	10
COND.				
1	1.106	0.084	7.925	10
3	-0.544	0.084	6.275	2
2	-0.562	0.084	6.257	3
TIME				
3	0.137	0.103	6.956	2,1
2	0.125	0.103	6.944	3,1
1	0.114	0.103	6.933	3,2
4	-0.377	0.103	6.442	10
DAYS				
1	0.191	0.184	7.01	3,4,5,2
3	-0.006	0.184	6.812	1,4,5,2
4	-0.017	0.184	6.802	1,3,5,2
5	-0.034	0.190	6.785	1,3,4,2
2	-0.134	0.190	6.685	1,3,4,5

FREE DRINKING

GUILTY-ASHAMED

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
6	3.509	0.156	6.506	Itself Only (IO)
2	1.336	0.155	4.333	7
7	1.019	0.155	4.017	2,4
4	0.769	0.155	3.767	7
8	0.273	0.156	3.269	IO
1	-1.714	0.155	1.2833	IO
5	-2.197	0.155	0.799	IO
3	-2.997	0.155	-0.954	IO
COND.				
3	0.203	0.083	3.2	IO
1	0.078	0.083	2.919	2
2	0.125	0.083	2.872	1
TIME				
3	0.055	0.102	3.051	2,1,4
2	0.048	0.102	3.045	3,1,4
1	-0.047	0.101	2.95	3,2,4
4	-0.055	0.101	2.945	3,2,1
DAYS				
2	0.182	0.118	3.179	5,1,3,4
5	-0.014	0.118	2.983	2,1,3,4
1	-0.018	0.117	2.979	2,5,3,4
3	-0.028	0.117	2.969	2,5,1,4
4	-0.122	0.117	2.875	2,5,1,3

FREE DRINKING

FATIGUED

SOURCE OF VARIATION

SUBJECT	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
8	3.008	0.142	5.386	Itself Only (IO)
4	1.806	0.141	4.183	IO
2	0.706	0.141	3.083	IO
7	-0.227	0.141	2.15	6
6	-0.243	0.142	2.134	7
1	-0.711	0.141	1.667	IO
3	-2.027	0.141	0.349	5
5	-2.311	0.141	0.067	3
COND.				
3	0.6599	0.075	3.037	IO
2	-0.007	0.075	2.370	IO
1	-0.652	0.075	1.725	IO
TIME				
4	0.272	0.092	2.65	3,1
3	0.027	0.092	2.401	4,1,2
1	-0.036	0.092	2.342	4,3,2
2	-0.260	0.092	2.117	3,1
DAYS				
2	0.249	0.107	2.626	3
3	0.112	0.106	2.489	2,5,1,4
5	-0.106	0.107	2.271	3,1,4
1	-0.127	0.106	2.25	3,5,4
4	-0.127	0.106	2.25	3,5,1

DUNCAN MULTIPLE RANGE TEST AT 5% LEVEL — 2 GROUPS (PROG'D. & FREE DRINKING)

GROUPS	CONSTANT	SE OF CONSTANT	MEAN	HOMOGENEOUS WITH
DEPRESSION				
2	1.643	2.00	7.602	Itself Only (IO)
1	-1.643	2.00	4.317	IO
CAREFREE				
1	0.563	0.185	0.113	IO
2	-0.563	0.185	0.102	IO
FRIENDLINESS				
1	1.066	0.127	0.128	IO
2	-1.066	0.127	0.107	IO
HOSTILITY				
2	1.042	0.134	2.864	IO
1	-1.042	0.134	0.781	IO
ANXIETY				
2	1.688	0.156	7.667	IO
1	-1.688	0.156	4.292	IO
COG. GAIN				
1	0.148	0.065	7.12	IO
2	-0.148	0.065	6.824	IO
GUILT				
1	0.566	0.081	4.12	IO
2	-0.566	0.081	2.987	IO
FATIGUE				
2	0.396	0.054	2.37	IO
1	-0.396	0.054	1.578	IO

t-TEST CORRELATED DIFFERENCES PROG'D.

SOBER VS DRINKING 2

CAREFREE

X	Y	
12.13	11.47	↓
15.6	9	↓
14.13	13.27	↓
12.73	2.2	↓
11.4	3	↓
24.4	20.6	↓
5.87	5.87	↓
23.73	17.13	↓
15.47	6.13	↓

Sum of D = 47.86
Sum of D Squared = 372.5566
N = 9
t = 4.153 p < 0.01

FATIGUE

X	Y	
1.13	1.16	↑
0.53	0.07	↓
0.67	1.2	↑
2.93	3.4	↑
1	1.27	↑
1.6	3.2	↑
2.87	4.27	↑
0.8	2.27	↑
0	0.6	↑

Sum of D = -6.35
Sum of D Squared = 8.0481
N = 9
t = -3.1695 p < 0.02

t-TEST CORRELATED DIFFERENCES PROG'D.

DRINKING 2 VS WITHDRAW 2

DEPRESSION

X	Y	
2	4.2	↑
2	4.6	↑
1	1.8	↑
4	4	=
9.3	10.4	↑
8	5.4	↓
2	1.2	↓
46.6	43.7	↓

Sum of D = -.4
Sum of D Squared = 29.26
N = 9
t = -.0698 N.S.

Test inverse -
$t^2 = F$
$t^2 = 0.0049 = F$
$F = 204.0816 \quad n_1 = 8 \quad n_2 = 1$
$0.10 > p > 0.05$

HOSTILITY

X	Y	
0	1	↑
0	1.6	↑
0.6	1.8	↑
0	5.6	↑
0	2.6	↑
0.3	0.3	=
6.6	12.2	↑

Sum of D = -17.6
Sum of D Squared = 74.48
N = 9
t = -2.6216 $p < 0.05$

t-TEST CORRELATED DIFFERENCES FREE

SOBER VS DRINKING

CAREFREE

X	Y	
15.1	10.75	↓
10.75	9.75	↓
11.15	9.3	↓
8.85	7.85	↓
16.2	15.5	↓
19.75	12	↓
18.85	5.7	↓
4.6	2.65	↓

Sum of D = 31.75
Sum of D Squared = 261.6225
N = 8
t = 2.5503 $p < 0.05$

FRIENDLINESS

X	Y	
12	8.4	↓
16.3	16.5	↑
6.35	5.85	↓
6.45	6.15	↓
12.95	13.2	↑
17.9	16.15	↓
10.4	4.8	↓
10.5	10.7	↑

Sum of D = 12.1
Sum of D Squared = 49.865
N = 8
t = 2.0146 $p < 0.10$

t-TEST CORRELATED DIFFERENCES FREE

SOBER VS DRINKING

COGNITIVE GAIN

X	Y	
7.4	6.15	↓
7.6	6.65	↓
8.85	6.65	↓
6.1	5.35	↓
7.75	7.5	↓
9.1	6.45	↓
9.05	5.05	↓
7.55	6.3	↓

Sum of D = 13.3
Sum of D Squared = 32.515
N = 8
t = 3.857 $p < 0.01$

HOSTILITY

X	Y	
0.4	1.3	↑
0.7	1.4	↑
0	0.05	↑
2.65	3.2	↑
1.85	2.6	↑
1.05	1.65	↑
1.5	6.1	↑
5.4	7.5	↑

Sum of D = -10.25
Sum of D Squared = 28.0975
N = 8
t = -2.4785 $p < 0.05$

ABSTRACT

Mood Changes in Alcoholic Subjects with
Programmed and Free-Choice Experimental Drinking of Alcohol

By: David Davis M.B., Ch.B.

Two studies of programmed and free-choice experimental drinking of alcohol with chronic alcoholic subjects were conducted to determine: (1) the effect of alcohol on self-reported mood scores, (2) the trends in mood over five day periods of drinking, (3) the effect of anticipation of the first drink on mood, (4) the effect of the same one dose of alcohol at the same time each day over a five day period of drinking, (5) the relationship of blood alcohol levels to mood scores, (6) the difference in mood scores between subjects, and (7) the difference in mood scores and alcohol levels between the programmed and free-choice drinking designs. Nine chronic alcoholics took part in the programmed study and eight in the free-choice study. All subjects had full physical and mental status examinations, laboratory studies, mood assessments and Breathalyzer tests. The mood was assessed by a Q-sort developed from the Lorr-McNair mood adjective checklist. Several devices were introduced to assure the reliability and validity of the instrument.

It was found that in both groups there was a significant decrease in "carefree" and "friendliness" scores and an increase in "hostility" scores during the drinking periods, as well as other mood score changes peculiar to each group. The data also suggest that a decrease in the score on the

"carefree" scale may have been a more sensitive indicator of lowering of mood than an increase on the "depression" scale. These mood changes tended to increase or decrease as drinking progressed, with the levels of "hostility" and "anxiety" being altered significantly in the first two days of free-choice drinking. For the total subjects, differences before, after, and between drinking for "carefree", "anxiety", "cognitive gain" and "fatigue" scores in free-choice drinking were significant, while change in the "fatigue" score was the major difference during programmed drinking. The increase in depression and anxiety which occurred in most subjects in anticipation of drinking may have clinically significant implications. The variation of mood patterns among subjects emphasizes the importance of an individualized interpretation of the findings. Clustered patterns indicate the high probability that mood profiles among alcoholics are definable, with potential value in formulating therapeutic programs.

These studies were designed and carried out by the author in 1969-70 in the Alcohol Study Unit of Professor Jack Mendelson at St. Elizabeths Hospital, Washington, D.C., U.S.A. During this time the author was a visiting scientist with the National Center for the Prevention and Control of Alcoholism of the National Institute of Mental Health. This report has been written up by the author and is respectfully submitted to the Faculty of Medicine in fulfillment of the requirements for the degree of Doctor of Medicine.

David Davis

David Davis, M.B., Ch.B.
1 September 1973