

# General Papers

## ELECTROSLEEP THERAPY

### A Controlled Study of its Effects In Anxiety Neurosis\*

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Electrosleep, or cerebral electrotherapy (CET) evolved as a method of treating stress disorders using a low amplitude, pulsating direct current. The concept of using electrical current for this purpose, "to induce a state of protective inhibition of the neurones", is said to have originated with Pavlov (10). The enthusiasm for this form of treatment has been particularly marked in the Soviet Union and Eastern Europe, with many case reports commending its use in anxiety, insomnia and a wide range of other conditions. There is general agreement that anxiety is the symptom which best responds to CET (13). However, clinical trials employing "blind" subjects and controls provide contradictory evidence about the therapeutic value of CET.

A recent review (14) pointed out that these controlled studies were equally divided between those in which the active treatment was superior and those in which it did not significantly differ from placebo treatment in its effect. None of the four trials which demonstrated the effectiveness of CET had identical treatment conditions; the subjects experienced tingling due to the electric current during active, but not during placebo treatment. In three of the four trials in which no specific CET effect was found, the subjects' experiences of the active and placebo conditions were identical.

This review (14) recommended that in

clinical trials of CET both experimental conditions should be identical, and that the placebo as well as the active condition should be attended by cutaneous sensation. Other recommendations from this same review included in this investigation are the crossover design, the positions of the electrodes and the duration of treatment. The first aim of this study, therefore, was to determine if CET had a direct treatment effect under these more rigorous experimental conditions.

One argument employed to support the contention that CET's action is really a placebo effect was that the current employed was too weak to pass through the skull and affect the brain. The demonstration of changes in potential at intracerebral electrodes in subjects undergoing CET appears to have answered this criticism (1). However, this does not mean that this effect upon cerebral electrical activity will translate into beneficial physiological changes elsewhere.

Two investigators examined the effects of CET on the autonomic nervous system (4, 15). Both found changes in pulse rate, blood pressure and respiration rate, before, during and after treatment. Neither study reported the level of statistical significance of the observed changes, nor did they employ any form of control group. A second aim, therefore, of this investigation was to determine if CET produced significant autonomic nervous system changes under the conditions of a double-blind crossover.

### Method

The overall strategy was to measure the changes which occurred in patients with anxiety neurosis, who were receiving either active or

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placebo CET. Each treatment was given for five consecutive days, with a two day rest between, using a double-blind crossover design.

#### Subjects

The subjects were ten consecutive patients who were seen by two staff psychiatrists and who fulfilled the following criteria. They had a primary diagnosis of anxiety neurosis as defined in the DSM-II. The condition had been present for at least three months, and they were free from any physical illness, or other psychiatric disorder. They were told that a mild electrical treatment, called electro-relaxation therapy, might help their condition and they gave their consent to this before being referred to the study.

There were four females and six males in the group with ages ranging from 17 to 52 years. Any medication was kept constant for at least one week before starting the trial, during the two weeks of treatment, and throughout the four week follow-up period.

#### Treatment

A Neurotone 101 (9) set to give a 20 V unidirectional square wave of 2 msec duration at a frequency of 100 Hz. with a maximum current of 1.5 mA was used to administer CET. The four electrodes were gauze pads soaked in normal saline, the anodes being applied to the forehead and the cathodes to the mastoid area. At the start of treatment the current was increased until the tingling sensation was unpleasant and then turned down to a level at which the subject felt comfortable.

In the placebo condition the electrode pair placed on the forehead were an anode and a cathode, and as they were approximately 2 cm. apart, the current flowed in the skin between them and not through the cranium. The electrodes placed on the mastoid areas were not electrically connected. Thus, the subjects experienced a tingling sensation on the forehead, which is the more sensitive area, whether they were receiving active treatment or placebo.

Subjects received the treatment each afternoon, for thirty minutes on five consecutive weekdays starting on a Monday. Following a two-day interval they resumed treatment on the next Monday for a further five days. The first subject was randomly allocated to placebo treatment for the first week and received active treatment the second week. Each subsequent subject entering the trial received treatment in the opposite order to the one before. Treatment

was given in a quiet darkened room with the subjects recumbent on a hospital stretcher.

#### Measures

Weekly measures were made of the subjects' symptoms at the following times:

- a) Day 1 — immediately before the trial started.
- b) Day 8 — two days after the first five treatment days and immediately before the next five days of treatment.
- c) Day 15 — two days after the second five treatment days were completed.
- d) Day 22 — one week later.
- e) Day 43 — four weeks after completion of treatment.

The following assessments were made on these days:

- i) *Psychiatric Clinical Assessment*: A scale similar to one used in a previous study (8) was employed. On the basis of a clinical interview a staff psychiatrist scored the subjects' anxiety, depression and insomnia on an eight-point scale (0-7) on that day. There were two scores for each symptom, the subjective and objective. Sleep was scored on both its duration and quality. The psychiatrist did not know the treatment order.
- ii) *Eysenck Personality Inventory (EPI)*: The Neuroticism Scores were given as a measure of trait anxiety (3). Forms A and B were administered alternately in a balanced design. EPI norms for American College students were used and the scores on Form B transformed to give equivalent raw scores to those on Form A for use in the data analysis.
- iii) *State Trait Anxiety Inventory (STAII)*: The STAII comprises two self-report scales for measuring state and trait anxiety (12).
- iv) *Complaint Checklist (CC)*: The subjects listed in order of their importance the symptoms and behaviours which they hoped would be changed by CET. They were then asked to rate them in terms of severity on an eleven-point scale for 0 (absent) to 10 ("severest"). Only the most severe were used in the analysis.

Daily measures made were of two kinds, physiological and psychological. The physiological recordings were made immediately before CET with the subjects resting and the electrodes in place, in the middle, from the fifteenth to the seventeenth minute of actual treatment, and as soon as the CET machine was switched off. Pulse, respiration and blood pressure recordings were made on a Lafayette Datagraph. The blood pressure was recorded after pulse

and respiration and was omitted from the mid-treatment assessment, as inflation of the cuff was a potentially disturbing procedure.

The daily psychological measures were made before and after treatment and were as follows:

a) *The IPAT Eight Parallel-Form Anxiety Battery* (1969): Three of the forms, which have the best construct validity and interform reliability (F, D and B), were used as measures of anxiety. They were each given an equal number of times in a randomized order.

b) *Muscle Tension-Anxiety Self Rating Scale*: This form used a horizontal 10 cm. line, the left end being marked "none" and the right end "severest". The subjects were asked to mark on the line the point which best described their muscle tension and on another line their anxiety. They were not allowed to see their previous marks. The scores were determined by measuring the distance in millimeters from the left end of the line to the marked point.

#### Statistical Analysis

The principal method of statistical analysis was by analysis of variance using a computer program capable of handling a multifactorial design with repeated measures. All raw data were transformed into T-scores with a mean of 50 and a standard deviation of 10 before entering them in the analysis.

## Results

### Overall Effect of CET

A factorial analysis of variance was carried out on the weekly data to determine if significant changes had occurred in the subjects following CET. There were two "Order" variables (active/placebo and placebo/active) five "Type of Dependent Variable", (Psychiatric Clinical Assessment, EPI - Neuroticism, STAI-Trait and State Anxiety and Complaint Checklist) and five "Day" variables (Days 1, 8, 15, 22 and 43). The results of this analysis are summarized in Table I.

"Day", a within-subjects variable, produced a significant main effect  $F(4, 32) = 4.667, p < 0.005$ . A post hoc test of the significances of the differences between all the means of the pooled  $T =$  scores were made using Tukey's test (6) and this is set out in Table II. It shows that there is a significant difference between the subjects' scores on Day 1 and all subsequent Days and between Day 8 and Days 22 and 43.

Table I also shows a significant interaction between "Day" and "Type of Dependent Variable",  $F(16, 128) = 2.57, p <$

TABLE I  
SUMMARY OF OVERALL ANALYSIS OF VARIANCE ON WEEKLY DATA

Source	SS	df	MS	F-ratio	p
Order (O)	19.088	1	19.088	.012	.91133
Error	12596.900	8	1574.610		
Type of dependent variable (DV)	.000	4	.000	.000	.99991
O x DV	1038.390	4	259.596	2.763	.04374*
Error	3006.600	32	93.956		
Day (D)	1383.230	4	345.807	4.667	.00468*
O x D	63.944	4	15.986	.216	.92621
Error	2371.320	32	74.104		
DV x D	967.703	16	60.482	2.570	.00203*
O x DV x D	540.245	16	33.765	1.435	.13553
Error	3012.550	128	23.536		
Total	25000.000	249			

**TABLE II**  
**DIFFERENCES BETWEEN ALL PAIRS OF MEANS FOR MAIN EFFECT "DAY"**

Day	Mean	1	8	15	22	43
		2709.15	2547.20	2433.35	2424.30	2385.83
1	2709.15	-				
8	2547.20	161.95*	-			
15	2433.35	275.80	113.85	-		
22	2424.30	284.85*	122.90*	9.05	-	
43	2385.83	323.32*	161.37*	47.25	38.47	-

\*Tukey's test, critical range, difference between means 116.61, significant at 0.05 level.

0.005. Further analysis of variance of the individual measures demonstrated that the significant contributions to this variance were made by those three variables, which were primarily symptom measures, decreasing as the trial progressed. The statistical significance of the changes in these measures were, Psychiatric Clinical Assessment  $p < 0.001$ , Complaint Checklist  $p < 0.005$ , STAI - State Anxiety  $p < 0.005$ . The measures of trait anxiety STAI-Trait Anxiety and EPI-Neuroticism did not show a significant change during this investigation.

Further analyses of variance were carried out to determine the source of the variance in the interaction effect between "Order" and "Type of Dependent Variable",  $F(4, 32) = 2.763$ ,  $p = 0.044$ , but none could be identified which was statistically significant.

The overall result of CET treatment is that the scores of patients with anxiety neurosis, on measures of symptom intensity, show a significant decline from the pre-treatment levels, thus indicating that there has been a significant improvement in the clinical condition.

#### *Active versus Placebo Treatment*

Having demonstrated an overall treatment effect, a second factorial analysis of variance was carried out to determine if this was attributable to active CET only. The factors were "Treatment", (active-/placebo), "Day" and "Type of Dependent Variable". It was found that "Treatment"

both as a main effect and as an interaction effect with the other factors, did not make a significant contribution to the total variance.

Active CET, therefore, did not significantly differ from placebo CET. The significant improvement in the symptoms of these subjects with anxiety neurosis does not appear to be attributable to the direct effect of the electrical current on the brain.

#### *Immediate Effect of CET Treatment on Symptoms*

In order to determine if CET had an immediate effect upon the subjects' symptoms, a factorial analysis of variance was carried out with the daily measures, pulse, respiration, systolic blood pressure and scores on the Muscle Tension Anxiety Self Rating Scale and the IPAT eight Parallel Form Anxiety Battery as dependent variables. The other factors were "Treatment" (active/placebo), "Order" (placebo/active, active/placebo), "Day" (treatment days 1-5) and "Occasion of Measure" (pre-treatment, post-treatment).

The "Occasion of Measure" produced the only statistically significant main treatment effect,  $F(1, 18) = 15.568$ ,  $p < 0.005$ , showing that the pooled post-treatment measures were significantly smaller than the pre-treatment measures. The "Type of Measure" did not significantly contribute to the total variance and there was no significant "Treatment" effect in the first, second and third order interactions.

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These results indicate that the subjects' symptoms diminished during CET irrespective of whether they were receiving active or placebo treatment.

### *Changes During CET*

The possibility that CET might have a physiological effect while the actual electric current was flowing, was examined by a separate analysis of variance, using the mid-treatment, as well as the pre- and post-treatment measures of the pulse and respiration rates. The analysis, a 2 ("Order") x 2 ("Treatment") x 2 ("Type of Dependent Variable") x 5 ("Day") x 3 ("Occasion of Measure") did not identify any statistically significant main effects, or interactions amongst these factors. Thus, CET did not have a statistically significant effect upon the pulse and respiration rate whilst it was being administered.

### *Responders to CET*

The overall improvement of the subjects from Day 1 of this study through to Day 43 which did not appear to be attributable to the direct effects of CET, led to a post hoc decision to examine the relationship between the response to this procedure and the EPI - Extraversion personality dimension. The response to the treatment was calculated for the three symptom measures, Psychiatric Clinical Assessment, State Anxiety and Complaint Checklist, for each subject, using the following formula:

$$\text{Response} = \frac{\text{Score Day 1} - (\text{Scores Days } 15+22+43)/3 \times 100}{\text{Score Day 1}}$$

As the parametric properties of this score was doubtful non-parametric methods of analysis were employed. Correlations between these three individual measures were highly significant and so the final measure of the subject's response used for the rank order was the mean of the three.

The range of Neuroticism scores on the EPI, between 87th and 99th percentiles was considered too narrow for use in this analysis. However, the Extraversion scores

ranged between the second and 85th percentile, so their Spearman rank-order correlations (11) with the response score was calculated. This correlation of 0.71 was significant at the 5% level. Thus there appears to be an association between extraversion, as measured by the EPI and the response to the procedure of CET.

### **Conclusion**

This study has demonstrated that the symptoms of patients with anxiety neurosis improve with CET, but there is no difference between active and placebo treatment.

These findings are consistent with those of other studies in which the presence or absence of cutaneous stimulation in both the active and placebo condition was held constant (5, 7, 8).

The results provide support for the "indirect mode of action" theory of CET, which holds that non-specific elements of the procedure such as suggestion, the treatment situation and cutaneous stimulation are responsible for its effect (2). The failure to demonstrate any physiological changes during the procedure also tends to refute the "direct" theory of CET, which attributes its effect to the action of the electrical current upon the neurones.

The possibility that the improvement observed in the subjects of this study might have been due to a spontaneous remission rather than a placebo response cannot be entirely discounted. However, their conditions had been present for a minimum of three months and no other changes were made in the treatment during the period of the investigation. The unexpected finding of the significant positive correlation between improvement and extraversion does suggest that personality might play a part in the response to CET and any investigation of CET should therefore control for extraversion.

### **Summary**

This study has investigated the effects of electrosleep treatment, or cerebral electrotherapy (CET) on the symptoms of ten

subjects with anxiety neurosis. A blind crossover experimental design, in which subjects received five consecutive days of active and five days of placebo treatment was employed, the order being counterbalanced. The subjects' experience of CET, particularly with regard to cutaneous sensation, was identical for both treatment conditions. Anxiety levels were determined pre- and post-treatment using daily psychological and physiological measures. Weekly symptom measures were also obtained before and after each type of treatment and one week and four weeks after the treatment terminated.

The results showed a statistically significant overall improvement in the levels of anxiety, but no difference between placebo and active treatment. Nor was there any significant difference between these two treatment conditions in their effect upon physiological measures made while treatment was in process. There was a post hoc finding of a significant correlation between the overall response to this procedure and extraversion as measured by the Eysenck Personality Inventory (EPI).

The implications of these findings are that the therapeutic effectiveness of CET is attributable to non-specific or placebo components of the treatment, and not to the direct effects of electrical current on the brain.

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### Résumé

Cette étude a porté sur les effets du traitement à l'électronarcose, ou électrothérapie cérébrale (CET), sur les symptômes de dix sujets souffrant de névrose d'anxiété. On a employé un schème expérimental chassé-croisé en aveugle, où les sujets recevaient pendant cinq jours consécutifs un traitement actif et pendant 5 autres un placebo, l'ordre étant réparti d'une manière équilibrée. La façon dont ils ressentirent le CET, particulièrement la sensation au niveau cutané, fut identique pour les deux genres de traitement. On détermina chaque jour les niveaux d'anxiété, avant et après le traitement, en effectuant des mesures psycholo-

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giques et physiologiques. On a aussi évalué les symptômes chaque semaine, avant et après chaque type de traitement, de même qu'une semaine et quatre semaines après sa fin.

Les résultats montrèrent une amélioration statistiquement significative des niveaux d'anxiété, mais sans différence entre le traitement actif et le placebo. Il n'y avait pas de différence significative entre les effets des deux types de traitement sur

les évaluations physiologiques recueillies au cours du traitement. On a retrouvé ultérieurement une corrélation significative entre la réponse totale à cette procédure et l'extraversion mesurée par l'inventaire de Personnalité d'Eysenck (EPI).

On croit donc que l'efficacité thérapeutique du CET est attribuable aux composantes placebo ou non spécifiques du traitement, et non pas aux effets directs du courant électrique sur le cerveau.

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## A SURVEY OF ALCOHOL-RELATED PROBLEMS AND THEIR TREATMENT\*

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Currently, we have little detailed information about the extent of alcohol-related problems in Canada. Estimates of numbers of alcoholics have been made from the Jellinek formula and from alcohol sales data (8). However, these methods have their own problems; Popham (7) has reviewed the problems of the Jellinek formula. Data on sales of alcoholic beverages to individuals are impossible to obtain. Such methods as the Jellinek formula are typically not applicable to small areas such as counties or regions, and even if they were, they provide virtually no information on how demographic or social characteristics relate to alcohol problems. Furthermore, they provide no direct information on the actual types of social, family and employment problems endured by the problem drinker or his family. Studies of persons in treatment can do so but 4 to 9 times as many cases need treatment as actually obtain it (3). Probably, in-depth surveys are necessary to obtain detailed information on problem drinking in the society as a whole. This paper reports data from a survey of drinking problems in the Durham Region of Ontario.

The last large scale studies of alcohol

problems in the general population of Ontario were conducted by Gibbins in 1951 (4) and 1961 (5) and by Newman (6) in 1965. They utilized treatment and social agencies, employers and others to obtain data on numbers of problem drinkers. The rate of alcoholism in the county they studied was 16.0 per 1,000 adults in 1951 and 23.4 per 1,000 in 1961. Of course, these studies were out of date in 1978 and they provided little information about the actual problems seen and the characteristics of those who were identified.

The concept of alcoholism employed here is the one used by the World Health Organization (10):

"Alcoholics are those excessive drinkers whose *dependence* on alcohol has attained such a degree that it shows a noticeable *mental disturbance or an interference* with their mental or bodily health, their smooth economic functions or shows prodromal signs of such development . . ."

Dependent drinkers here are taken to be those whose "disturbances or interferences" are well marked and problem drinkers are those who show "prodromal signs" but no dependency.

The purposes of the present study are to determine for the Durham Region: the frequency of dependent and problem drinking; the characteristics of dependent and problem drinkers; and the proportions of those who have been treated.

The Durham Region was chosen because interest in such a study was expressed by community groups and professionals, for example, the Council on Alcoholism, Pinewood Treatment Centre and others. Also the area contains a popu-

\* The initial formulation and development of the methodology for this study was carried out in collaboration with a group of researchers meeting under the auspices of the World Health Organization. Manuscript received November 1978; revised April 1979.

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lation which is very similar in age, sex, marital status and occupation to the province as a whole when compared with the 1971 National Census. This should make possible tentative generalizations to the Province of Ontario.

### Method

#### *Fieldwork and Sampling Procedures*

Interviewing occurred in early 1978 and lasted about ten weeks. Over half the interviews were obtained after only one or two calls by the interviewer on a selected household. Only 4.0% of interviews required more than six calls. The typical interview took 45 minutes to 1 hour to complete. The majority of interviews (99.5%) were in English but a few were in French and Ukrainian.

The sampling procedures used in the study were chosen so as to produce a probability sample of approximately 1,000 respondents aged 18 years or over who resided in the Regional Municipality of Durham. The sample design required four stages of selection: Enumeration Areas (EA's), dwelling address, household (HH) and respondent†.

Enumeration Areas are used by Statistics Canada as the foundation unit of such statistical areas as municipality and Federal Electoral District. From the 358 EA's that make up the Durham Region, 68 were selected. These 68 EA's were primary sampling units. The probability of an EA being included in the sample was dependent on the number of households in the EA: a higher probability of selection attached to those EA's with the largest number of households.

The second stage or secondary sampling units were dwelling addresses. Within each EA, addresses were selected using a predetermined sampling ratio based on the estimated household count for the EA in the 1971 Census. Most often a dwelling address coincided with the third stage sampling unit, the household, although occasionally more than one household existed at a single address.

When a selected household was contacted, the interviewer made a list of all household members aged 18 years or over. From this list the ultimate sampling decision was made, that is, the person to be interviewed was chosen by the interviewer using a predetermined selection

table. Only one person per household was interviewed.

The original sample base numbered 1,480 households from which 1,013 interviews were obtained. The resulting response rate is 68.4%; the reasons for non-response were chiefly refusal to participate on the part of the respondent or householder, absence of the householder or respondent and, in a few cases, illness.

Due to the effects of data weighting, and incompleteness of some questionnaires, the sample size was reduced from 1,013 to 993. The data weighting referred to arises out of the probabilities associated with each stage of selection in the multi-stage sampling design of the study. The manipulation of the data weights acts to improve the representativeness of the sample population.

#### *The Questionnaire*

The questionnaire included some 133 items. The main areas covered by the questionnaire were: demographic characteristics; drinking patterns; frequency of use of illicit drugs and treatment for alcohol problems; and the frequency of 14 drinking symptoms which indicate alcohol abuse or alcoholism. Seven dependency symptoms and seven problem symptoms are shown in Table IV.

The analyses in this study are based upon the problem and dependency symptoms which identify "recent" alcohol abusers or alcoholics, or at least those reporting symptoms within the past twelve months.

A reliability test of the questionnaire was made with thirty respondents who were given the questionnaire on two occasions about four weeks apart. Answers to alcohol problem and dependency items were very stable over time with 83% getting the same dependency score on both occasions and 93% the same problem score. Most demographic items were also relatively stable.

#### *Sample Characteristics*

The median age of the sample, that is, the age which divides the sample into halves, falls in the age group between 35 and 44 years. The age structure of the sample compares well with that of the Durham Region adult population: as determined from 1976 Statistics Canada Census data. The survey data is seen to be within an acceptable  $\pm 5\%$  sampling error.

The sample design for this survey involved using weighting factors to create household, respondent, person and sex weights. As a result of the reweighting, the sample population

\*A detailed technical sampling report prepared by York University Survey Research Centre is on file in the Program Development Research Department.

closely represents the general population from which it was drawn, in terms of the distribution of males and females (48.2% : 51.7%) and in terms of the other variables surveyed.

About half the respondents (51.1%) were employed full time, and 7.6% of respondents worked part time. Housewives (26.5% of the sample) comprised the largest group not in the paid labour force. All respondents who were employed were asked about the nature of their current or most recent full-time job. The occupations reported by these respondents were classified according to Statistics Canada Occupational Classification, devised for the 1971 Census.

Occupational data were classified using the Blishen socio-economic index for occupations in Canada (1,2). Under the Blishen index, occupations are assigned a score and then stratified into six classes on the basis of the income, education and prestige level associated with a specific occupation. In the highest of the six classes, that is, class I with Blishen Scores of 70 or more, would be found those occupations with which are associated the highest proportion of workers earning \$6,500 or more annually and the highest proportions who had attended at least grade 12. The majority of respondents for whom occupational data are available are classified as being classes 4, 5 or 6 on the Blishen index.

## Results

### 1. Frequencies of Various Drinker Types

Four types of drinkers were identified in this study. They include (i) abstinent persons who have not drunk alcoholic beverages in the past 12 months, (ii) social drinkers who have drunk alcohol but report no problems or dependency symptoms, (iii) dependent drinkers who report one or more dependency symptoms in the past year, (they may also report problems but this is not essential to the definition) and (iv) problem drinkers who did not report dependency symptoms. Of the 993 respondents, 15.3% were abstinent, 56.8% were social drinkers, 25.1% reported some dependent drinking and 2.8% reported some problem drinking. In all, 14% reported one or more problems although most (111 of 139) also reported dependency symptoms (Table I). Serious dependency was defined as three or more depen-

dency symptoms or three or more problems. In total, 5.5% of the sample fell into this category.

TABLE I  
FREQUENCY OF TYPES OF DRINKER

	N	%
Abstinent	152	15.3
Social Drinker	564	56.8
Problem Drinker (no dependency symptoms)	28	2.8
Dependent Drinker (dependency only: 138, dependency plus problem: 111)	249	25.1
Total	993	100.0

Total number reporting problem symptoms is 139: 28 problem only plus 111 dependency with problem.

### 2. Frequency of Serious Dependency or Problems

A high proportion of drinkers, i.e. 27.9% reported one or more problems or dependency symptoms (Tables II and III). It can be seen that about 58.2% with a dependency score reported only one symptom but nearly 20% or 4.9% of the total sample reported three or more. Of those with problems, two-thirds reported only one, but 2.3% of the total sample reported three or more.

TABLE II  
DRINKERS REPORTING DEPENDENCY SYMPTOMS

Number of Dependency Symptoms	N	%	%
None	744	74.9	/
1	145	14.6	58.2
2	55	5.5	22.1
3	26	2.6	10.4
4	15	1.5	6.0
5	4	0.4	1.6
6	4	0.4	1.6
Total	993	99.9	249/ 99.9

TABLE III  
DRINKERS REPORTING PROBLEM SYMPTOMS

Number of Problem Symptoms	N	%	%
None	854	86.0	/
1	90	9.1	64.7
2	26	2.6	18.7
3	15	1.5	10.8
4	6	0.6	4.3
5	2	0.2	1.4
Total	993	100.0	139/100.0

### 3. Types of Symptoms and Problems Reported

Not all problems were reported with the same frequency (Table IV). The most commonly reported dependency symptoms were; thinking that they should stop or reduce drinking (18.0%), memory loss after drinking (9.8%) whereas medical warnings about drinking (1.9%) and being intoxicated for several days at a time (2.1%) were least common. Among the problems "being ashamed of actions while drinking" (8.1%) and feeling alcohol effects on the job (6.3%) were most common. Being involved in accidents at home or work accidents were least common (1.1% and 0% respectively).

### 4. Characteristics of Those with Serious Dependency or Problems: Probable Alcoholics

Respondents with three or more dependency or three or more problems were grouped together as probable alcoholics or serious alcohol abusers. In all, there were 55 respondents or 5.5% of the population defined as "probable alcoholics". The probable alcoholics are mainly males (85.5%), married (60%), aged 30 and over (65%), and have completed some secondary school (84%). Most have lived in Durham for more than 5 years, although most were not born in Durham. Religion is usually listed as Roman Catholic or Protestant, but church attendance is infre-

quent. About 73% are employed full time currently but about 25% have been unemployed at some time in the past year. Most (69%) have worked at their present jobs for more than a year. The Blishen scores place most in the lower two occupational classes and very few in the upper or upper middle classes. About a quarter have incomes of \$20,000 or more and about a quarter have incomes of less than \$10,000.

### 5. Characteristics of Respondents in Various Drinking Categories

Males constitute two-thirds of the dependent drinkers but only a third of the abstinent respondents. However, the ratio of males to females is very close for the problem drinker category. There are proportionately fewer male than female social drinkers.

Larger than expected proportions of problem drinkers are in the lowest income group, and higher proportions of dependent drinkers are in the higher group. Abstainers tend to be in the low income groups.

Those in the dependent and problem categories were more often working than the other groups but this is probably related to age and sex. Dependent and problem drinkers tended more often to be unemployed in the past year and ever in their careers than social drinkers or abstainers. As expected they also had lower Blishen scores than did those who were social drinkers or abstinent respondents. Among dependent and problem drinkers most were employed full time. Fewer than expected on a statistical basis were housewives, retired, students or disabled.

More dependents and problem drinkers reported infrequent or no church attendance at all (82%) whereas social drinkers less often (66%) and abstainers (35%) rarely reported infrequent attendance. Dependent and problem drinkers more often reported no religion than social drinkers or abstainers, with the latter being mostly Protestant. Rates of dependency and problem drinkers were similar for Protestants and Catholics.

**TABLE IV**  
**TYPES OF DEPENDENCY AND PROBLEM SYMPTOMS REPORTED**

TYPE OF SYMPTOM	YES		NO		TOTAL	
	N	%	N	%	N	%
<b>DEPENDENCY SYMPTOMS</b>						
Thinks drinking should be reduced or stopped	179	18.0	814	82.0	993	100.0
Getting drunk even when there is an important reason to stay sober	37	3.7	956	96.3	993	100.0
Memory loss after drinking	97	9.8	896	90.2	993	100.0
Morning drinking	49	4.9	944	95.1	993	100.0
Received medical warning about drinking	19	1.9	974	98.1	993	100.0
Shaking hands morning after drinking	35	3.5	958	96.5	993	100.0
Intoxicated for several days at a time	21	2.1	972	97.9	993	100.0
<b>PROBLEM SYMPTOMS</b>						
Feeling alcohol effects while on the job	63	6.3	930	93.7	993	100.0
Being told to leave a place because of drinking	15	1.5	978	98.5	993	100.0
Involved in a fight because of drinking	44	4.4	949	95.6	993	100.0
Ashamed of actions while drinking	80	8.1	913	91.9	993	100.0
Involved in a road accident while drinking	11	1.1	982	98.9	993	100.0
Involved in an accident at home while drinking	8	0.8	985	99.2	993	100.0
Involved in an accident at work while drinking	0	0.0	993	100.0	993	100.0

There was an expected relationship of drinking category with marital status. More dependent drinkers (12%) had been divorced than social drinkers or abstainers (5.7% and 2.9%). Also, fewer dependent drinkers were currently married than were social drinkers, but more were single and separated.

There were no relationships between drinking category and place of birth (within Durham or not), whether respondents had moved from a village, rural area

or city to Durham, or whether they had lived in Durham for their whole lives. However, dependent and problem drinkers had lived in Durham for shorter periods than had abstinent persons and social drinkers.

Drinking category varied by age. Dependent drinkers tended to be under 39 (68.6%) as did problem drinkers (89%). However, social drinkers and abstinent persons were older. About 37.5% of abstinent persons but only 6.0% of dependent drinkers were aged 60 or more.

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### 6. Multivariate Analyses

Many characteristics associated with drinking category are related to each other. For example, males are more often working than females and have higher incomes. It is therefore difficult to be sure from bivariate analyses whether "maleness", being at work, or income are most important in predicting problem drinking. Multivariate methods examined the contribution of each variable when all of the others are contributing as well. The method is termed multiple classification analysis or MCA. It allows for the identification of the most important variables and the unique contribution of each to the prediction of problem drinking.

Two MCA's were done using seven demographic variables which were associated with problems in the bivariate analyses (birthplace, age, religion, participation in religion, Blishen score, income and sex). The criteria in the two analyses were number of dependency symptoms and number of problem drinking symptoms. With regard to dependency scores, the seven variables explained 10.7% of the total variation. Age, sex and religious participation were the strongest variables in both analyses. Also, the following were significant predictors in both analyses: age, participation in religion, Blishen score, income and sex. Religion and birthplace were relatively unimportant. The variables with the largest unique explanatory power were age, sex and participation in religion for both dependency and problem symptoms, and income was important for the problem symptom criterion. However, the rank order of these variables was a little different in the two analyses. Sex and participation in religion were most important for dependency symptoms, but age and income were most important for problem drinking.

The multivariate analyses show that dependency symptoms and problems are most common among males, middle-aged persons, those with lower incomes and Blishen scores (low social status) and who did not participate in religious activities.

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### 7. Treatment Received

Questions were asked about both formal and informal treatment ever received for alcohol problems. Informal treatment included advice by relatives, friends, employers and non-professionals. Formal treatment referred to interventions by doctors or other professionals, hospital or clinical treatment, detoxification and the like. Neither type of treatment was frequently reported. In the total sample only 13 persons reported formal treatment. Of those, three were in the "abstinent" group, one among the "social drinkers", none in the "problem" group and nine were in the "some dependency" group. Only 6 people or 11% of those with "serious dependency" scores had been treated. The most common form of treatment was given by doctors, hospitals or clinics (6 of 13 cases), but employees' programs, detoxification centers, Alcoholics Anonymous and family agencies were used by only one person each.

Informal treatment was more common than formal. In all, 58 people of the 993 or 5.8% received some informal treatment or advice for an alcohol problem. Of these, seven were in the abstinent group, four in the social drinkers group, one in the problem group and 46 in the some dependency group. Nearly half of those who received some treatment (28 of 58) were in the serious dependency group. As expected the larger the number of dependency symptoms the more likely was it that the respondent had received informal treatment. Friends (38.1%), relatives (23.6%), and workmates (12.7%) were the most common sources for informal treatment. Priests or ministers, neighbours and employers were less often consulted.

### Summary and Discussion

A substantial proportion of drinkers have alcohol dependency or alcohol problems but receive no treatment for them. Of the 993 respondents, 15.3% were abstinent, 56.8% were social drinkers, 25.1% reported some dependency symptoms and 2.8%

were problem drinkers. Serious dependency or alcoholism (three or more dependency symptoms or three or more problems) were found in 5.5% of the sample. The most commonly reported symptoms were; wishing to stop or cut down drinking, memory loss after drinking, or receiving medical warnings about drinking. Those who were serious dependent drinkers were mainly males, married, aged 30 and over, and in the lower or middle social classes. Respondents with one or more symptoms were more often male, in lower social classes, young or middle-aged adults, and with lower incomes. Few dependent or problem drinkers had received any treatment for their problems, whether of an informal or formal nature.

Abstinent people were more often older, females, in the housewife or retired category, and they also had more frequent church attendance. This suggests the close association of abstinence with conservative attitudes and values found in earlier studies.

This study shows a seemingly high rate of dependent and problem drinking symptomatology in the general population. Such a survey has not been done in Canada before and hence comparisons with other data are difficult to make. Also about 58% of those with some dependency symptoms reported only one. This sort of drinking probably does not represent serious abuse requiring treatment or intervention, provided it does not worsen. At present, we are not certain how much problem drinking disappears without treatment but at least some does (9).

A serious concern is the 5.5% of the sample which reported three or more dependency or problem symptoms, as they are likely to require treatment or other forms of intervention and they best fit the definition of alcoholic as proposed by the World Health Organization. The number of alcoholics for the Durham Area cannot be directly known by other means. However, Single (8) has calculated that for the area around Toronto (including Durham) the rate based on liver cirrhosis data is 24.9% per 1,000. The rate based on alcohol

consumption is 28.5 per 1,000. From the present survey the rate is 55 per 1,000 or more than double that derived from the liver cirrhosis data. This, of course, is in addition to the other 230 per 1,000 who have some lesser number of dependency or problem symptoms.

Factors associated with alcohol dependency and problems include sex, age, income and social class. In general, they suggest that those most at risk for developing serious drinking problems are males, young and middle-aged persons, those with low incomes, those in the lower classes and those with no religious participation. These data suggest that special case finding or preventive measures should be directed at certain sub-populations rather than at the entire population.

Treatment of alcohol dependency or problems was infrequent but again comparisons with other studies are impossible to make. However, only 13 persons in the entire sample had been treated in the formal sense. Only nine of the 249 "some dependency drinkers" and 6 of the 55 "serious dependency drinkers" had been treated. Informal treatment was somewhat more common. However, the conclusion must be that large numbers of alcohol abusers and problem drinkers are receiving no treatment currently. Part of the reason for this is that the Durham area is not well served with specialized treatment facilities. For example, detoxification and halfway house facilities do not exist as they do in most other areas of Ontario. Clearly some further effort would be necessary to get more alcoholics and problem drinkers into treatment and perhaps there will be a need for larger or newer treatment facilities. Efforts at prevention of alcohol problems are also required, for example by reducing the availability of alcoholic beverages and providing educational programs and early case-finding techniques.

### Summary

This paper reports on the extent of alcohol problems in a sample of adults aged 18 and over. The survey was of the household type with personal interviews. The area of

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the survey is very similar in demographic characteristic to the Province of Ontario as a whole. Of the 993 respondents, 15.3% were abstinent, 56.8% were social drinkers, 25.1% reported some dependency symptoms and 2.8% were problem drinkers. Serious dependency, defined as three or more symptoms or problems, was found in 5.5% of drinkers. They were mostly males, in lower social classes, young or middle-aged and with lower incomes. The most commonly reported symptoms were wishing to stop or cut down on drinking, memory loss after drinking and receiving medical warnings about drinking. Very few dependent or problem drinkers had received any treatment for problem drinking, including both formal and informal treatment. The rate of serious dependent or alcoholic drinking is 55 per 1,000 or about twice as high as expected based on liver cirrhosis or alcohol consumption data for the area surveyed. The results strongly suggest that there is a large number of people with serious alcohol problems who are receiving no treatment for them. There is a need for both more treatment efforts and preventive programs.

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### Résumé

Cet article traite de l'étendue des problèmes alcooliques dans un échantillonnage d'adultes âgés de 18 ans et plus. L'enquête s'est faite de porte à porte, l'enquêteur interviewant les gens personnellement. L'endroit où elle s'est déroulée a les mêmes caractéristiques démographiques que la province d'Ontario dans son ensemble. Des 993 personnes qui répondirent, 15.3% étaient abstinents, 56.8% buvaient socialement, 25.1% avaient des symptômes de dépendance et 2.8% étaient des buveurs ayant des problèmes. 5.5% des buveurs indiquèrent une dépendance sérieuse, celle-ci étant définie par trois ou plus symptômes ou problèmes. Ils étaient la plupart de sexe masculin, de niveau social peu élevé, jeunes ou d'âge moyen, et à revenu inférieur. Les symptômes les plus fréquemment rapportés furent le désir de cesser ou de diminuer la consommation d'alcool, la perte de mémoire après ingestion de boissons alcoolisées et l'avertissement de la part d'un médecin qu'ils avaient un problème à cet égard. Très peu de buveurs présentant de la dépendance ou de buveurs problèmes avaient reçu une forme quelconque de traitement, formelle ou informelle. Le taux de dépendance sérieuse ou d'alcoolisme est de 55 sur 1000, deux fois plus élevé qu'on pourrait s'y attendre en se basant sur les données de cirrhoses du foie et de la consommation d'alcool rapportée dans la région étudiée. Les résultats nous incitent fortement à croire qu'il y a énormément des gens ayant un problème d'alcool et qui ne sont pas traités. Il faut faire un plus grand effort pour les traiter et mettre sur pied des programmes de prévention.

## A PARENTS' GROUP IN THE MANAGEMENT OF ANOREXIA NERVOSA\*

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Recently anorexia nervosa has received increasing attention for several reasons. First, while generally considered to be an uncommon condition, there is a consensus that its prevalence is increasing (3,6,10, 17,28); the most recent estimate (6) found one severe case for every 250 London high school girls and one case for every 100 girls over age 16. Moreover, anorexia nervosa is associated with an alarming mortality rate, estimated to be between 2-20% (12). In addition, the morbidity ranges from recurrent episodes of weight loss, frequent hospitalizations and depression to interpersonal difficulties, persistent amenorrhea and infertility. Finally, while many management plans have been advocated, none has emerged as the definitive treatment (20). Regardless of treatment method, at least 25 to 50% of anorexic patients have severe symptoms or remain unchanged at follow-up (4,16,20,25).

The issue that emerges from a review of treatment and prognostic studies (12) is that weight restoration alone is not sufficient for long term weight control. Resolution of intrapsychic and interpersonal conflicts appears to be germane to recovery (3). Those anorexic patients whose condition remains unchanged or moderately improved continue to have difficulties in many areas of their lives. Specifically, these include problems with peer and parental relationships and psychosexual adjustment, social isolation, lack of commitment to school or job and feelings of

powerlessness in social relationships. The multiple problems of individual anorexic patients and the variable prognosis of anorexia nervosa suggest that several concurrent treatment modalities may be needed to alter the course of the illness.

It has been suggested that the development of anorexia nervosa may be a function of the entire family, rather than of the individual (19); therapy may then be focused on the family in order to improve interpersonal communications and relationships. Rosman et al. (23) have used family therapy to improve maladaptive patterns in families where a child has a "psychosomatic illness". They report an unusually high success rate (85%) in anorexia nervosa. Barca (2) has also described good results with fewer families. While these groups have claimed success with family therapy, a number of families are not likely to respond to treatment because of contraindications, as described by GAP (13). That is, the family may be fragmented and irrevocably split. Family members may consistently be poorly motivated and undermine therapeutic efforts. One parent may be suffering from an organized paranoid condition. Moreover, one or both parents may be unable to be sufficiently honest. Other contraindications include the existence of a valid family secret, unyielding cultural or religious prejudices, extremely rigid defences which, if broken, might induce psychosis or physical assault, or an organic disease that would preclude the participation of a family member (1).

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A number of families are therefore not likely to be suitable for family therapy. For these families we considered that group therapy for the parents would provide direct benefit through education and support and indirect benefit upon the course

onships. The dual anorexic diagnosis of anorexia nervosa and bulimia may be needed.

The development of a child may be a function of the family environment. The family may then be more likely to improve its relationships and relapse. (23) have used maladaptive family patterns to explain why a child has a low self-esteem. They report an 85% success rate in anorexia nervosa. Other studies have also described the importance of family relationships. While initial success with family therapy is encouraging, treatment because of family members' lack of motivation and support. One parent may be fragmented and unable to provide the support that is required. Another parent may be sufficiently motivated to participate in family therapy, but be sufficiently suspicious of the other parent's intentions to preclude participation. These family secrets, which, if broken, would preclude the child from receiving treatment, may be sufficiently prejudicial to the child's health that they would preclude family therapy. For example, if one parent is physically assaultive, it would preclude the child from seeking help. Therefore, family therapy is not always appropriate. For example, if one parent is physically assaultive, it would preclude the child from seeking help. Therefore, family therapy is not always appropriate.

April, 1980

of anorexia nervosa in the child. In this paper, we describe the response to such a program.

### Structure of the Program

#### *Selection of Parents*

Ten couples, each with a child with primary anorexia nervosa (11) who had been admitted to the Psychosomatic Medicine Unit at the Clarke Institute of Psychiatry, were selected and agreed to attend group sessions. Initially five couples formed the group. The youngest parent was 35 and the oldest 65. The anorexic child of each, nine daughters and one son, ranged in age from 13 to 24. The majority had more than one previous admission to hospital, and three patients had three or more admissions, varying in length from one to nine months. All the families had been assessed by a family therapy consultant and by the clinical team, to determine whether family therapy was appropriate. Five families who had been previously involved in family therapy were dissatisfied with the treatment. These five couples refused family therapy directly, and three sets of parents were considered inappropriate candidates for family therapy. One father suffered from a paranoid reaction, a second was an alcoholic, and two mothers were clinically depressed.

#### *Selection of Therapists*

Three therapists were involved in the sessions; the social worker (J.R.) of the unit was involved in all meetings. For the first three months, a clinical research psychologist served as a co-therapist. During the last 16 months, a woman volunteer, who had previously successfully overcome the symptoms of anorexia nervosa, was the co-therapist. She had expressed an interest in helping patients with anorexia nervosa, and it was believed that her willingness to share her feelings about the illness would be of benefit to the parents.

#### *Duration*

The group met bi-weekly for 18 months. The sessions lasted for 90 minutes and were

held in the early evening in an area separate from the patient ward.

### Group Process

Initially, the parents seemed anxious to learn factual data. They then began to discuss and seek information about etiologic theories of anorexia nervosa. The therapists were thrust into a didactic stance, and efforts at encouraging interactional group process failed. The educative content was repeated with the addition of new parents, each of whom requested nearly identical information (issues of frequency, cause, treatment and prognosis). Gradually senior group members took over part of the educative role. The more common symptoms of the anorexic patient, as they directly affected family life, were described. Most parents came to the group primarily with bewilderment and dismay and they expressed their despair and anger over their frustration in coping with their sick child. Many derived support initially from sharing a common problem and advice on conducting normal family life while being supportive to their child. Support for other group members was expressed and carried out consistently.

In the first stages, two sub-groups informally developed: one involved those parents whose child's illness was of recent onset and who therefore were optimistic about the prognosis; the other consisted of those whose child's illness seemed to be intractable and who, therefore, felt cautious about believing that their child might ever be symptom-free. During the evolution of the group these two divisions were less evident.

When the volunteer therapist joined the group, the focus shifted. Parents sought clarification about their children's attitudes and feelings towards their illness, themselves, and their families. They sought in the volunteer therapist some affirmation of their own feelings and rehearsed behaviour and tested ideas with her, with more safety than with their offspring. They appeared to see her as their pre- or post-anorectic child. She could identify readily