THE DIFFERENCE BETWEEN BIOLOGICAL HEREDITY AND CULTURAL HEREDITY. PRELIMINARY FINDINGS IN ASSESSMENT OF PARENTAL REARING PRACTICE BY EMBU-INVENTORY IN PRIMARY ALCOHOLISM

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This study is an attempt to assess the relationship between parental rearing practice and some personality traits, and primary alcoholism with/ without positive family history for alcoholism. Thirty-one alcoholic-men were tested by means of the Marke-Nyman Temperament Scale, the Karolinska Scales of Personality and EMBU inventory. This sample was matched to 21 control subjects by sex, age and educational characteristics. Our investigation shows that the particular traits on personality inventories and parental rearing practices are present in both categories of alcoholics with different family history. This reflects that nosological subdivision in alcoholism (familial versus non-familial) is a progress.

Our investigation is an attempt to estimate the contribution of biological and cultural heredity in the familial incidence of alcoholism. For this purpose the EMBU inventory was chosen as instrument for the assessment of childhood environment.

There now exists a good deal of evidence suggesting that there is an inherited predisposition for alcoholism (1) (8) (11) (12).

Standardized genetic strategies have been employed to study the alcoholism occurrence among the relatives of alcoholics. The twin studies point out to genetic control of drinking behaviour, but the evidence for a genetic determinant of alcoholism is inconsistent (11) (12). Adoption studies have established a particular vulnerability to alcoholism among sons of alcoholics (5) (6) (7) (13) (14) (15) (16), and family morbidity studies have found the morbidity risk for alcoholism increased in first-degree relatives of alcoholics compared with the general population (9) (24) (36).

Despite these methodological refinements, the genetical approaches have not yielded much valuable information regarding what is inherited in alcoholism: the psychological vulnerability as personality traits, the neuropsychologic defects and brain dysfunctions, the particular cerebral biochemistry, etc. Moreover, these studies were not successful in discriminating the socio-cultural influences from the constitutional ones. Furthermore, there are differences in the prevalence of alcoholism due to socio-cultural influences (7).

Chronic alcoholism tends to produce distortions in the normal family life cycle with the resonance in their offsprings. These families have a chronic disease in their home environment (30) (31). Many studies gave broad evidence of disrupted family conditions during childhood among the alcoholics (4) (7) (17) (28) (32) (33) (34). The authors had described the influence of the educational conditions during childhood, i.e. the violence in their family of origin (17), the exposure to parental alcoholism

group II (FH-) composed of subjects who were without problem drinking in parents or siblings.

QUANTIFICATION OF PARENTAL REARING PRACTICES

This quantification was made by EMBU-inventory developed by Perris et al. (22). The three main factors : rejection, emotional warmth and overprotection were used.

QUANTIFICATION OF PERSONALITY TRAITS

The personality inventories were : the Marke-Nyman Temperament Scale (18) and Karolinska Scales of Personality (23).

The present study deals with investigation of different interactions between genetical background and environmental background. If a pedigree loading exists in the family, is there a poor childhood environment, too, or are there disturbances in family environment alone? If there is a relation between family history of alcoholism and childhood environment was it reflected in particular personality traits? In other words, how often is personality and family interactional pattern a primary risk factor and how often is it a mediating condition that potentiates the risk from hereditary factors?

RESULTS AND DISCUSSION

The subjects meeting the diagnostic criteria for alcoholism in the present study have been allocated to two family history groups : group I with family alcoholism (FH+) in the first-degree relatives (N = 17), and group II without family alcoholism (FH-) in the first-degree relatives (N = 14). The distribution of the relatives of subjects in the total sample is presented in Table 1. (Table 1)

Table 1

Family history in the two groups according to pedigree loading

Alcoholism in family members	Group I FH + N = 17	Group II FH− N = 14
Mother	3	—
Father	14	—
Sibling	7	—
Maternal grandmother	1	—
Maternal grandfather	1	—
Paternal grandmother	1	—
Paternal grandfather	5	—
Other	4	6

The characteristics of the alcoholic subjects were regarded by the distinction between two genetic groups (Table 2).

In this study, socio-demographic factures of group I and group II did not discriminate significantly probably because of small sample size. However, most of the alcoholics had been raised in rural areas, had not

during childhood (4), low occupational status (7) (10), earlier interpersonal loss in adolescence (19).

Probably poor childhood experiences contribute to the continuation of alcoholism via personality disorder; the future alcoholics tend to be hyperactive, aggressive, with low self-esteem, impulsive, gregarious, and have a poorer sense of purpose and values (8).

Obviously, it appears that no specific personality profile predisposes for alcoholism.

Cloninger et al. were the first to assess the gene-environment interaction and identified two types of alcohol abuse with specific combinations of genetic and environmental factors (7).

The present study tries to bring a new view in this matter by finding and demarcating genetic and environmental influences within some families.

MATERIAL AND METHOD

SUBJECTS

The sample includes 31 men who met the DSM-III diagnostic criteria for alcohol abuse and/or alcohol dependence (2). All alcoholic subjects met the Schuckit criteria for primary alcoholism (25), in order to have a homogeneous sample.

Moreover, the admission in the sample has been based on a minimum score of 10 on the Michigan Alcoholism Screening Test — MAST (29).

Before any biological and psychological treatment was started, a semistructured interview was used for collecting data on the alcohol use, the family history of alcoholism, and the other inventories for quantification of parental rearing practice and for quantification of personality traits.

For comparison, a control group was drawn for a population sample and there was no evidence of psychiatric disorder or treatment either by history or at interview. The two proband groups were matched by sex, age and educational characteristics.

QUANTIFICATION OF ALCOHOL USE

A number of questions were formulated about the pattern of alcohol intake, i.e. the average number of days per month on which drinking occurred during the preceding 6 months, the average number of drinks taken per drinking day, the duration of alcoholism (years), age at onset of alcohol consumption, age of first treatment contact (age of first admission at hospital). A drink was defined as 12 oz of beer, 4 oz of nonfortified wine or 1 oz of 80-proof-whisky (26).

QUANTIFICATION OF FAMILY HISTORY OF ALCOHOLISM

The diagnosis in relatives was made using the sources of information that were obtained from the proband and other informants.

The subjects were placed into two family history groups: Group I (FH+) in which at least one parent or sibling had misused alcohol and

been graduated from high school, and had a low level of occupational achievement.

The present results do not support previous findings regarding the different demographic, social, educational, and occupational factors for alcoholic men with a positive family history of alcoholism (27), but are in agreement with findings concerning higher overall rates of alcoholism in low socio-economic classes (10) (Table 2)

Table 2

Socio-demographic characteristics of alcoholic men according to pedigree loading

Item	Group I FH+ N = 17	Group II FH− N = 14	Group control N = 21
Age (years)	38.2±6.8	45.7±7.7	37.2±7.7
Marital status			
— married	6	7	14
— never married	4	1	4
— separated/divorced	4	4	1
— living with partner	2	1	2
— widowed	1	1	—
Education			
— eighth grade or less	2	1	5
— some high school	8	7	6
— high school graduate	4	1	4
— some college	1	2	1
— college graduate	1	—	—
— some postgraduate education	1	3	4
Occupation			
— unemployed	4	3	—
— pensioner	1	1	—
— unskilled worker	4	1	3
— skilled worker	7	3	14
— office worker	1	2	—
— professional, managerial	—	—	4
Origin			
— rural	9	10	11
— urban	8	4	10
Residence			
— rural	6	3	3
— urban	11	11	18

Table 3 shows the pattern of alcohol intake in the two family history groups. There are few significant differences between the men with FH+ and FH− on these factors. Group I (FH+) had the youngest mean age at the first admission to hospital and more drinks per drinking day. These findings are in agreement with the suggestion of Cloninger et al. that the male-limited alcoholism usually is moderate and has an early onset and severe alcoholism in biological father. In contrast, the milieu-related type of alcoholism which is usually mild associated with a later onset and minimal alcohol abuse in biological father and mother (7). (Table 3)

Familial interaction patterns have been linked to alcohol consumption problem in offsprings, but whether these influences exert differential affects on vulnerable individuals is unkown. The present study was

Table 3

Pattern of alcoholism misuse according to family history of alcoholism

Item	Total sample N = 31	Group I FH+ N = 17	Group II FH− N = 14
Days intoxicated/ month in the last 6 months	22.6±4.1	22.5±4.8	22.8±3.5
Drinks/ drinking day	20.7±4.0	22.0±5.6*	19.5±2.5
Duration of alcoholism (years)	11.3±2.7	8.3± 1.7**	14.4±3.5
Age at first admission to hospital (years)	36.8±8.0	34.4±7.7	39.3±8.4*
MAST score	27.5±2.4	27.4±2.2	27.7±2.6

Mann-Whitney's U test:
* group I vs. group II = $p < 0.1$
** group I vs. group II = $p < .001$

undertaken to examine the relative contribution of parental rearing behaviour assessed by the EMBU-inventory.

Table 4 shows that group I, i.e. the alcoholic patients with FH+ had scored their father on the factor rejection higher than healthy controls (35) and on factor emotional warmth lower than controls. They had also scored their mother higher on the factors rejection and overprotection than healthy controls. Group II, i.e. alcoholic patients with FH− had scored their father lower on the factor emotional warmth than controls and their mother lower on rejection than controls (Table 4).

Table 4

Differences in perceived parental rearing according to family history of alcoholism

EMBU factor	Group I FH+ N = 17	Group II FH− N = 14	Healthy control (34) N=100
FATHER			
Rejection	46.6±6.5**	42.1+4.4	41.5±9.4
Emotional warmth	45.0±4.6*	46.6±4.3*	50.2±7.0
Overprotection	36.6±4.1	36.8±4.0	36.0±7.0
MOTHER			
Rejection	49.6±8.6**	38.8±8.8*	42.6±9.5
Emotional warmth	49.0±5.2	50.4±5.3	51.5±6.9
Overprotection	43.9±3.7*	41.6±3.2	39.3±7.8

Mann-Whitney's U test: control vs. alcoholics
* U = $p < .01$
** U = $p < .001$

Parker found that parental affectionless control (20) and maternal overprotection (21) in childhood were associated with a wide range of psychiatric conditions in adulthood, a general psychological vulnerability.

The results obtained in the group with positive history of alcoholism show that in addition to genetic influences, the parental behaviour might

be a relevant variable in the pathogenesis of alcoholism abuse. Therefore, the genetic influences and environmental factors go together with alcoholism FH+ while the contribution of genetic and environmental backgrounds is less within alcoholism FH-. This is not surprising because it is a common finding that there is a later onset in alcoholism FH−.

Table 5 presents personality characteristics assessed by various personality inventories. The aim has been to evidence possible differences

Table 5

Personality scales — mean values and SD according to genetic subgroup

SCALE	Group I (FH+) N = 17	Group II (FH−) N = 14	Control N = 21
Marke-Nyman Temperament Scale			
— solidity	12.3±2.1	14.5±2.3	13.2± 2.9
— stability	8.0±3.5	9.7±2.9*	7.4± 2.9
— validity	8.5±3.2**	10.6±3.9*	13.8± 2.7
Karolinska Scales of Personality			
— somatic anxiety	23.9±3.4**	22.7±2.7**	15.44±4.63
— psychic anxiety	25.9±2.2*	25.5±3.1*	23.05±4.46
— muscular tension	24.9±3.0**	23.5±3.0**	15.66±4.42
— social desirability	27.9±3.2	28.3±3.3	28.77±5.96
— impulsiveness	24.7±2.8	23.0±2.4	23.66±2.76
— monotony avoidance	24.9±2.1	21.3±3.4*	25.88±4.20
— detachment	26.3±4.1*	26.8±2.2*	22.27±5.18
— psychasthenia	26.4±3.6*	26.1±3.2*	21.50±4.45
— socialization	50.0±5.2**	53.0±5.3*	58.62±7.20
— indirect aggression	10.7±2.1	8.5±2.3*	11.04±2.14
— verbal aggression	13.0±1.4	11.8±2.7*	13.11±1.82
— irritability	12.4±2.4*	12.0±2.8	10.66±2.42
— suspicion	13.0±1.3*	11.8±2.2	9.92±1.20
— guilt	13.9±2.3	14.2±1.8	14.34±1.92
— inhibition of aggression	27.2±2.4*	28.3±2.8*	24.67±3.77

Mann-Whitney U test: alcoholics versus healthy controls
* p<. 01
** p<. 001

in personality traits between alcoholics with different family history or with different parental rearing behaviours.

The results of the Marke-Nyman Temperament Scale show that the alcoholics FH− had super-solidity (steadiness, dependability, rigidity), super-stability (schizothimia), and sub-validity (psychastenia: low energy, cautiousness) as compared with controls, while the alcoholics FH+ had only more sub-validity than controls and than alcoholics FH−.

The mean scores for the Karolinska Scales of Personality subscales show some significant differences as compared with controls, e. g. higher scores on somatic and psychic anxiety, muscular tension, detachment, psychasthenia, irritability, inhibition of aggression and suspicion subscales, and lower scores on socialization subscale. The significant differences between alcoholics with and without family history were found. The alcoholics FH+ had scored higher on monotony avoidance, indirect aggression, verbal aggression and suspicion subscales and lower on socialization subscale than the alcoholics FH−.

These findings show that the particular personality traits are present in both categories of alcoholics with different family history. A more sophisticated analysis would better find the complex relationships between the parental rearing and the personality traits in one genetical pattern. (Table 5)

The goal of this research has been to assess the genetic environment interaction in the etiology of alcoholism. Therefore, the findings obtained are preliminary and they outline that there are genotypically different forms of alcoholism but phenotypically similar, indicating that alcoholism is no unitary condition. This reflects that nosological subdivision in alcoholism (familial versus nonfamilial) is a progress.

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