

Pedophilia in the Context of Entropy Neuron Glial Networks of the Brain



Rosman SV*

Physician of functional diagnostics of SBIH, Regional psycho neurological clinic, Russia

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***Corresponding author:** Rosman SV, Physician of functional diagnostics of SBIH, Regional psycho neurological clinic, Tver, Russian Federation, Russia, Tel: +7-903-800-11-05; Email: seros2005@mail.ru

Abstract

In article attempt of systematization of the neurophysiological changes observed in cases of pedophilia using the new method is the dispersion of amplitude-frequency characteristics of the alpha rhythm - with the aim of identifying common patterns of development of psychopathology, creating a natural-scientific systematization of mental illness on the basis of dimensional neurophysiological methods and objective assessment of the patient in the practice of forensic psychiatric examination.

Keywords: Neurophysiological causes of pedophilia; Entropy of the neuron-glial network of the brain; Dispersion of alpha-rhythm; Diagnosis of mental illness

Abbreviations: PD: Personality disorder (F60.x ICD-10); BPD: Borderline personality disorder; BS: Burnout Syndrom; PPhT: Pedophilia in all categories of psychopathology; PPhH: Pedophilia is in the category of healthy; DSch: Debut of paranoid schizophrenia (F20.09x ICD-10); DAFCAR: Dispersion of Amplitude-Frequency Characteristics of the alpha rhythm EEG; NGNB: Neuron-Glial Network of the brain; HVT: Hyperventilation test; CD α 1: Coefficient of Dispersion of alpha-Rhythm EEG-1 (the quotient of the moral values of power of alpha rhythm to his total power in the range of 7-13 Hz); CD α 2: Coefficient of Dispersion of the alpha-Rhythm EEG-2 (the quotient of the power of the alpha rhythm in the range of "a modal value ± 0.5 Hz" to his total power in the range of 7-13 Hz); O Mo f: Value of the Modal Frequencies in Occipital Electrodes; F Mo f: Value of the Modal Frequencies in Frontal Electrodes; O Mo f - F Mo f: Value of the Difference of Modal Frequencies Between the Occipital and Frontal Electrodes; IIDA: Integral Index of Dispersion of the Alpha rhythm EEG (Value of the Kurtosis of the Normal Distribution CD α 1 in the Occipital Electrodes); ADA: Asymmetry Distribution of the Alpha rhythm EEG (Value of the Asymmetry Distribution CD α 1 in the Occipital Electrodes); IIH: Value of the Index Hypofrontality (Kurtosis of the Normal Distribution CD α 1 in the Frontal Electrodes); AH: Value of the Asymmetry of CD α 1 in the Frontal Electrodes; CV%: The coefficient of variation; CI: Confidence interval; Cu: conditional unit

Introduction

Pedophilia - a mental disorder, one of many paraphilia. According to the Tenth revision (ICD-10) international classification of diseases (ICD) belongs to the class V as one of the disorders of sexual preference (F65 code.4): a sexual preference for children, boys or girls or both, usually of prepubertal or early pubertal age. In the broadest sense, pedophilia means sexual attraction to children [1]. From a legal point of view it acts of a sexual nature committed by an adult against a minor and considered law as a crime [2,3]. Currently, this problem is of great social importance. The bulk of the population, fueled by the media, tend to see in this phenomenon the perversion of morals, you need to burn with a hot iron criminal prosecution, forgetting that, ideally, a criminal punishment-not revenge for what he did, as an educational measure. However, is it possible to raise a sick man? The bulk of pedophiles implements sexual needs only in appropriate sexual fantasies, masturbatory fantasies, non-sexual communication with children, communicating on the Internet, viewing visual products relevant content. Pedophilia

is diagnosed largely in males of heterosexual orientation. The public also submitted to sexual predators who kidnap children, they brutally raped and murdered. Conceptual transfer occurs on all pedophiles represent about a serial killer: "they're all the same". But among this group the bulk of the people in a rather respectable age, well-educated workers in culture, clergy, politicians and even mayors of major cities.

The more obscure the legal conflict in which there are people suffering from pedophilia. Justice does not recognize those sick, despite the fact that medicine is a mental state recognized as a disease. The legal aspect of this problem is beyond our consideration. After long deliberations the most prominent scientists in the beta version of ICD-11 pedophilia recognized as a "paedophilic disorder", i.e. almost returned to the old interpretation in ICD-10 (F65.4 Pedophilia). Many disputes that are under way around the pedophilia and other sexual deviations are the controversy surrounding the empty space. Freud called sexual deviation is the lack of sex, and all the rest of sexual

preferences. All these many respected scientists in the relation of pedophilia to express their moral and legal preferences that the subject matter is irrelevant, because this argument has no scientific basis, because in no way affiliated with dimensional research methods of the human psyche [4].

A. The objectives of the study: To determine whether there are objective preconditions for dimensional diagnosis of pedophilia and assigning it to a category of psychopathology.

Materials and Methods

With the help of methods of analysis DAFCAR studied the EEG of patients who underwent examination in stationary conditions. All the subjects reached the age of majority and have given grateful evidences on the fact of committing criminal acts

Table 1: Distribution of patients by age and diagnostic groups according to the results of a psychiatric examination in comparative experiment study on DAFCAR patients with pedophilia.

Expert diagnosis	Number	Age
F02.8 Dementia in other diseases	3	65.7±5.6
F07 Organicbrain disease	9	45.8±4.2
F10 Alcoholism	5	44.4±4.4
F6x personality Disorder, including sexual perversions	4	36±3.8
F20 Schizophrenia	4	49.5±3.5
F70-71 Mental retardation	13	26.8±3.5
Mental health (PPhT)	15	43.2±4.1
TOTAL	53	40.9±3.9

Results: (Figures 1-5).

Conclusion

Assessment of the dispersion of comparative maps leads us to believe that, in General, cartograms patients with pedophilia is close to the base of PRL, however, differ from the last large value

(Table 1). Patients were subjected to standard implementation methodology of EEG with electrode placement according to the international system "10-20%" and the ipsilateral ear electrodes. Test with hyperventilation was performed by the standard method with the dispersion assessment of the changes of alpha-rhythm method SV Rosman [5]. DAFCAR parameters were calculated by the method of SV Rosman 2013 using the programs Microsoft Excel and Statistica 10.0 [6]. A critical reader may ask, whether all these statistics are the result of the pathology, which was established in these patients by a panel of experts? In this case the pathological changes are attributed to the group of patients who were deemed mentally healthy. To study this question, a comparative analysis of average values of indices DAFCAR in persons with pedophilia, but recognized healthy.

O f Mo - F Mo, i.e., greater severity of functional hypofrontality and thus occupies an intermediate position between BPD and DSch (Figures 1 & 2), with stratification cartogram close to the PD. DAFCAR indices have the same trend, which is clearly seen not only according to the summary Table 2 but, especially, according to the comparative histograms (Figure 3).

Table 2: Summary data for the comparative analysis of indexes DAFCAR with various mental diseases.

Hemi sphere	Index	Health	PD	BS	BPD	PPhT	DSch
		Sr. značenie Dover.interval	Sr. značenie Dover.interval	Sr. značenie Dover.interval	Sr. značenie Dover.interval	Sr. značenie Dover.interval	Sr. značenie Dover.interval
Left	O Mo f	10.25	10.05	10.13	9.78	9.83	9.9
		10.11-10.4	9.91-10.19	9.92-10.35	9.56-10.01	9.52-10.14	9.71-10.1
	F Mo f	10.26	10	10.05	9.27	8.81	9.01
		10.12-10.41	9.85-10.14	9.82-10.28	9-9.53	8.54-9.07	8.73-9.29
	O Mo f - F Mo f	-0.01	0.05	0.08	0.52	1.02	0.89
		-0.03-0.02	0.01-0.1	0.01-0.15	0.25-0.78	0.68-1.37	0.6-1.18
	CDa1	0.284	0.237	0.287	0.205	0.2	0.169
		0.274-0.294	0.221-0.253	0.265-0.308	0.18-0.23	0.169-0.23	0.149-0.19
	CDa2	0.745	0.66	0.741	0.573	0.54	0.509
		0.727-0.762	0.634-0.686	0.717-0.766	0.528-0.618	0.487-0.594	0.468-0.55
	IIDA	6.895	5.205	7.1	4.054	3.899	3.284
		6.359-7.431	4.536-5.873	6.176-8.025	2.933-5.175	2.742-5.056	2.388-4.181
	ADA	2.657	2.29	2.67	1.948	1.856	1.746
		2.572-2.741	2.166-2.414	2.525-2.815	1.721-2.175	1.597-2.114	1.543-1.949

	CDa1 F	0.23	0.19	0.252	0.155	0.16	0.127	
		0.216-0.243	0.173-0.207	0.233-0.272	0.136-0.175	0.135-0.186	0.112-0.141	
	CDa2 F	0.623	0.529	0.648	0.449	0.444	0.389	
		0.597-0.649	0.499-0.559	0.616-0.68	0.411-0.487	0.396-0.492	0.355-0.423	
	IIH	6.534	4.458	7.271	3.053	3.079	1.955	
		5.925-7.144	3.693-5.224	6.424-8.117	2.106-4	1.968-4.19	1.146-2.764	
	AH	2.542	1.998	2.667	1.613	1.612	1.299	
		2.427-2.656	1.825-2.171	2.519-2.816	1.393-1.833	1.353-1.871	1.091-1.507	
	Alpha-1/Alpha	0.129	0.188	0.124	0.294	0.322	0.301	
		0.118-0.141	0.162-0.213	0.108-0.14	0.252-0.335	0.275-0.368	0.27-0.331	
	Alpha-2/Alpha	0.773	0.703	0.755	0.593	0.561	0.583	
		0.737-0.808	0.674-0.732	0.7-0.81	0.548-0.638	0.513-0.61	0.545-0.62	
	Alpha-3/Alpha	0.134	0.152	0.137	0.141	0.145	0.145	
		0.09-0.178	0.123-0.181	0.08-0.195	0.112-0.17	0.114-0.176	0.123-0.167	
	IZ	0.148	0.157	0.131	0.129	0.109	0.143	
		0.121-0.176	0.128-0.185	0.089-0.173	0.097-0.161	0.067-0.152	0.11-0.176	
	Age	21.5	22.9	28.2	29.7	40.9	27.1	
		20-23	21.6-24.2	26.8-29.6	28.7-30.8	36.8-45.1	25-29.1	
	Right	O Mo f	10.25	10.02	10.04	9.65	9.64	9.8
			10.1-10.39	9.88-10.16	9.8-10.27	9.44-9.87	9.36-9.92	9.6-9.99
F Mo f		10.26	9.93	9.93	9.37	8.92	8.94	
		10.12-10.4	9.79-10.08	9.68-10.19	9.1-9.64	8.67-9.17	8.69-9.19	
O Mo f - F Mof		-0.02	0.08	0.1	0.29	0.72	0.86	
		-0.05-0.01	0.02-0.15	0.03-0.17	0.09-0.48	0.39-1.05	0.57-1.14	
CDa1		0.296	0.247	0.282	0.215	0.199	0.172	
		0.284-0.307	0.23-0.264	0.26-0.304	0.192-0.239	0.17-0.228	0.151-0.193	
CDa2		0.767	0.669	0.733	0.586	0.538	0.516	
		0.749-0.785	0.641-0.697	0.7-0.766	0.544-0.627	0.485-0.591	0.474-0.558	
IIDA		7.137	5.502	6.901	4.76	4.039	3.254	
		6.563-7.711	4.816-6.187	5.942-7.86	3.743-5.778	2.857-5.22	2.287-4.22	
ADA		2.706	2.324	2.617	2.102	1.897	1.713	
		2.615-2.798	2.184-2.464	2.458-2.776	1.891-2.313	1.634-2.16	1.481-1.945	
CDa1 F		0.23	0.191	0.249	0.155	0.16	0.121	
		0.215-0.244	0.174-0.208	0.231-0.266	0.135-0.175	0.134-0.185	0.107-0.135	
CDa2 F		0.625	0.535	0.645	0.449	0.441	0.377	
		0.598-0.653	0.506-0.564	0.617-0.673	0.411-0.487	0.393-0.49	0.344-0.41	
IIH		6.194	4.498	7.319	2.951	2.909	1.579	
		5.521-6.868	3.729-5.266	6.569-8.069	1.977-3.924	1.8-4.019	0.746-2.412	
AH	2.479	2.024	2.684	1.584	1.584	1.162		
	2.348-2.61	1.858-2.191	2.56-2.808	1.355-1.813	1.33-1.838	0.937-1.387		
Alpha-1/ Alpha	0.112	0.178	0.119	0.284	0.32	0.297		
	0.101-0.123	0.152-0.205	0.1-0.138	0.239-0.328	0.273-0.367	0.266-0.327		
Alpha-2/ Alpha	0.793	0.719	0.761	0.605	0.558	0.582		
	0.756-0.83	0.689-0.749	0.706-0.816	0.558-0.652	0.51-0.607	0.543-0.622		
Alpha-3/ Alpha	0.095	0.103	0.105	0.111	0.121	0.121		
	0.056-0.133	0.082-0.124	0.048-0.161	0.086-0.137	0.092-0.151	0.099-0.143		

IZ	0.241	0.217	0.215	0.178	0.137	0.178
	0.218-0.264	0.189-0.245	0.172-0.258	0.143-0.214	0.1-0.173	0.14-0.215
Age	21.5	22.9	28.2	29.7	40.9	27.1
	20-23	21.6-24.2	26.8-29.6	28.7-30.8	36.8-45.1	25-29.1

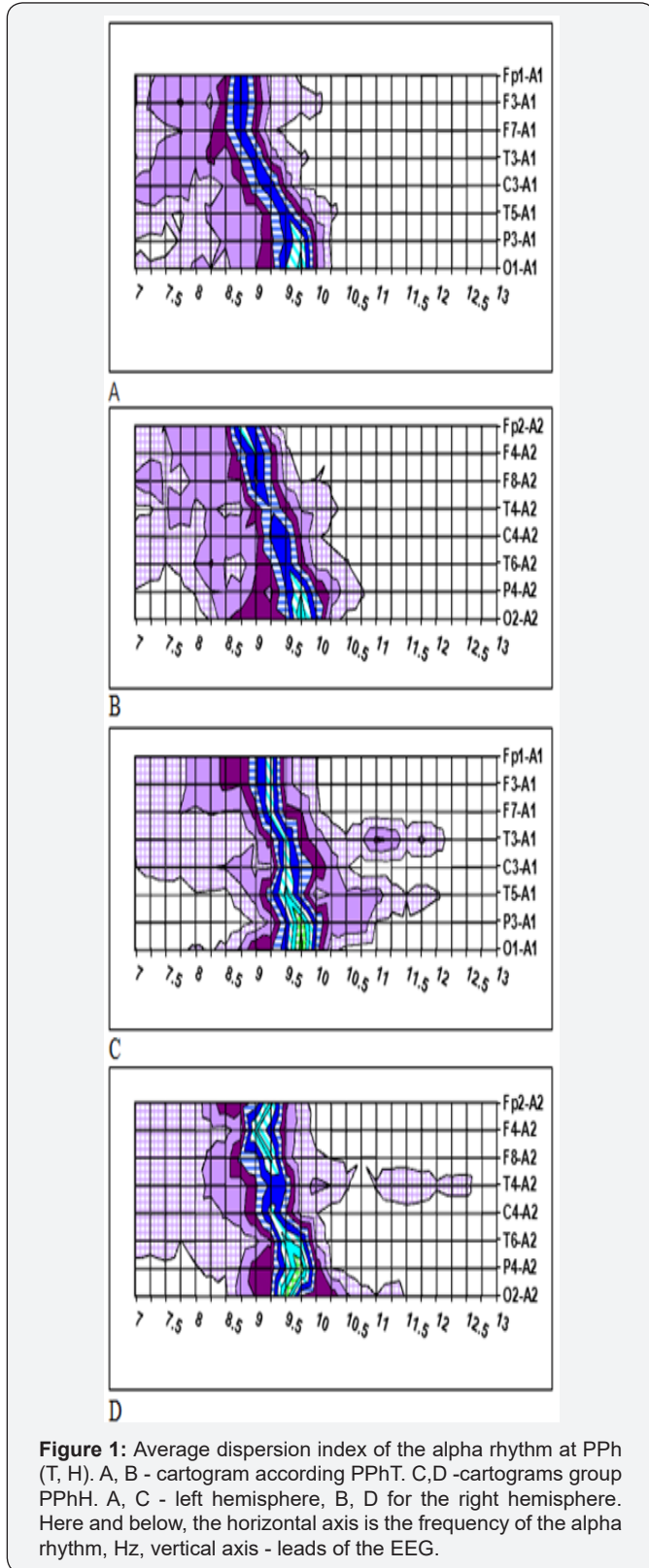


Figure 1: Average dispersion index of the alpha rhythm at PPH (T, H). A, B - cartogram according PPHt. C, D - cartograms group PPHh. A, C - left hemisphere, B, D for the right hemisphere. Here and below, the horizontal axis is the frequency of the alpha rhythm, Hz, vertical axis - leads of the EEG.

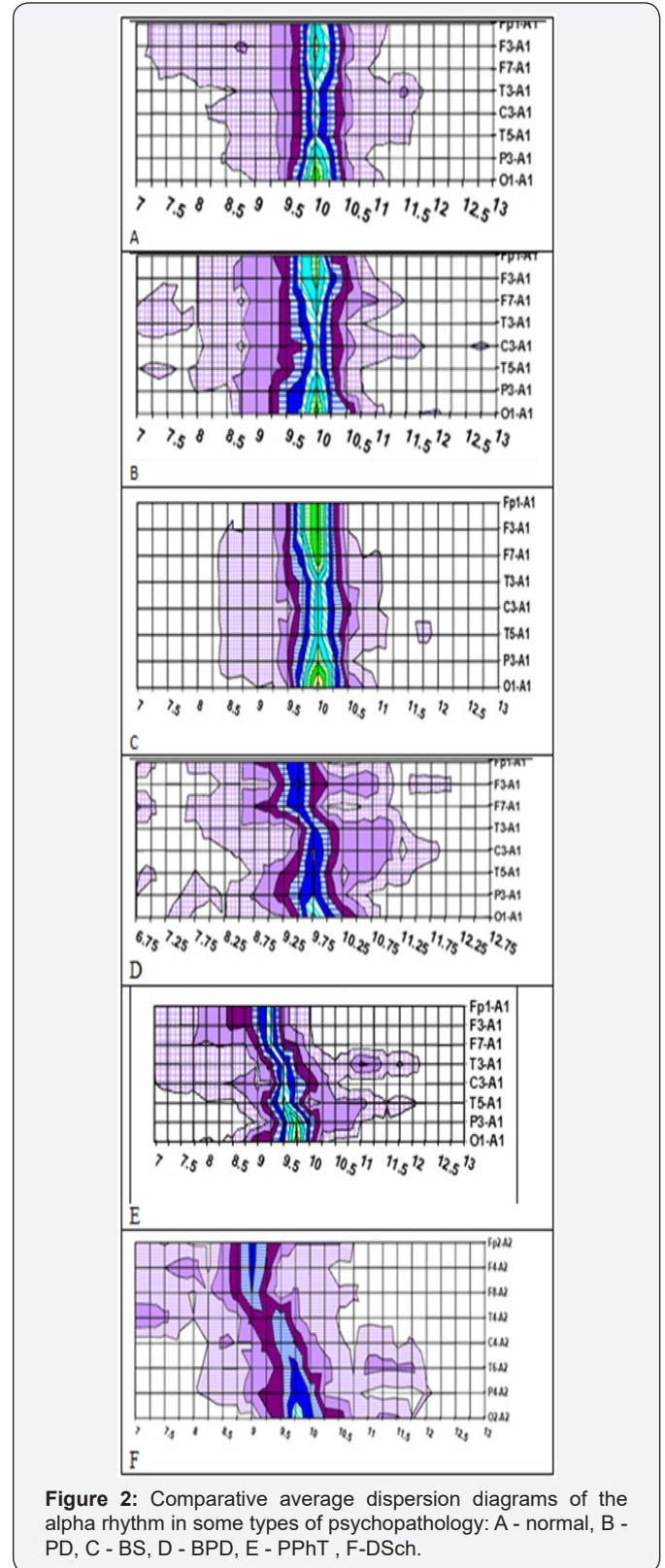


Figure 2: Comparative average dispersion diagrams of the alpha rhythm in some types of psychopathology: A - normal, B - PD, C - BS, D - BPD, E - PPHt, F-DSch.

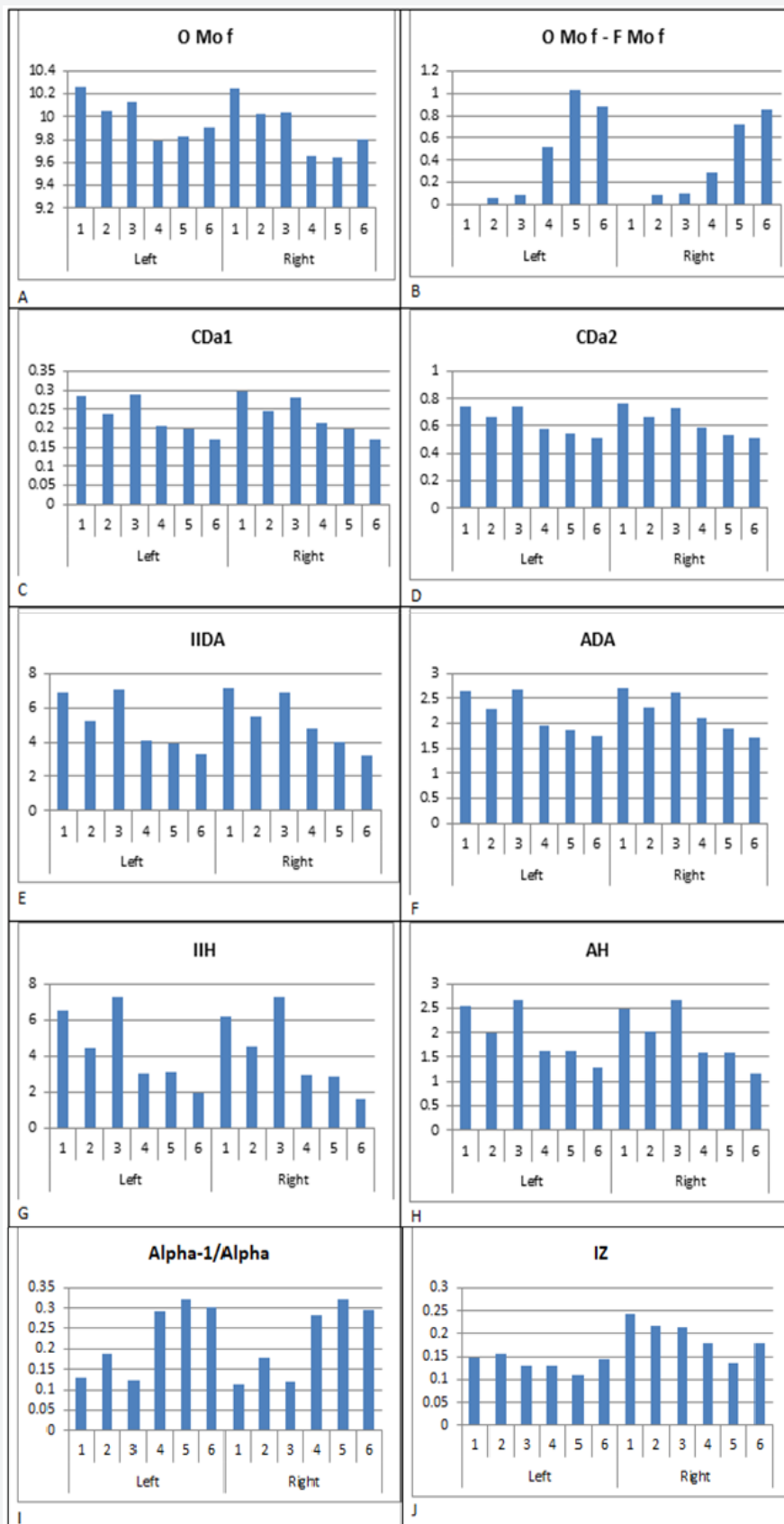


Figure 3: Comparative histograms of index values DAFCAR with various mental diseases: 1 - Health, 2 – PD, 3 – BS, 4 – BPD, 5 – PPhT, 6 – DSch

The statistical validity of these changes in the test checked student represented Lena in Tables 3 & 4. In General we can say that the PPhT group, with statistically significant differences from the norm and personality disorder, not very different from BPD and DSch [7-10]. Quite illustrative are the results of HVT (Figure 4). With PPhT and PPhH we observed abnormally high levels of endogenous reactions, at least twice the level in the personality disorder, even among healthy recognized pedophiles. The level of the PPhT total even higher than at the onset of schizophrenia, but we should not forget that in the group DSch all patients were intensively treated with

neuroleptics, and in the PPhT group as there are people with schizophrenia, and during the survey period, they intensively were not treated. From the studies presented in the previous articles in this series, it can be concluded that the endogenous reaction is a kind of constitutional state MSGM in which it is not sufficiently resistant to stress factors: brain cells, instead of synchronizing their activities in normal conditions (neutral reaction, exogenous reaction) on the contrary, desynchronizing her, which is manifested by increase of dispersion of the alpha rhythm. It is possible that the property is hereditary, and it is transmitted as a genetic predisposition to schizophrenia [11].

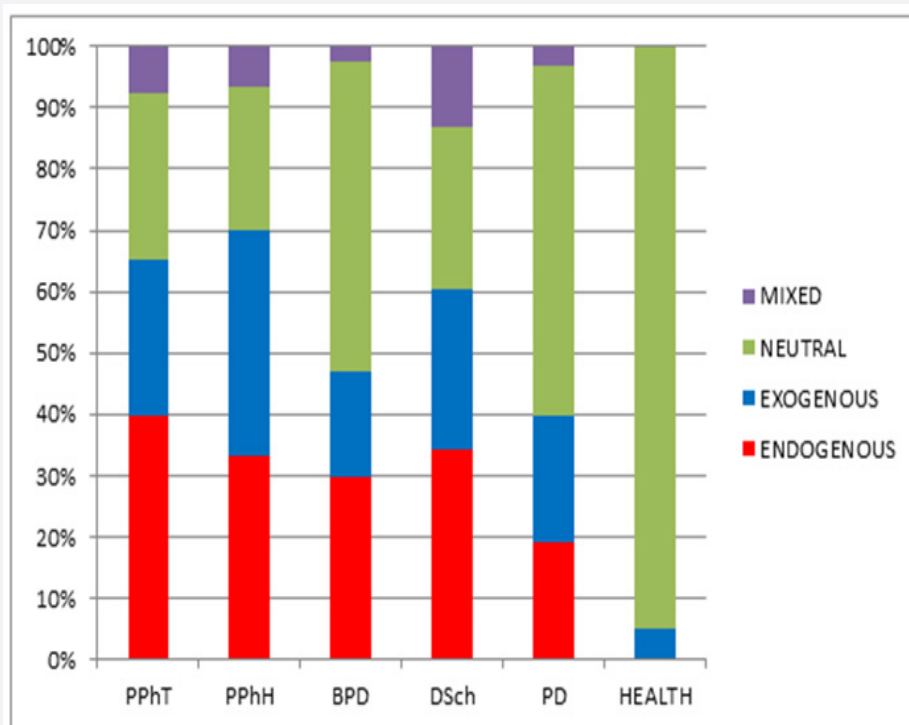


Figure 4: The results of the hyperventilation test (HVT) for different types of psychopathology.

Table 3: Statistical significance of differences between the average values of indices of dispersion DAFCAR in different groups of patients according to Student's test (t-value), a group of PPhT (filtered data represented only statistically significant differences).

	Mean	Mean	t-value	df	p
	PPhT	Health			
Alpha-1/Alpha	0.321	0.121	12.548	225	p<0.001
Alpha-2/Alpha	0.560	0.783	-10.591	225	p<0.001
CDa1	0.199	0.289	-8.487	225	p<0.001
CDa2	0.539	0.756	-11.519	225	p<0.001
IIDA	3.969	7.015	-6.969	225	p<0.001
ADA	1.877	2.681	-8.768	225	p<0.001
CDa1 F	0.160	0.230	-7.038	225	p<0.001
CDa2 F	0.443	0.624	-9.638	225	p<0.001
IIH	2.994	6.366	-7.709	225	p<0.001
AH	1.598	2.510	-9.482	225	p<0.001
O Mo f	9.736	10.250	-4.567	225	p<0.001
F Mo f	8.863	10.262	-14.055	225	p<0.001

O Mo f - F Mo f	0.873	-0.012	7.917	225	p<0.001
IZ	0.123	0.194	-4.241	225	p<0.001
	PPhT	PD			
Alpha-1/Alpha	0.321	0.183	7.889	300	p<0.001
Alpha-2/Alpha	0.560	0.711	-7.920	300	p<0.001
CDa1	0.199	0.242	-3.824	300	p<0.001
CDa2	0.539	0.664	-6.568	300	p<0.001
IIDA	3.969	5.353	-3.110	300	0.002052
ADA	1.877	2.307	-4.642	300	p<0.001
CDa1 F	0.160	0.190	-2.906	300	0.003933
CDa2 F	0.443	0.532	-4.714	300	p<0.001
IIH	2.994	4.478	-3.168	300	0.001694
AH	1.598	2.011	-3.913	300	p<0.001
O Mo f	9.736	10.034	-2.924	300	0.003717
F Mo f	8.863	9.966	-11.497	300	p<0.001
O Mo f - F Mo f	0.873	0.069	8.783	300	p<0.001
IZ	0.123	0.187	-3.688	300	p<0.001
	PPhT	BS			
Alpha-1/Alpha	0.321	0.121	9.480	172	p<0.001
Alpha-2/Alpha	0.560	0.758	-7.568	172	p<0.001
CDa1	0.199	0.284	-5.920	172	p<0.001
CDa2	0.539	0.737	-7.992	172	p<0.001
IIDA	3.969	7.001	-5.274	172	p<0.001
ADA	1.877	2.643	-6.295	172	p<0.001
CDa1 F	0.160	0.250	-7.332	172	p<0.001
CDa2 F	0.443	0.647	-8.956	172	p<0.001
IIH	2.994	7.295	-8.047	172	p<0.001
AH	1.598	2.676	-9.074	172	p<0.001
O Mo f	9.736	10.085	-2.400	172	0.017459
F Mo f	8.863	9.993	-8.624	172	p<0.001
O Mo f - F Mo f	0.873	0.092	5.210	172	p<0.001
IZ	0.123	0.173	-2.324	172	0.021293
	PPhT	BPD			
F Mo f	8.863	9.316	-3.435	232	p<0.001
O Mo f - F Mo f	0.873	0.400	3.356	232	p<0.001
	PPhT	DSch			
CDa1	0.199	0.171	2.272	220	0.024058
CDa1 F	0.160	0.124	3.587	220	p<0.001
CDa2 F	0.443	0.383	2.925	220	0.003806
IIH	2.994	1.767	2.558	220	0.011208
AH	1.598	1.230	3.130	220	0.001987
IZ	0.123	0.160	-1.983	220	0.048646

Table 4: Statistical significance of differences between the average values of the indices DAFCAR in different groups of patients according to Student's test (t-value), group PPhH (filtered data represented only statistically significant differences).

	Mean	Mean	t-value	df	p
	PPhT	Health			
Alpha-1/Alpha	0.279	0.129	7.573	74	p<0.001

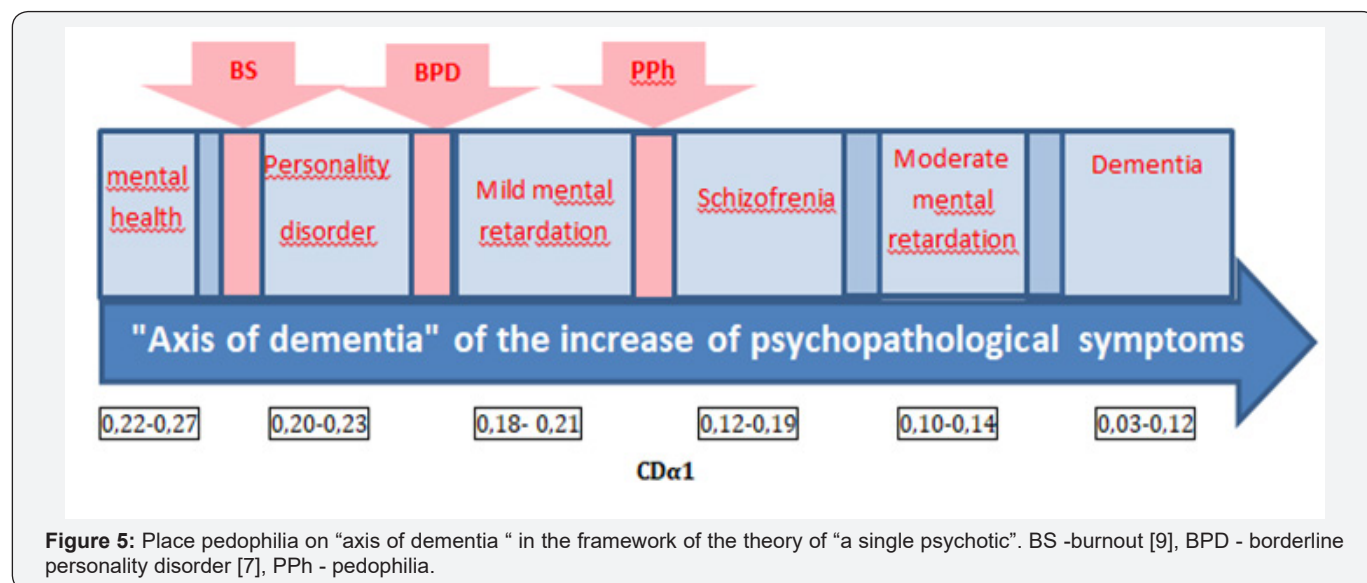
Alpha-2/Alpha	0.640	0.773	-3.373	74	0.001
CDa1	0.226	0.284	-3.998	74	p<0.001
CDa2	0.599	0.745	-5.465	74	p<0.001
IIDA	4.666	6.895	-3.204	74	0.002
ADA	2.143	2.657	-4.101	74	p<0.001
CDa1 F	0.160	0.230	-4.364	74	p<0.001
CDa2 F	0.447	0.623	-5.260	74	p<0.001
IIH	2.990	6.534	-4.647	74	p<0.001
AH	1.614	2.542	-5.734	74	p<0.001
O Mo f	9.717	10.254	-3.002	74	0.004
F Mo f	9.000	10.262	-6.945	74	p<0.001
O Mo f - F Mo f	0.717	-0.008	6.125	74	p<0.001
Возраст	43.2	21.5	10.001	74	p<0.001
	PPhT	PD			
Alpha-1/Alpha	0.279	0.188	2.594	111	0.011
F Mo f	9.000	9.997	-4.831	111	p<0.001
O Mo f - F Mo f	0.717	0.054	6.177	111	p<0.001
Возраст	43.2	22.9	9.595	111	p<0.001
	PPhT	BS			
Alpha-1/Alpha	0.279	0.124	6.311	47	p<0.001
Alpha-2/Alpha	0.640	0.755	-2.487	47	0.017
CDa1	0.226	0.287	-2.872	47	0.006
CDa2	0.599	0.741	-4.380	47	p<0.001
IIDA	4.666	7.100	-2.692	47	0.010
ADA	2.143	2.670	-3.214	47	0.002
CDa1 F	0.160	0.252	-5.048	47	p<0.001
CDa2 F	0.447	0.648	-5.576	47	p<0.001
IIH	2.990	7.271	-4.904	47	p<0.001
AH	1.614	2.667	-5.611	47	p<0.001
F Mo f	9.000	10.052	-4.619	47	p<0.001
O Mo f - F Mo f	0.717	0.081	3.889	47	p<0.001
	PPhT	BPD			
Возраст	43.2	29.7	7.19	77	p<0.001
	PPhT	DSch			
CDa1	0.226	0.169	2.490	71	0.015
Возраст	43.2	27.1	6.296	71	p<0.001

Thoughtful interpretation of these data should lead us to some very important conclusions a General slowing of the alpha rhythm leads to cognitive impairment - mental retardation and dementia; regional slowdown (particularly in the frontal lobes) - mostly behavioral (schizophrenia). A series of articles dedicated to DACHER demonstrates that at the core of all psychopathological changes - from the most innocent to deep delusional dementia is the disruption of the NGNB of varying severity and localization. This allows us to make a reasonable conclusion that as the cause of mental illness acts as a functional-informational etiologic factor (FIEF). FIEF disrupt the processing of afferent information and prevents the formation of the appropriate

efferent response, which is the essence of psychopathology. Hence it is quite logical to conclude that there is a whole class of information of the disease, the etiological cause of which is FIEF. In the first instance to information diseases include mental illness. Key to this concept is the notion that the etiological factor is not necessarily embodied in morphological changes in tissues and organs. In cases of information of the disease as such can be functional disorganization of the management structure. In cases of psychopathology is the entropy NGNB. In the case of pedophilia, we deal with such information a disease in which result from the effects of FIEF NGNB is formed on inadequate existing conditions of society a model of sexual behavior. They

have no intent to commit a crime because of their pathologically changed brain does not see this behavior nothing wrong. In the framework of the theory “a single psychotic” pedophilia in its

neurophysiological parameters change NGNB may be related to schizotypal disorder (F21) or sluggish schizophrenia (Figure 5).



Conclusion

- a) Entropy of NGNB is the functional-informational etiologic factor (FIEF) information diseases - primarily mental illness.
- b) Information diseases - diseases in which interfere with the normal managerial function of the body due to incorrect processing of afferent information and formulating efferent inadequate response.
- c) DAFCAR is a fairly sensitive marker FIEF that allows for early information to diagnose disease.
- d) Pedophilia is an informational disease in which distorted moral assessment of sexual behavior due to the disorganization NGNB in the frontal lobes; in the framework of the existing classification ICD-10 it belongs to schizotypal disorders (F21), or latent schizophrenia.

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