## VIII INTERNATIONAL SYMPOSIUM "MODERN PROBLEMS OF BIOPHYSICAL MEDICINE" 14-17 MAY 2014

MATHEMATICAL AND BIOPHYSICAL INFLUENCES ON THE STATE OF NOOSPHERIC CONSCIOUSNESS AND ON THE PSYCHONEUROANALITICAL THERAPY OF MILD AND MODERATE DEMENTIA DISEASE

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Kiev 14-17 May 2014



# EPIDEMIOLOGY OF DEMENTIA

Dementia  $\rightarrow$  5 - 7% of the world population over 60th.

Currently estimate that people affected by Dementia are about 35,6 millions in the World: we suppose they will increase up to 65,7 millions in the 2030 and 115,4 millions in the 2050.

In Italy they are over 1 million, 600.000 are Alzheimer disease (AD).

Among all the people affected by Dementia 50% are AD, 10% Vascular Dementia (VD), 10% mixed Dementia (AD+VD) and 15-20% are other forms of primary Dementia as Fronto-Temporal Dementia (FTD), Pick disease etc. 10-15% are secondary Dementia.

## **DIAGNOSTIC CRITERIA OF DEMENTIA**

### **DSM IV TR**

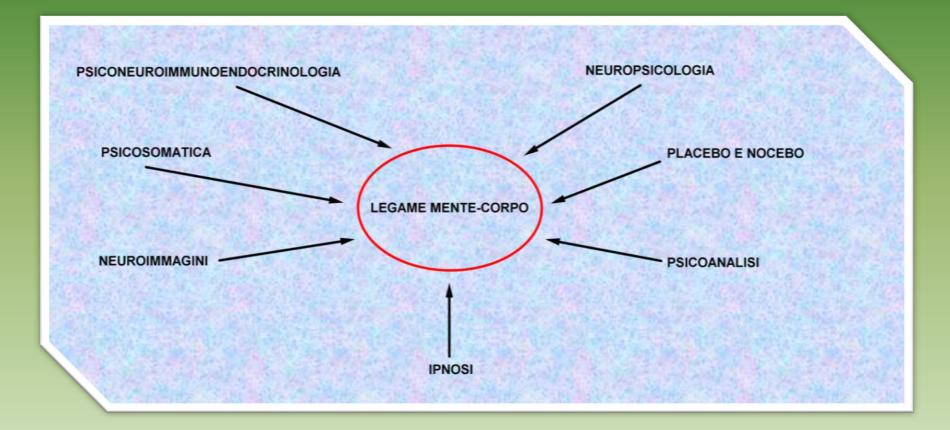
- A1. Memory deficit that can be demonstrated objectively on cognitive testing.
- A2. At least one other cognitive deficit such as aphasia (abnormal speech), executive function impairment (difficulty with planning, judgment, mental flexibility, abstraction, problem-solving, etc), agnosia (impaired recognition of people or objects), or apraxia (impaired performance of learned motor skills).
- B. Together, these cognitive deficits must result in impairment in performance of daily activities.
- The course is characterized by gradual onset and continuing cognitive decline.
- These deficits must represent a decline from a previous higher level of functioning.
- C. There must not be any other neurological disease that accounts for them (i.d. Delirium).

## **GENERAL TREND OF DEMENTIA**

IN THE 2010 THE WORLD EXPENSE FOR DEMENTIA WAS ABOUT 604 BILLION DOLLARS, HIGHER THAN 1% GROSS NATIONAL PRODUCT (GNP) OF THE PLANET. IF DEMENTIA HAD BEEEN A NATION IT WOULD HAVE BEEN THE 18th MONDIAL ECONOMY.

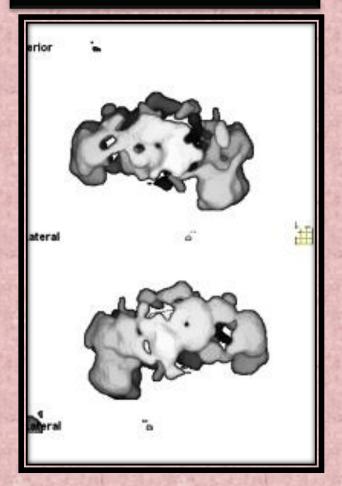
BECAUSE THE MONDIAL PEOPLE AGEING, DEMENTIA WILL BE AN INCREASINGLY HEALTHCARE, SOCIO-ECONOMIC AND CULTURAL PROBLEM.

### IMPORTANT MULTIDISCIPLINARY CONTRIBUTIONS TO UNDERSTANDING THE BODY-MIND RELATION



### WHAT BIOLOGICAL LESION IS AN INSURMOUNTABLE LIMIT FOR THE ACTION OF THE MIND OVER THE BRAIN?

#### SPECT Neuroimaging of vascular lesions



Up to now Neuroscience drow the line at the therapeutic action of the mind over the human brain, expecially when Pathological and/or Imaging evidences show a cerebral lesion, especially, in neocortex of dementia people.

# **OVER THE LIMIT**

A NEW THEORIC-THEREPEUTIC KNOWLEDGE, NAMED PSYCHONEUROANALYSIS, ASSOCIATED WITH AN UPDATE OF THE WELLKNOWN HYSTERIA ACHIEVED THE EVIDENCE HOW MIND, PARTICULARY CONSCIOUS MIND, IT'S CAPABLE ITSELF TO OVERSHOOT THE BIOLOGICAL LESIONS AND IMPROVE THE CEREBRAL STATUS EVEN IF IN PRESENCE OF A SEVERE DEMENTIA.

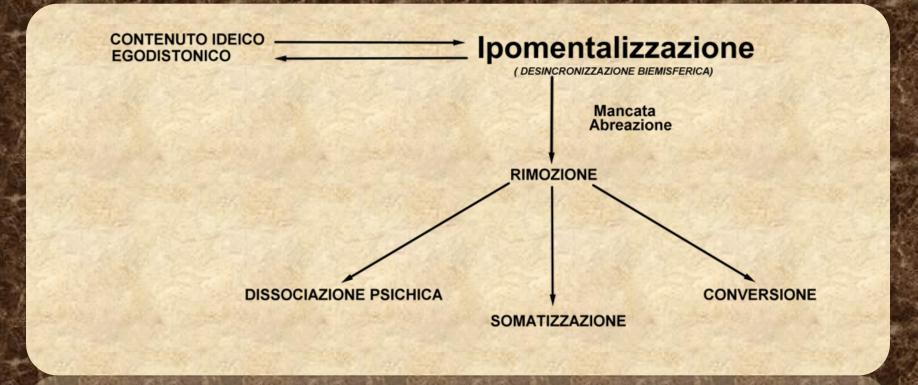


## FREUD'S IDEA OF HYSTERIA

According to Psychoanalysis somatic symptoms are considered as the expression of incapability to realize, identify and/or express feelings, istincts or better needs and desires by means of more mature psychological systems, because of incompatibility between the Ego's requests and Es and SuperEgo.

In conversion disorders, in effect, the person acts out a mechanism of transfer in his body impulses or unacceptable desires: in such way the negative and unpleasant value of the conflict is removed and kept out the awareness, while the person directs his attention to the somatic symptom (primary gain). Thus the symptom is charged by a symbolic value and represents the ongoing conflict. Also, by means of symptoms, the person may escape from hard and demanding situations, or, in any case, may receive attention from other people (secondary gain).

#### FROM THE HYSTERIA OF FREUD'S PSYCHOANALYSIS TO THE PSYCHONEUROANALYSIS OF HYSTERO-DEMENTIA

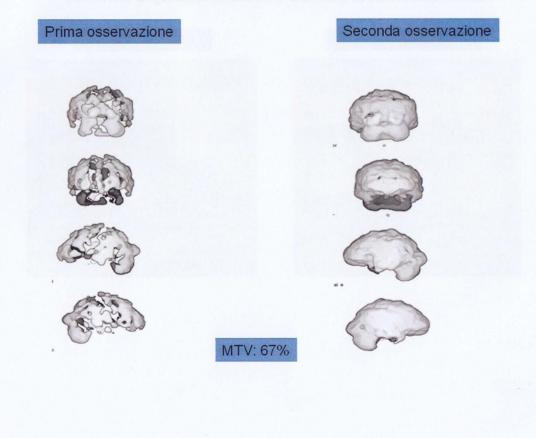


SOMATIZZIZIONE

# Strumental evidences post-Psychoneuroanalytic treatment

### 1° Case: HYSTERO-DEMENTIA

Università degli studi di Sassari: cattedra di Medicina Nucleare



#### NEUROCOGNITIVE EVALUATION PRE AND POST PSYCHONEUROANALITIC TREATMENT

MENTAL STATUS	March 2007	October 2007
VERBALE FLUENCY	2 14	26
COMPREHENSION	* 4 *	4
DENOMINATION AND WORD FINDING	5	5
ORIENTATION	2 2 2 2	4
NEW DATA LEARNING	5 min.= 3 10min.= 2	5 min.= 4 10min.= 3
IMMEDIATE RECALL OF A STORY	8	12
VISUAL MEMORY	5	5
LEARNING FROM ASSOCIATIVE COUPLING	6	8
CONSTRUCTIVE ABILITY	9	9
CALCULATION	3	4
PROVERB INTERPRETATION	1	8
SIMILARITY	1	10
DICTATION	DYSGRAPHIA - DYSORTHOGRAPHIA	NORMAL
FINAL SCORE	64/100	95/100

## CALLIGRAPHIC EVIDENCE PRE AND POST-**PSYCHONEUROANALYTIC TREATMENT**

#### PATHOLOGIC

#### NORMAL

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ca le mascelle=quotostomi

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#### Assertivita

L'assertivité à une parole che ste a significare la facelle presente un un individuo, che sie capece d'esper espere d'erossimo i prepri publi d'USTO, e le proprie eniozioni, seuze mai essere invadente offins. No, ma anzi, permettindo all'interlocutore d'interagire nel mooto pui adegnato. Dunque con assort, vi to si unale interdere quel fore naturale dismutato e si enzo nell'esporre la proprie personali ta: noé dire si al manénto di dire si, dire no al monanto di dire no.

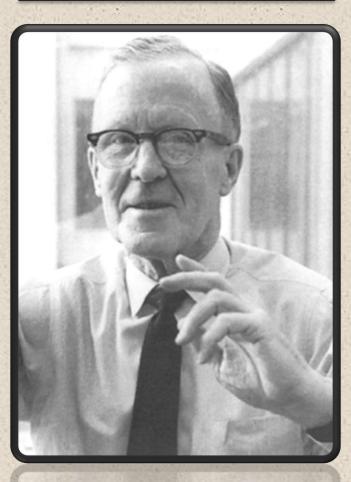
Finore sous Tre i Terunin foudamentali finore altributi. 45 Mueles della esserinza autoriflessiva.

25 Muelio permonente e continuitivo rel corso dei combiement, somatice, mentali e psichici, che assengono durante la formezione i le cresente dell'individuo.

3) Potolite delle istanze psich che alative alla propria persona, m contrapposizione alle opinioni grattuali

h) La presofisica del se è data dalla fus one d'lege individuali con quelle medes, me universali

## D. O. HEBB



Donald Olding Hebb was one of the first Neuroscientist that discovered the important relationship between nervous system and behaviour. He gave his name to one of fundamental algorithms of

learning in the field of neural network, the «Hebbian Learning rule».

# HEBB'S RULE

THE FOUNDAMENTAL CONTRIBUTION OFFERED BY D.HEBB ABOUT THE KNOWLEDGE OF NERVOUS EVENTS IS IN NEUROSCIENCES THE HEBB'S RULE OR "ASSEMBLY THEORY".

IT IS OFTEN SUMMARIZZED AS "CELLS THAT FIRE TOGETHER WIRE TOGETHER". THE THEORY ATTEMP TO EXPLAIN ASSOCIATIVE OR HEBBIAN LEARNING IN WICH SIMOULTANEOUS ACTIVATION OF CELL LEAD TO PRONOUNCED INCREASE IN SINAPTIC STRENGTH BETWEEN THOSE CELLS.

HEBBIAN THEORY HAS BEEN THE PRIMARY BASIS FOR THE CONVENTIONAL VIEW THAT WHEN ANALIZED FROM A HOLISTIC LEVEL, ENGRAMS ARE NEURONAL NETS OR NEURONAL NETWORKS.

E.KANDEL WORKED IN LABORATORY AND HE PROVIDED EVIDENCES FOR THE VALIDATION OF HEBB'S THEORY IN THE MARINE GASTROPOD APLISIA CALIFORNICA.

THE FOLLOWING IS A FORMULAIC DESCRIPTION OF HEBBIAN LEARNING:

 $\Delta W i i = n \chi i \chi i$ 

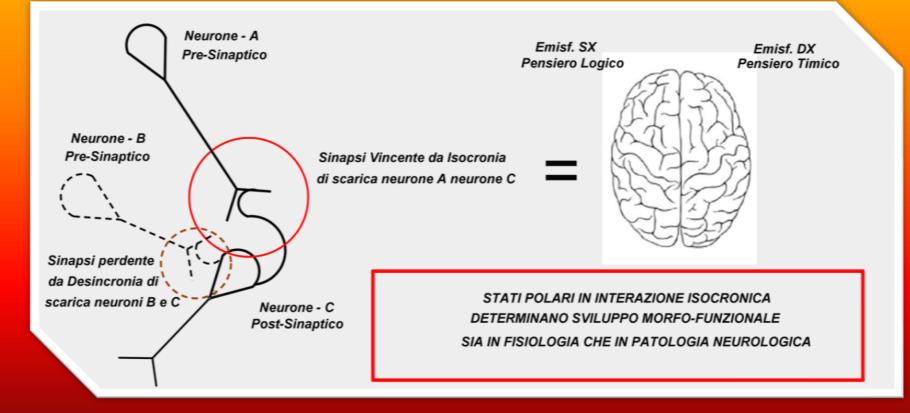
# HEBB'S RULE and PSYCHONEUROANALYSIS

• PNA discovers that the Hebb's rule is valid even at cerebral bi-hemispheric level

2 hemispheres > (<u>neuro-psyco-social level</u>)

2 cells > (*biological level*)

# Principle of Complementary-Polarity in the human CNS according to Psychoneuroanalysis



# HEBB'S RULE and PSYCHONEUROANALYSIS

#### **CONVERGENZA SINCRONICA**

#### Dal modello base bi-neurale di Hebb

 $\Delta W i j = \eta X i X j$ 

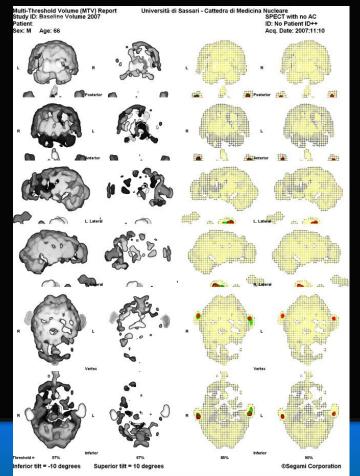
### Al modello integrale bi-emisferico della Psiconeuroanalisi

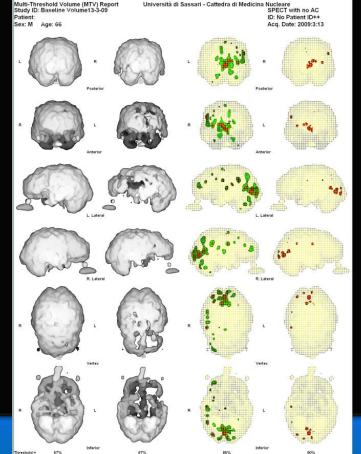
 $\Delta WESEd = \eta XESXEd$ 

## Strumental Evidences post Psychoneuroanalytic treatment

### 2° Case: MIXED DEMENTIA

#### **2007 – FIRST OBSERVATION**





**2009 – SECOND OBSERVATION** 

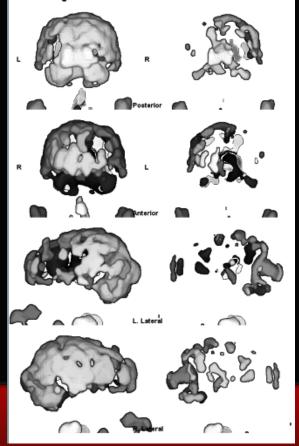
nferior tilt = -10 degrees Superior tilt = 10 degrees

©Segami Corporation

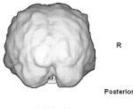
# Strumental Evidences post Psychoneuroanalytic treatment

### 2° Case: Mixed Dementia – Details

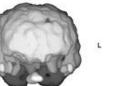
2007



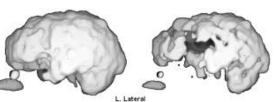
2009



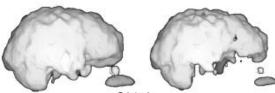








Anterior



R. Lateral

#### NEUROCOGNITIVE EVALUATION PRE AND POST PSYCHONEUROANALITIC TREATMENT

PSYCHOMETRIC TEST	2007	2011
MMSE	17	27
STORY RECALL Test	7,5/16	10/16
VISUAL ATTENTION	35,25	47,75
DICTATION	DYSGRAPHIA	COMPLETE and READABLE
VERBAL MBT	3,25	4,18
VISUO-SPATIAL MBT	2	4,77
VISUO-SPATIAL MLT	NOT EVALUATED	18,61
CRITIQUE and JUDGMENT	44	53,50
CALCULATION	CAN'T IDENTIFY MATH. SIGNS	13/20
RAVEN'S MATRICES Score	27/36	32/36
CLOCK DRAWING test	1/4	4/4
CONSTRUCTIONAL APRAXIA	11,75	11,14
VOCABULARY test	SCARCE	DISCRETE

# CONCLUSION

In our opinion the ancient dream of the Father of Psychoanalysis that Psychology lift up to a full science, by means of Neurology, is coming true. Through the Psychoneuroanalytic treatment is now appreciable the profound therapeutic effect that the Word holds with regards to our Bio-Psychological Nature, consinstently with the theoretical ambition of the early Freud (Progetto di una Psicologia - 1895).

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