

Poster presentation

## **Artificial neural networks: new perspectives in neuropsychiatry**

Vasiliki Psarra\*, Zoe Santa, Nikolaos Dimopoulos, Charalambos Mitsonis, Alexander Gerontas, Konstantina Lagiou and Christos Garnetas

Address: Psychiatric Hospital of Attica "Dafni", Athens, Greece

\* Corresponding author

from International Society on Brain and Behaviour: 2nd International Congress on Brain and Behaviour  
Thessaloniki, Greece. 17–20 November 2005

Published: 28 February 2006

*Annals of General Psychiatry* 2006, **5**(Suppl 1):S317 doi:10.1186/1744-859X-5-S1-S317

### **Background**

In the last decades computer models are central to scientific disciplines.

Artificial neural networks are constructed according to fundamental Biology principles, and their properties are investigated, in order to provide theoretical background about the functioning of the human brain, and possible mechanisms underlying mental illnesses.

The aim of this study is to investigate if there is an increased scientific interest in the study of artificial neural networks and to review their successful applications in neuropsychiatry.

### **Materials and methods**

We conducted a search in the MEDLINE database from 1985 until 2005 using the following key words, grouped in 5-year periods: Artificial neural network; Artificial neural network brain.

The key-word "brain" was used in order to limit the search to neuropsychiatry related papers, whereas using the other 3 words alone, yielded results from all medical specialties.

### **Results**

#### **Discussion**

There is evidence for a continuously growing scientific interest in neural network models within the last two decades in medicine and especially in neuropsychiatry, as shown by the increasing number of relevant published papers. Most recent papers, in which neural network models give plausible mechanisms for cognitive functions such as associative memory, and for psychiatric symptoms such as delusions and auditory hallucinations, are reviewed.

The issue of how the brain represents information at the neuronal level is crucial because it sheds light from another perspective to cognition and mental illnesses and provides a potential target for therapeutic interventions.

Table 1:

5 year period	Number of papers – keyword	
	ARTIFICIAL NEURAL NETWORK	ARTIFICIAL NEURAL NETWORK BRAIN
1985–1989	11	3
1990–1994	329	45
1995–1999	557	117
2000–2005	1883	145