

Translation by Patrizia Rustichelli-Stirgwolt

**The review of the Italian association of psycho-neuro-endocrine-immunology**

Edited by Francesco Bottaccioli

# **PNEI NEWS**

**The new knowledge of health**

**The spread causes nociceptive pain.  
Social pain is processed through the same  
brain pathways used for physical pain.**

**Special supplement  
Engel: The biopsychosocial model 35 years later.**

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## **PNEI NEWS NR 3-4 / 2012**

### **Editorial**

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*Francesco Bottaccioli*

### **Interview with Richard Wilkinson and Kate Pickett**

#### **Page 4. Social inequality harms health**

A study on chronic stress in our contemporary society reveals that there is a relationship between social inequality and diseases. The meeting of social epidemiology with psychoneuroendocrineimmunology opens a new frontier in the research allowing us to better understand the key role played by the social structure on health.

*Paola Emilia Cicerone*

### **Close up. Social pain**

#### **Page 6. Recession imposes a change and a more humane healthcare**

In Italy the recession has resulted in an increase of stress and anxiety cases. These disorders affect already a third of the population and are currently handled only privately as the main part of the people affected do not have the necessary resources.

*David Lazzari*

### **Dossier. Hands off our children**

#### **Page 8. We are altering the biological basis of our species.**

The effects of environmental pollution are a reason for growing worries. These concerns are supported by the fact that the transgenerational epigenetic inheritance of the negative effects of endocrine disrupting chemicals have been confirmed also in human beings.

*Laura Gaspari, François Paris Nicolas, Kalfa Charles Sultan*

#### **Page 13. Bisphenol A in babies' bottles. Perhaps a ban is not enough.**

Recently BPA has been banned for feeding bottles manufactured with polycarbonate plastics. Some studies show that this step may not be enough to avoid problems related with the use of plastic compounds in items for babyhood.

*Francesca Baldi, Alberto Mantovani*

#### **Page 14. Chlorpyrifos: a huge hazard.**

The research of the two authors proves that an exposure to organophosphate pesticides can alter the hormones during the foetal growth already at doses considered below the toxicity levels.

*Roberta Tassinari, Sabrina Tait*

## Human Network

### **Page 16. No drug is effective in regulating the hunger/satiety balance**

The New England Journal of Medicine has recently published some articles about the effectiveness of bariatric surgery which claims to be the only real solution to pathological obesity as the pharmacological approach has failed.

*Andrea Delbarba*

### **Page 18. Sleep disorders, inflammation, depression.**

There is a close link between sleep disorders and depression. The first ones are a sign of depressive illness. A prolonged lack of regular sleep triggers an increase of inflammatory cytokines that results in a depressive symptomatology.

*A.Palmisano*

### **Page 20. From vices to diseases.**

Behavioral addictions from – gambling to sex in internet – are about to be listed among mental disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM) scheduled to be published for 2013.

*Paola Emilia Cicerone*

## SPECIAL SUPPLEMENT: ENGEL

### **Page 21. The biopsychosocial model 35 years later**

### **Page 22. The need for a new medical model: a challenge for biomedicine.**

*George L. Engel*

### **Page 33. Integrating medicine and psychology**

Implementing the biopsychosocial model requires a correct and new integration of medicine and psychology.

*David Lazzari*

### **Page 36. Legitimate heirs.**

After having been long forgotten or vainly referred to it, the biopsychosocial model is now acquiring a solid scientific base thanks to psychoneuroendocrineimmunology.

*Francesco Bottaccioli*

## EDITORIAL

### **SPREAD IS NOCICEPTIVE**

**Social pain is processed through the same brain pathways used for physical pain.**

Francesco Bottaccioli – Sipnei Honorary President

Nowadays news report constantly that unemployment, unsteady jobs and poverty are rocketing dramatically and depict a very bleak outlook for the future of Europe caught in the middle of a catastrophic crisis. The economists consider these data under the financial point of view: Stock Exchange performance, spread and real economy. The trade unions see them in terms of job positions and income, the politicians worry about their votes.

We are going to read these data in terms of the amount of pain caused on the individuals.

Pain for redundancy, for not finding a job, for what a very small income or lack of money involves, pain for not being able to find a social role in spite of having the age and the competence for it, the anxiety for properly supporting one's own family, pain for the fear of losing the little healthcare which is currently available. When we think about this kind of pain, we understand immediately its gravity but we place it in the immaterial dimension of the psyches. Fear, anxiety, distress, humiliation, devaluation, failure, void are all terrible words used to describe this kind of experiences and yet they do not tell exactly what really happens inside the individuals who are experiencing these conditions. Is this just a mental pain or is it also a physical pain, the same as having been assaulted and injured? In effect, most of the words used to describe social pain are the same used for physical pain: "it was painful having been made redundant, dismissed. I was hurt by the indifference shown at my request for help, for a job. I was affected by the cut on the pension wages. My dignity was harmed".

These are wounds, injuries, knocks that do not leave signs on the body but, thanks to the last discoveries on the brain, we now know that affect the same brain areas that perceive physical pain.

The feeling of exclusion from social life is processed by the same cortical area that assesses a kick in the shin.

In fact there are two pain circuits (see figure at the bottom) which operate in a very tightly connected way. One sensorial circuit is characterized by the primary (S1) and secondary (S2) somatosensory cortical areas and the posterior portion of the Insula (P1) whose function is also to process pain stimuli otherwise called nociceptive stimuli. The other circuit is characterized by the dorsal portion of the anterior cingulate cortex (dACC) and the anterior portion of the insular cortex, these latter process the meaning of pain. This is the area where the pain is recognized, assessed and emotionally "measured". Naomi I. Eisenberger from the UCLA Department of Psychology carried out influential experimental studies which have been recently summarized in a review<sup>1</sup>. These studies reveal that social pain is processed through this circuit and that there exists a reciprocal influence between social and physical pain.

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Why should we be surprised then? We, human beings, are social. Being part of a group means survival and procreation. Being excluded is equal to death. The intermediate steps cause a stabbing pain.

Rather than getting ready for the next flu wave, it would be wiser for the health care professionals to prepare a supporting network for the people that will be affected by the social pain. Someone may object that health operators can not replace the government. Obviously a physician or a psychologist can not solve the crisis of the car industry, although when a person is in pain, this pain can be mitigated with the help of a friend or even by recalling the memory of a helping hand received in the past<sup>2</sup>. On the other hand also health care professionals are in danger. By definition they are helping operators whose role and mental health risk to be severely impacted by the crisis if they turn into prisoners of the spending review rather than turning in health review promoters. Only by doing this we can think of regaining the strength to fight together to get out of the tunnel created by a social model which is leading half of the world into despair.

QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

**The red areas represent the processing circuitry. The green areas represent the sensorial circuitry for pain perception. The two circuits are synergetic and interdependent. Social pain activate the processing circuit.**

- 1) Eisenberger N.I., The pain of social disconnection: examining the shared neural underpinnings of physical and social pain, Nature Review Neuroscience 2012; 13:421-434
- 2) Master S.L., Eisenberger N.I. et al. A picture's worth: partner photographs reduced experimentally induced pain, Psychol Sci 2009; 20: 1316-8