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# Neuroeconomics and Public Health

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**Objective:** To identify and describe the parameters of the Frontal Power of Concentration (C). **Method:** Systematic review of EEG- and fMRI-studies from a neuroeconomic point of view.

**Results:** C is a quadripartite executive integrator depending on:

1) Limbic system (L) generates emotions and cognition towards the Frontal Cortex (FC) in a reciprocal balance<sup>1</sup>. Chronic stress in L limiting C<sup>6</sup> is indicated by baseline serum cortisol

2) Volition in the vmPFC (c) controls both cognitive prediction (dlPFC)<sup>2</sup> and emotions (OrbitoFC)<sup>3</sup>

3) Semantic memories (R) based on Hippocampal memories are recollected from the Superior Temporal Sulcus<sup>4</sup>

4) An intuitive visuo-spatial sketchpad in the Parietal lobe (I) that spontaneously may integrate episodic memory mismatches temporarily preserved in the Occipital lobe<sup>5</sup> is a background variable depending on L.

L and c are reciprocal as indicated by a concave capacity curve. Hemispheric dominance (C>1) during insecurity is evidenced to be associated with sub-optimal decision-making<sup>7</sup> while C<1 is associated with a present bias. A neuroeconomic optimum represents secured risk-taking (i.e. including a worst-case-alternative) as determined by:

$$C = Rc^2/L + \varepsilon_I \rightarrow 1$$

**Discussion:** How to reinforce volitional flexibility (c)? Firstly, cognitive predictions are improved by open-mindedness. Secondly, emotional control is best maintaining an appropriate level of physical fitness. Thirdly, our imagination is directly facilitated by in-depth-relaxation-procedures<sup>8</sup> and visualization.

**Conclusion:** Five parameters of C are experimentally evidenced. Formula C predicts improved rehabilitation of large groups with chronic conditions by integrated home care which has a comparative advantage in learning due to a relaxation effect (BP↓~L↓→C↑). Further, Formula C predicts that well-organized stress-management integrating LowTech-interventions as exercise (L↓ and c↑), in-depth-relaxation (c↓) and diet (integrating L, R and c) tailored to the individual would improve public health (national life expectancy) significantly.

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## About the Author

Torben Larsen is MSc Econ from Aarhus University and has a diploma in strategic management from Maryland U. He has hold posts in Danish National Board of Health, Odense University Hospital, Danish Agency of Foreign Aid, Health Authority of Funen and CAST at SDU where he is chief consultant. He has received more academic awards:

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- Poster Award from the European Association of Medical Informatics for ICT-system for Integrated Primary Care, 1996
- Medal of Honour from Black SeaDiab for an technical aid program to a scientific network on diabetes, 1998
- Visiting Professor at the International Institute for Advanced Studies and Cybernetics (IIAS), 2002-
- Book Award for 'Neuropsychology for Economists' from Intersymp in Baden-Baden, Germany, 2007
- Bibliography in WHO-IS-WHO-IN-THE-WORLD 2009.