ISCH Action TD0904
Time In MEntaL activitY: theoretical, behavioral, bioimaging and clinical perspectives (TIMELY)

TIMELY Symposium at the EuroCogSci2011 meeting
"Current advances and directions on Time perception: Theoretical, Psychophysical, Neuroimaging, and Applied Perspectives"
Sofia (BG), May 21-24, 2011

Organized by Argiro Vatakis

Information, Programme, & Abstracts

COST is supported by the EU Framework Programme

ESF provides the scientific, technical and administrative secretariat for COST

Location: Sofia (BG) see more on http://nbu.bg/cogs/eurocogsci2011/location

Participation: EuroCogSci2011 registration fees (see http://nbu.bg/cogs/eurocogsci2011/registration).

For more information on the Training School or joining TIMELY: contact Argiro Vatakis at argiro.vatakis@gmail.com or visit www.timely-cost.eu.

TIMELY Management Structure

Grant Holder	**CSRI (GR)**
Chair	**Dr. Argiro Vatakis (GR)**
Vice chair	**Dr. Elżbieta Szeląg (PL)**
Secretary	**Dr. Georgios Papadelis (GR)**
Scientific coordinator (Yearly)	**Dr. Fred Cummins (IE)** **Dr. Mark Elliott (IE)** **Dr. John Wearden (UK)** **Dr. Dan Zakay (IL)**

ACTION GROUP 1 - *Conceptual analysis and measurement of time*

WG1a - Coordinator	**Dr. Peter Ohrstrom (DK) & Dr. Anna Eisler (SE)**
WG1a - Co-coordinator	**Dr. Valtteri Arstila (FI) & Dr. Bruno Molder (EE)**
WG1b - Coordinator	**Dr. Hedderik Van Rijn (NL)**
WG1b - Co-coordinator	**Dr. Rolf Ulrich (DE)**

ACTION GROUP 2 - *Exploring factors associated with TP variability*

WG2a - Coordinator	**Dr. George Dellatolas (FR)**
WG2a - Co-coordinator	**Dr. Joseph Glicksohn (IL)**
WG2b - Coordinator	**Dr. Anna Esposito (IT)**
WG2b - Co-coordinator	**Dr. Maria Giagkou (GR)**

ACTION GROUP 3 - *Extending time research to ecologically-valid stimuli*

WG3 - Coordinator	**Dr. Armin Kohlrausch (NL)**
WG3 - Co-coordinator	**Dr. Leon van Noorden (BE)**

ACTION GROUP 4 - *Uncovering the neural correlates of TP*

WG4 - Coordinator	**Dr. Christine Falter (UK) & Dr. Valerie Doyere (FR)**
WG4 - Co-coordinator	**Dr. Virginie Van Wassenhove (FR)**

DAY 1 – May 21st, 2011

Current advances and directions on Time perception: Theoretical, Psychophysical, Neuroimaging, and Applied Perspectives	
17:30 – 17:35	Introduction to the Symposium by Argiro Vatakis
17:35-17:55	Time is not perceived; Time is not controlled: Evidence from speech by Fred Cummings
17:55-18:15	Perception Search for cardiac influence on time interval reproduction by Olga Pollatos
18:15-18:35	Neural basis of audiovisual temporal processing by Tömme Noesselt
18:35-19:55	Do Robots Sense the Flow of Time?" by Michail Maniadakis
19:55-19:00	Q & A

Abstracts

Time is not perceived; Time is not controlled: Evidence from speech

Fred Cummings
University College Dublin, Ireland

Cognitivist models understand perception to be a distinct from action. In such models, 'time' is something perceived, and durations are actively controlled. Alternatives to this classical "cognitive sandwich" view are increasingly influential. Within dynamical models of coordinated behavior, perceptual variables play a constitutive role in setting the boundary conditions within which temporally structured patterning unfolds. Temporal patterning is here not controlled, but is an emergent property, arising within a domain of relative autonomy.
The recent Embodied Task Dynamic model provides an example of emergent temporal patterning in speech articulation that arises from both motor and perceptual constraints. Here, high-level constraints reflecting both aspects of speaking give rise to highly nuanced articulator trajectories capturing coarticulatory dependencies. Instead of employing the notion of "control", this model identifies the movement pattern that is optimal with respect to both production and perceptual criteria. This approach is continuous with recent work in visual perception that emphasizes the tight interdependence between movement and sensory change.

Associative models of animal timing Perception Search for cardiac influence on time interval reproduction

Olga Pollatos
University of Potsdam, Germany

Internal signals like one's heartbeats are centrally processed via specific pathways and both their neural representations as well as their conscious perception (interoception) provide key information for many cognitive processes. An important target structure serving as interface between information from bodily processes and feeling states is the insular cortex which also plays an essential role in different theoretical conceptualizations and models of time perception. Recent empirical findings propose that neural processes in the insular cortex which are related to bodily signals and feeling states might constitute a neurophysiological mechanism for the encoding of duration. Nevertheless, the exact nature of such a proposed relationship remains unclear. We aimed to address this problem by use of specially designed experiments, to examine synchronization and interrelation between cardiac and respiratory rhythms and cognitive tasks related to time perception and rhythm reproduction. In the present experiment participants were asked to reproduce different time interval several ranging from 0.5 to 60 seconds, while EEG, ECG, and respiration were assessed. First results show that for certain time durations markers of time interval reproduction are significantly synchronized with ongoing heart cycles, suggesting that this biorhythm might serve as pace maker for the estimation of time interval durations.

Neuroanatomy of Interval Timing Neural basis of audiovisual temporal processing

Tömme Noesselt
Otto von Guericke University, Germany

Temporal processing and time perception are essential for our cognitive systems to parse incoming objects and events and to determine their cause and effect. Time perception may be particularly demanding in multisensory situations, because sensory-specific information is thought to be initially processed in specialized modules before integration can take place. Thus, the neural basis of multisensory temporal processing has been a matter of debate for a long time. In my talk I will briefly review recent findings on the neural correlates of multisensory time processing including higher association cortices, e.g. superior temporal sulcus, parietal and frontal regions. I will present new data, suggesting a role of putatively sensory-specific cortex in

(automatic) audiovisual temporal processing. In addition, I will highlight how attention to temporal and spatial stimulus properties may modulate the neural network instrumental in multisensory temporal processing. Implications of these results and their relevance for the cognitive sciences will be discussed.

Do Robots Sense the Flow of Time?

Michail Maniadakis

Foundation for Research and Technology, Greece.

The capacity of humans and animals to experience and process time is fundamental for most of their daily activities. Despite the fundamental role of time in cognition, current endeavors in the development of robotic intelligence are not directed towards encompassing time processing in the systems' repertoire of capacities. The lack of temporal cognition in artificial agents obstructs robotic agents in developing sophisticated cognitive skills. In order to bridge the gap between human and artificial cognition, systematic research efforts should be devoted to artificial time perception, enabling robots to consider the temporal dimension of real world phenomena. The current presentation will discuss how temporal cognition facilitates low and high-level cognitive processes, and will present alternative computational approaches for enabling robots to experience and process time. Interestingly, the implementation of artificial temporal cognition is expected to provided added value to the cognitive modalities already implemented in robotic systems, therefore facilitating the seamless integration of artificial agents into human environments.