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Area: Psicología

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Título:

SPATIAL ATTENTION AS A GATEWAY FOR CONSCIOUS PERCEPTION: EXPLORING FUNCTIONAL AND NEURO-ANATOMICAL MECHANISMS

Resumen de la Memoria:

We are unconscious of most of the stimulation reaching our senses. But how is information selected to achieve consciousness and what are the brain mechanisms underlying conscious perception is still a matter of hot debate. Introspection suggests that when we attend to an object or part of a scene we become conscious of it. When we shift attention away, the information fades from consciousness. The question of whether this intuition is true or not is still under debate. Empirical data and influential theoretical models have emphasised the relationship between attention and conscious perception, however, this view has recently been challenged by studies showing that some forms of attention (endogenous or top-down attention) are dissociable from conscious perception (Koch Chica et al., 2011a; Chica et al., 2008; Chica Chica et al., 2006; Funes et al., 2007) and other groups (Klein, 2004), have demonstrated that there are at least two independent attentional systems underlying orienting. We have recently demonstrated using a variety of methods (behavioural, ERPs, fMRI and TMS) that exogenous, orienting is an important modulator of conscious perception, and that the state of activation of the orienting networks determines subsequent conscious perception (Chica et al., 2011b; Chica et al., 2010). However, the neural basis of both spatial attention and conscious perception are still being explored. The aim of my research project is to 1) explore the differential neural basis of different subtypes of attention such as endogenous vs. exogenous attention (see e.g., Chica et al., 2011a), alerting vs. spatial attention, object vs space based orienting. 2) Explore the causal implication of each of those attentional subsystems on conscious perception to determine its causal antecedents, and what attentional mechanisms are necessary and sufficient for consciousness. These studies will hopefully increase our understanding of the functional and neural mechanisms underlying spatial orienting and conscious perception, which might be of help for the rehabilitation of patients suffering attentional and consciousness deficits such as patients with neglect.

Resumen del Curriculum Vitae:

I obtained my BA in Psychology at the University of Granada in 2003. I joined the Experimental Psychology and Neuroscience PhD program at the University of Granada thanks to a PhD scholarship from the Spanish Ministry of Education and Science. I graduated with a Cum Laude in 2008 under the supervision of Dr. Juan Lupianez. During my PhD, I did several research stays at Oxford University (with Dr. Charles Spence, 5 months) and Dalhousie University (with Dr. Raymond Klein, 1 year). In 2008, I obtained a research contract from the Neuropôle de Recherche Francilien to work in an INSERM lab in Paris in collaboration with Dr. Paolo Bartolomeo. In 2009 I was awarded a Marie Curie postdoctoral fellowship (7th Framework Program of the European Union) to pursue my research at the Salpêtrière Hospital in Paris. My main research topic is the Cognitive Neuroscience of attention and conscious perception. I am interested in understanding the neural basis of different forms of attention and how they relate to our conscious experience. I apply different methodologies to the study of healthy individuals and brain damaged patients, such as behavioural psychophysics, oculo-motor and electro-encephalogram recordings, magnetic resonance imaging and transcranial magnetic stimulation. Until now, I have participated in 8 research projects financed by the Spanish and Andalucía's government and the European Union. I have published 15 papers in indexed international journals (13 of them as first author and 2 of them as second author), and 2 book chapters. I also contribute as a peer reviewer in more than 12 international journals including the Journal of Cognitive Neuroscience, Neuroimage, Neuropsychologia and Cortex. I have participated in more than 35 conferences (one of my last posters was awarded as best poster in an international conference), 5 specialized courses in Psychology and Cognitive Neuroscience, and have been invited to give 6 talks. I was selected out of the most outstanding young researchers in Europe to assist to the European Diploma in Cognitive and Brain Sciences in Germany, and the Visceral Mind School in Wales. I currently co-supervise a PhD student and have co-supervised 6 master students. I have recently been employed as a lecturer collaborator at the Universitat Oberta de Catalunya (UOC), and have already taught more than 230 hours at the University of Granada as part of my PhD formation.



Nombre: JANSSEN , NIELS

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Area: Psicología

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Título:

Aspectos neurocognitivos y conductuales de la producción de lenguaje.

Resumen de la Memoria:

Mi investigación se centra en aspectos neurocognitivos y conductuales de la producción de lenguaje. En concreto, me interesan los mecanismos de almacenamiento de palabras y sintagmas complejos en la memoria léxica. Por ejemplo: si la producción de una palabra morfológicamente compleja en inglés como ζ doghouse ζ depende de la recuperación de las palabras ζ dog ζ y ζ house ζ , o es recuperada de la memoria como una unidad léxica; ζ doghouse ζ . Así mismo, si sintagmas como "el coche rojo" son recuperados palabra por palabra, o en bloque. Existen diferentes opiniones al respecto, basándose éstas en si lo que gobierna la memoria léxica son reglas simbólicas internas del lenguaje o bien factores probabilísticos externos al lenguaje (p.e., McClelland, 1985; Pinker, 1994). Mis experimentos se basan en técnicas de regresión multivariada (e.g., métodos de efecto linear mixto) para evaluar el grado en el que las variables continuas, las cuales parecen afectar a la recuperación de los componentes de palabras y sintagmas, predicen los tiempos de reacción y las medidas electrofisiológicas. En los estudios de tiempos de reacción, no hemos hallado evidencia de que las palabras y sintagmas se almacenen de acuerdo con las partes que las componen (p.e., Janssen, Bi, Janssen, Barber, ver también Janssen, Carreiras & Barber, enviado). Actualmente nos encontramos en proceso de extensión de estos estudios a la producción de varios tipos de palabras y sintagmas. Conjuntamente con los estudios previos de tiempos de reacción y por medio de análisis de efecto mixto, evaluamos en qué grado las variables relacionadas con las partes que componen las palabras y sintagmas predicen las medidas electrofisiológicas. Esta línea de investigación contribuye al avance de técnicas de análisis relacionadas con los estudios electrofisiológicos, además de informarnos acerca de la organización de la memoria léxica, proporcionarnos información temporal detallada sobre el proceso de recuperación de palabras, y permitir la integración de nueva evidencia procedente de otros estudios de neuro-imagen (fMRI, MEG, etc).

Resumen del Curriculum Vitae:

Lugar y fecha de nacimiento: 02/03/1974, Grubbenvorst, Holanda. Cargo actual: Investigador postdoctoral Juan de La Cierva, Universidad de La Laguna, Tenerife. Línea de investigación (UNESCO): 61 (Psicología) Especialidad: Aspectos neurocognitivos y comportamentales de la producción de lenguaje. Formación académica: 1994: Licenciado en Informática, Radboud University, Nijmegen, Holanda. 2001: Máster en Psicología, Harvard University, USA. 2005: PhD en Psicología, Harvard University, USA. Actividades anteriores de carácter científico: 2005-2008: Postdoc; Laboratoire de Psychologie Cognitive, Marseille, Francia. 2009-now: Postdoc, Universidad de La Laguna, España. Idiomas: Holandés, Inglés, Alemán, Español, y Francés. Participación en proyectos de investigación: I.P.: Compound production: Sackler Psychobiology Fund (\$12,000). I.P.: Dynamics of language production: Fondation Fyssen (ζ 25,000, dos veces). Miembro de proyectos I+D+I vigentes: Percepción parafoveal de palabras: Integración de medidas electrofisiológicas y de movimientos oculares (PSI2010-19767). Colaboración en 11 proyectos internacionales en curso. Publicaciones: 19 en total, 5 en proceso de revisión. 9 como primero autor. 2 como editor. Otras actividades destacables: Referee de las revistas de más impacto de la disciplina: Journal of Experimental Psychology: Learning, Memory and Cognition, Psychonomic Bulletin & Review. Derek Bock Excellence in Teaching Award (2001); Sackler Scholarship in Psychobiology (2003); Fondation Fyssen Post-doctoral Fellowship (dos veces; 2005; 2006), beca postdoctoral Juan de la Cierva (2009). Prestaciones académicas. Asesor académico de estudiantes de Psicología, Harvard University (2001 - 2005). Tutor de estudiantes de Psicología, Harvard University (2001 - 2005), representante de becarios en el Departamento de Psicología, Universidad de La Laguna (2010-2011). Coeditor de la revista Frontiers in Language Sciences (conjuntamente con B. Mahon and E. Navarrete) del volumen especial ζ The Dynamics of Lexical access ζ (2011). Coeditor de las actas del 15th Annual Meeting of the European Society for Cognitive Psychology (ESCoP), conjuntamente con J. Grainer, F.-X. Alario, y B. Burle (2007).



Nombre: NIEUWLAND , MANTE

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Título:

Informativeness and real-world knowledge in language comprehension from a cognitive neuroscience perspective.

Resumen de la Memoria:

A major feat of human cognition is our ability to use language to efficiently communicate about the world. To make sense of statements about the world, we map their meaning onto our world knowledge: they can be true or false with respect to what we hold to be true, and they can be informative or trivial in light of what we already know. In psycholinguistic and neurocognitive accounts of language comprehension, however, the contribution of real-world knowledge and informativeness is often ignored or underspecified. This omission is striking given the essential role that truth-value has traditionally played in philosophical and linguistic theories of meaning. My research, funded by the Spanish Ministry of Science and Innovation (PSI2010-18087), focuses on the interaction of informativeness and real-world knowledge in language comprehension, and adopts a multidisciplinary approach that uses neuroimaging techniques to bridge the fields of pragmatics, experimental psychology and cognitive neuroscience. This research line tests the overall hypothesis that informativeness modulates the conceptual integration of linguistic input with pre-existing knowledge from semantic memory. It will investigate when and where in our brains these processes take place, with the goal of addressing how they shape language interpretation and how they can differ across individuals. The techniques that I use are event-related potentials (EEG/ERPs) and functional magnetic resonance imaging (fMRI), supplemented with event-related spectral perturbation, which computes dynamic interactions within cortical areas from the EEG, and functional connectivity analysis, which uses fMRI data to test whether activated brain areas work together. The initial step is to identify the neural signature of informativeness, and to map this signature onto neurocognitive accounts of language (e.g., Ferstl et al., 2008, Human Brain Mapping; Hagoort, 2005, Trends in Cognitive Sciences). I will use different paradigms that deal with how people establish sentence truth-value (e.g., negation, quantifiers and counterfactuals; Nieuwland & Nieuwland et al., 2010, Journal of Memory and Language; Nieuwland & Martin, under review, Psychological Science). My research has three main objectives: 1) To determine when real-world knowledge and informativeness constraints are integrated during language comprehension. 2) To determine the neural mechanisms involved in establishing informativeness and truth-value, with the hypothesis that the neural systems that evaluate informativeness are qualitatively different from the systems that evaluate truth-value. Evaluating informativeness may particularly rely on the comprehension of communicative intentions as governed by medial and right lateral prefrontal cortex, accompanied by idiosyncratic power changes in the gamma and theta band (Hagoort et al., 2004, Science) and increased connectivity of these regions to left prefrontal and temporal cortices. 3) Uncovering the neuropsychological and neural mechanisms underlying individual differences in establishing informativeness and truth-value. Taken together, the proposed projects will provide unique insights into how a understudied but essential aspect of pragmatics and language comprehension, the extraction of message information value, is realized in the brain.

Resumen del Curriculum Vitae:

I studied psychology at the University of Amsterdam (UvA), the Netherlands, where I obtained both the Bachelor's and Master's degree Cum Laude. I subsequently received my doctoral training in psycholinguistics and cognitive neuroscience at the UvA under the supervision of Prof. Jos van Berkum. The focus of my doctoral research was semantic and referential analysis during discourse comprehension. I applied methods from cognitive neuroscience, in particular ERPs and fMRI, to examine brain activity of readers and listeners during semantic and referential analysis. My research on semantic analysis focused on the effects of discourse context on the semantic processing of incoming words (e.g., Nieuwland & Nieuwland et al., 2010, Journal of Memory and Language): pragmatically skilled participants showed disruptions in semantic processing, against theoretical accounts under which pragmatic scalar meaning is computed relatively late. In contrast, otherwise healthy but less pragmatically skilled participants did not show these effects, reflecting the autistic tendency to adhere to literal interpretations. In 2010, I took up a position as Staff Scientist at the BCBL, where I investigate the neural implementation of high-level aspects of language comprehension, and I was awarded a research grant by the Spanish Ministry of Science and Innovation for my proposal (PSI2010-18087) titled "Tell me something I don't know! Informativeness and real-world knowledge in language comprehension from a cognitive neuroscience perspective", which is my current research focus. Brief summary of achievements: I have received all my academic degrees Cum Laude, I have published 14 articles, 9 of which as first author, in top-ranking journals such as Journal of Cognitive Neuroscience, Journal of Memory and Language, NeuroImage and Psychological Science. I have received national and international awards for my publications, and have received prestigious Dutch and Spanish grants for my research proposals. As part of my academic service I have peer-reviewed over 70 times for international journals, and I have reviewed for major grants and important international conferences.



Nombre: YEE , EILING

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Título:

How are concepts represented? Cognitive and neural investigations of normal and atypical populations

Resumen de la Memoria:

My research investigates how meaning is represented. Connecting symbols like words to the things they represent is a central problem in cognition. Embodied theories propose that brain regions that are activated when one perceives and interacts with an object are the same regions that represent it. Like other distributed models of memory, these sensorimotor-based theories characterize the meaning of a concept as a distributed pattern across a set of semantic units or features, with relationships among concepts captured via overlapping patterns of representation. An interesting, but understudied question concerns the extent to which, because the distributed architecture is non-holistic, attention can be focused on specific properties of a representation (e.g. when the task requires retrieving information about color, or shape, or function). A second question concerns the extent to which individual experience can shape conceptual representations. My background in psycholinguistics highlights to me the importance of linguistic and non-linguistic context in altering the active aspects of word meaning, and the fact that this meaning can change extremely rapidly (on the order of milliseconds) during word recognition. An emerging body of work suggests that the same may be true for conceptual representations, with different properties becoming available at different times. The aim of my research is to explore the extent to which the dynamic processes that take place during word recognition also transpire during conceptual retrieval. Further, at least some aspects conceptual representations may vary both across time (e.g., from one context to another), and across individuals (e.g., from one person to another. By what kind of neural processes might this kind of dynamic processing be instantiated?). What are the factors, if any, that constrain this variability? To explore these facets of concept retrieval, I use a multi-pronged approach, combining eye-tracking and imaging methodologies and normal and impaired populations.

Resumen del Curriculum Vitae:

Research Assistant, Harvard University, Neurobiology Laboratory. Supervisor: Dr. Mark Tramo 1995.B.A. University of Rochester, Department of Brain and Cognitive Science. Magna cum laude with Highest Distinction and Honors in Cognitive Science. Honors thesis Supervisor: Michael Tanenhaus. 1996.Lab Manager, Georgetown University, Brain and Language Laboratory. Directed by Dr Michael Ullman. 1996-1998.Ph.D., Brown University, Department of Cognitive and Linguistic Sciences, Jacob K. Javits Graduate Fellow; Joukowsky Presidential Dissertation Fellow. Thesis Supervisors: Dr. Sheila Blumstein & Dr. Julie Sedivy. 2005.Ruth L. Kirschstein NRSA Postdoctoral Fellow, University of Pennsylvania, Center of Cognitive Neuroscience / Department of Psychology. Mentor: Dr. Sharon Thompson-Schill. 2005-2010.Relevant Publications:Yee, E., Ahmed, S., & Thompson-Schill, S.L. Colorless green ideas (can) prime furiously. Under Review at Psychological Science.Yee, E., Chrysikou, E.G., Thompson-Schill, S.L. Semantic Memory. To appear in the Oxford Handbook of Cognitive Neuroscience. Kevin Ochsner and Stephen Kosslyn (Eds.) Oxford University Press. Yee, E., Huffstetler, S., & Thompson-Schill, S.L. Function follows Form: Activation of Shape & Function Features During Word Recognition. (In Press) Journal of Experimental Psychology: General.Mirman*, D., Yee*, E., Magnuson, J.S., & Blumstein, S.E. (In Press). An Evaluation of Theories of Spoken Word Recognition Deficits in Aphasia Using Eye-Tracking and Computational Modeling. Brain and Language. *The first two authors contributed equally to this work.Yee, E., Drucker, D.M., & Thompson-Schill, S.L. (2010). fMRI-adaptation evidence of overlapping neural representations for objects related in function or manipulation. NeuroImage.Myung, J., Blumstein, S.E., Yee, E., Sedivy, J., Thompson-Schill, S.L., & Buxbaum, L. (2010). Impaired access to manipulation features in apraxia: Evidence from eyetracking and semantic judgment tasks. Brain and Language.Yee, E., Overton, E., & Thompson-Schill, S.L. (2009). Looking for meaning: Eye movements are sensitive to overlapping semantic features, not association. Psychonomic Bulletin and Review, 16(5), 869-874.Yee, E., Blumstein, S.E., & Sedivy, J.C. (2008). Lexical-semantic activation in Broca's and Wernicke's aphasia: Evidence from eye movements. Journal of Cognitive Neuroscience, 20, 592-612.Yee, E., & Sedivy, J.C. (2006). Eye movements to pictures reveal transient semantic activation during spoken word recognition. Journal of Experimental Psychology: Learning, Memory and Cognition, 32(1), 1-14.Yee, E. (2005). The Time Course of Lexical Activation During Spoken Word Recognition: Evidence from Unimpaired and Aphasic Individuals. Doctoral Thesis. Department of Cognitive & Linguistic Sciences, Brown University.Ullman, M. T., Izvorski, R., Love, T., Yee, E., Swinney, D., & Hickok, G. (2005). Neural correlates of lexicon and grammar: Evidence from the production, reading and judgment of inflection in aphasia. Brain and Language, 93, 185-238.Yee, E., Blumstein, S.E., & Sedivy, J.C. (2004). The Time course of lexical activation in Broca's and Wernicke's aphasia: Evidence from eye movements. Brain and Language, 91, 62-63.