ACTIVITY REPORT 2009/12

BASQUE CENTER
ON COGNITION, BRAIN
AND LANGUAGE

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Manuel Carreiras
Director of the BCBL
April, 2012

This document covers the activity report of the Basque Center on Cognition, Brain and Language (BCBL) from the moment it was launched in November 2008 until December 2012. The BCBL was promoted by the Basque Government through Ikerbasque (the Basque Foundation for Science) that planted the seed and managed to assemble four partners to set up the legal structure of the BCBL. The four founding and current partners are: Ikerbasque, Innobasque (Basque Innovation Agency), the Provincial Government of Gipuzkoa and the University of the Basque Country (UPV/EHU). Initially, the BCBL was mostly funded by a grant from the Basque Government, but grants from other funding bodies also contributed to the initial budget of the BCBL. In particular, grants from the Plan Nacional and the Consolider program of the Spanish Ministry of Science and Innovation, grants from the 7th Framework of the European Union, from the Provincial Government of Gipuzkoa, and from several private foundations. Currently, various researchers have managed to attract competitive funding from EU agencies, the Spanish Government, the Basque Government, and private foundations.

The BCBL was created with the mission of performing world-class research on cognition, language processing, and on the brain mechanisms that underlie these processes. We are a multidisciplinary research center within the Basque Country Science Network, dedicated to the pursuit of excellence in research, training and knowledge transfer within the field of Cognitive Neuroscience of Language.
The specific aim of our research activity is to unravel the neurocognitive mechanisms involved in language acquisition and processing, with special emphasis on bilingualism and multilingualism. To that end, we set up a well-equipped laboratory with exceptional facilities and recruited an outstanding group of human resources.

The laboratories of the BCBL are equipped with cutting edge technological platforms such as MRI, MEG, EEG and NIRS. As of December 2012, we have succeeded in recruiting 2 senior researchers, 7 staff scientists, 12 postdoctoral researchers, 14

PhD students, 9 administrative staff, 6 information technologies and technical staff, and 13 laboratory staff. Researchers are currently organized in two research groups. More research groups will be created in the near future as we continue recruiting outstanding researchers.

Finally, the BCBL is also committed to education and knowledge transfer; thus, in collaboration with the University of the Basque Country (UPV/EHU) we have created a Masters Program entitled “Cognitive Neuroscience of Language” that has been approved by the Spanish Government and has been running since September 2011.

These are exciting times for research in Cognitive Neuroscience of Language in the Basque Country. To learn more, read what is in the pages to come.

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THE CENTER

_ DEFINITION
_ MISSION, VISION
_ AIMS

DEFINITION

The Basque Center on Cognition, Brain and Language is a world-class interdisciplinary research center for the study of cognition, brain and language jointly founded by Innobasque, Ikerbasque, UPV/EHU (The University of the Basque Country) and the Government of Gipuzkoa.

The center is situated in Donostia-San Sebastián in the Basque Country (Spain) and was set up in December 2008, when operations began to create the necessary research environment, including administrative and technical support and to recruit personnel, with a view to beginning on-site research in September 2009.

Language is the most unique human ability and involves complex cognitive processes. Reading and writing are the most impressive cultural developments of our civilization and are at the same time a major developmental milestone in each person's life.

They fundamentally change the way in which a person interacts with their environment. However, despite the impressive technological and scientific advances of recent decades we have yet to unravel the complexities of the cognitive processes involved in language and reading and we still do not know the causes of some speech disorders and reading disabilities or how to remedy them.

The BCBL carries out research using the most advanced techniques in these fascinating areas, with a special focus on bilingualism.

MISSION, VISION

Provide a platform for researchers and professionals from related areas to carry out frontline research, development and innovation in this area.

We are a multidisciplinary research centre, within the Basque Country Science Network, dedicated to pursuing excellence in research, training and knowledge transfer within the field of Cognitive Neuroscience of Language.

Our centre aims to provide a platform for researchers and professionals from related areas to carry out frontline research, development and innovation in this area.

Aim of our research

The specific aim of our research activity is to unravel the neurocognitive mechanisms involved in the acquisition, comprehension and production of language, with particular emphasis on bilingualism and multilingualism.

Some of the areas we study include the processes involved in normal child language acquisition and second language learning in adults, as well as learning disorders, language disorders, the language-related effects of aging and neurodegeneration and language use in different social contexts.

Our commitment

Our commitment to education and knowledge transfer in the area of Cognitive Neuroscience extends across different contexts, including university, healthcare, social and business environments, with the aim of contributing to social welfare by applying the knowledge and technology derived from our research.

To this end, we have forged links with institutions and organizations in both the local and wider communities, to provide expertise, consultancy and technology development services, all to the highest international standards.

Research Agenda

Our research agenda also takes advantage of our centre's location in the bilingual Basque country to study language processing in Basque and Spanish. As an isolated language, Basque has unique characteristics and so provides an unrivalled opportunity to unveil both the specific and the universal characteristics of language.

To pursue our aims, we use a variety of methods, including cutting-edge neuroimaging techniques, behavioral methods and computational modeling, developing our own projects and also collaborating with other public and private institutions.

AIMS

To unravel the neurocognitive mechanisms involved in the acquisition, comprehension and production of language.

To develop research and innovation in Cognitive Neuroscience with particular emphasis on language processing and bilingualism.

To promote scientific research and national and international scientific relations within the field of Cognitive Neuroscience and to transfer the results of this research to the wider socioeconomic community.

To promote the transfer and dissemination of knowledge about Cognitive Neuroscience, Language and Bilingualism both within and beyond the Basque Country, by means of organizing courses, seminars, national and international conferences and by other appropriate general communication means.

To participate in undergraduate and postgraduate education and training programs and encourage the incorporation of young researchers to this field.

To facilitate the training and ongoing development of BCBL personnel and to promote their collaboration across different lines of research.

To forge collaborative links and common interest areas with public and private institutions, centers and industries, with the aim of providing research, training, technological and consultancy services to use the work developed in BCBL to the fullest economic and social advantage.

ORGANIZATION

_ PARTNERS
_ INTERNATIONAL ADVISORY BOARD
_ ORGANIZATIONAL CHART
_ PEOPLE

PARTNERS

BCBL was established as a Non-profit Association on November 19, 2008. The Association currently comprises the following founding partners:

Founding Partners

Ikerbasque. Basque Foundation for Science
www.ikerbasque.net

Innobasque. Basque Innovation Agency
www.innobasque.com

Local Government
www.gipuzkoa.net

University of the Basque Country
www.ehu.es

Promoted by

Gobierno Vasco / Eusko Jaurlaritza
www.euskadi.net

INTERNATIONAL ADVISORY BOARD

The main role of the International Advisory Board is to advise on the center's orientation and overall strategy. The International Advisory Board comprises internationally renowned researchers and professionals.

The members of the International Advisory Board for the 2009-2012 period were:

_ Ron Mangun (Chair)
Center for Mind and Brain. University of California at Davis, USA.

_ Anne Cutler
Max Planck Institute for Psycholinguistics, The Netherlands.

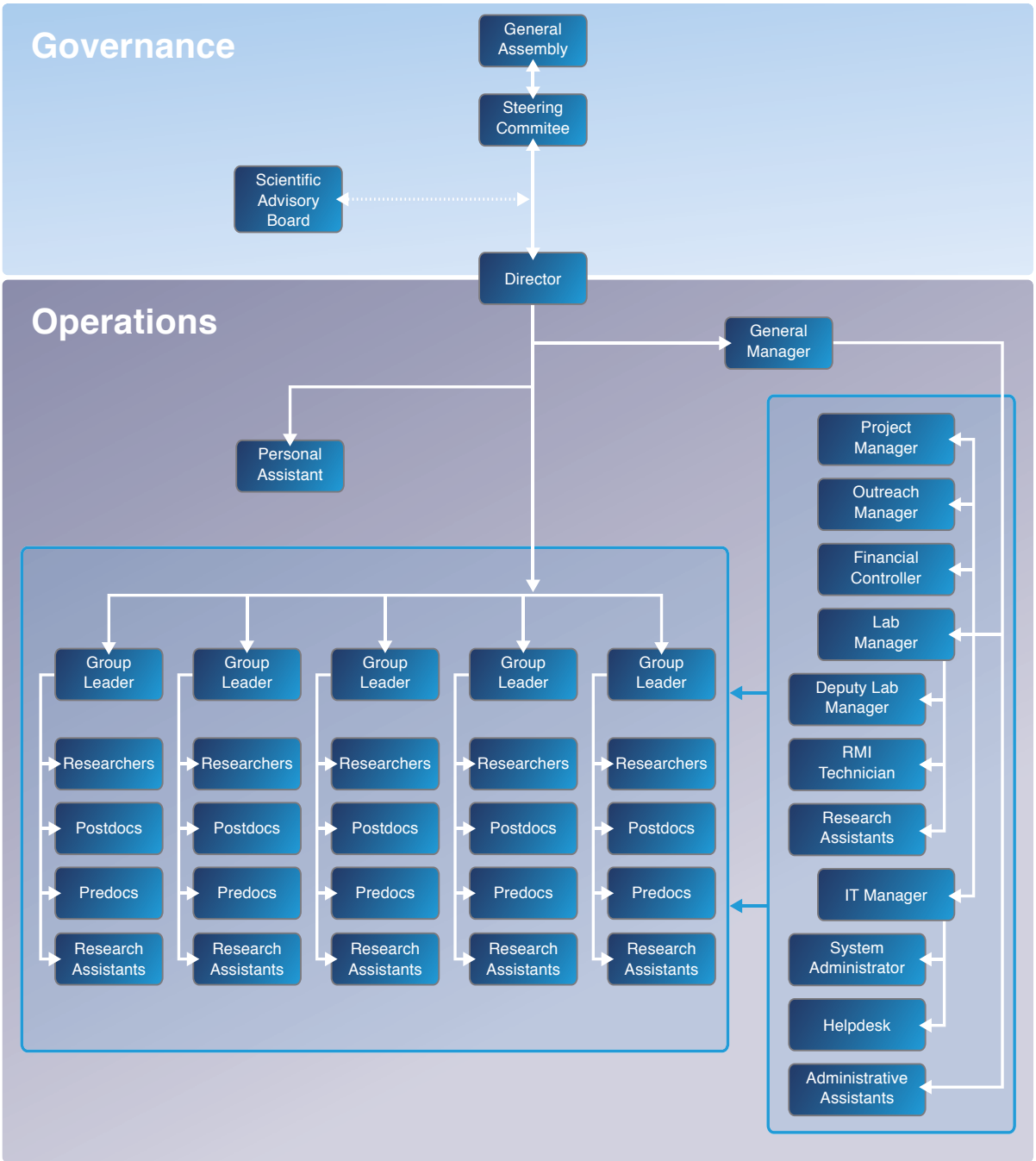
_ William Marslen-Wilson
University of Cambridge, UK.

_ Jay McClelland
Center for Mind, Brain and Computation. Stanford University, USA.

_ Mike Posner
University of Oregon and Sackler Institute, USA.

_ Tim Shallice
SISSA (Scuola Internazionale Superiore di Studi Avanzati – International School for Advanced Studies), Italy and Institute of Cognitive Neuroscience, UCL, UK.

ORGANIZATIONAL CHART

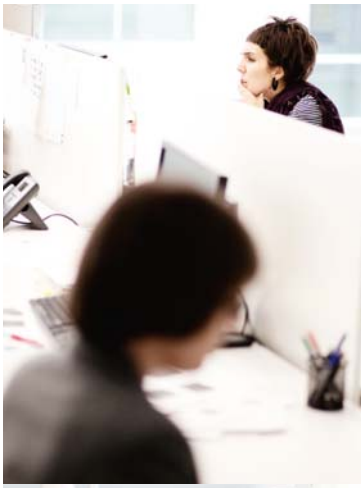


PEOPLE

Given that one of the BCBL's objectives is to become and international benchmark in its field of research, the quality of its staff has been a fundamental part of its strategy from the outset.

Our core research team was created based on three fundamental principles: quality staff, international dimension and the recuperation of talented researchers.

This philosophy was used to develop the selection and incorporation processes for staff at the various R&D units, as well as the technological infrastructure, as the high levels of investment in infrastructure, equipment and apparatus involved in starting up the BCBL make no sense if they are not accompanied by quality human resources.



BCBL Personnel on December 31, 2012

Director

_ Manuel Carreiras. Ikerbasque Research Professor

Group Leaders

_ Manuel Carreiras. Ikerbasque Research Professor
_ Arthur Samuel. Ikerbasque Research Professor

Staff Scientists

_ Doug Davidson
_ Nicolas Dumay
_ Eiling Yee. Ramón y Cajal MICINN Fellow
_ Jon Andoni Duñabeitia
_ Clara Martin. Ikerbasque Fellow
_ Nicola Molinaro
_ Elena Salillas. Marie Curie IEF FP7 Fellow

Post-doctoral Researchers

_ Adriana Hanulikova. Marie Curie IEF FP7 Fellow
_ Marie Lallier. Marie Curie IEF FP7 Fellow
_ Simona Mancini
_ Stephanie Massol. Fyssen Foundation Fellow
_ Monika Molnar
_ Philip J. Monahan. Marie Curie IIF FP7 Fellow
_ Pedro Paz-Alonso
_ Alejandro Pérez. ITN Marie Curie Training Action Fellow
_ Blair Armstrong
_ Martijn Baart. NWO Rubicon Fellow
_ Wouter De Baene. FWO Fellow
_ Frederic Roux

Pre-doctoral Researchers

_ Eneko Antón
_ Aina Casaponsa. FPI MICINN Fellow
_ Brendan Costello
_ Lorna Garcia
_ Cristina Gil
_ Saioa Larraza
_ Mikel Lizarazu
_ Ainhara Martí. BFI Basque Government Fellow
_ Ileana Quiñones
_ Jui-Ju Su. ITN Marie Curie Training Action Fellow
_ Ainhoa Bastarrika
_ Myriam Oliver
_ Karla Orihuela
_ Garikoitz Lerma

Administration staff

_ Miguel Ángel Arocena. General Manager
_ Ana Fernández. Project Manager
_ Vanessa Gallardo. Financial Controller
_ Pawel Kuszelewski. Outreach Manager
_ Leire Arietaleanizbeascoa. Personal Assistant
_ Joana Izurieta. Administrative Assistant
_ Larraitz Alcorta. Administrative Assistant
_ Eider Juaristi. Administrative Assistant
_ Maider Goñi. Management Assistant

Information Technologies & Technical staff

_ Jose Corral. IT Manager
_ Borja Chantre. Helpdesk
_ Leon Felipe García. Systems Administrator
_ Xabier Rojo. Program Developer
_ Andrew Duchon. Research Engineer
_César Caballero. MRI Engineer

Laboratories staff

_ Clara Furió. Lab Manager
_ Alazne Alegre. Lab section Coordinator
_ Larraitz López. Lab section Coordinator. PTA MICINN Fellow
_ Eri Takahashi. Lab section Coordinator. PTA MICINN Fellow
_ Oihana Vadillo. Lab section Coordinator. PTA MICINN Fellow
_ Elena Aguirrebengoa. Research Assistant
_ David Carcedo. Research Assistant
_ Mamen González. Research Assistant
_ Idoia Lauzurika. Research Assistant
_ Maider Lucas. Research Assistant
_ Xabier Urizar. Research Assistant
_ Inge Iturralde. Research Assistant
_ Itzal Uranga. Research Assistant

Fellowships:

MICINN _ Spanish Ministry of Science and Innovation	**8**
Ramón y Cajal Senior Grants	3
Juan de la Cierva Junior Grants	1
FPI Predoctoral Grants	1
PTA – Grants for Technicians	3
7PM _ Seventh Framework Programme	**5**
Marie Curie IIF Fellowship	1
Marie Curie IEF Fellowship	2
ITN Marie Curie Training Action Fellowship	2
Fyssen Foundation	**1**
Post doctoral Grants	1
Basque Government	**3**
Ikerbasque Research Professor Grants	2
BFI Predoctoral Grants	1

FACILITIES AND RESOURCES

_ BUILDING
_ LABORATORIES (MIRAMÓN, KORTA & JUNIOR LAB)
_ RESEARCH FACILITIES:
    _ BEHAVIOURAL
    _ MEG
    _ MRI
    _ EEG
    _ EYETRACKING
    _ babyLAB
    _ NIRS

BUILDING

Throughout 2009 the BCBL's Director and General Manager visited and analyzed some of the key European research centers in this sector, to be able to design and build the exceptional facilities that support cutting-edge research on language and cognition in adults and children, using both behavioral and neuroscientific approaches.

Today the BCBL has three sites. The headquarters (main laboratories and offices) are located in San Sebastián's Technological Park with a total surface area of 1,823 m^2 (1,170 m^2 for offices, meeting rooms, auditorium, library and lounge and 653 m^2 for labs). The second location is a 100 m^2 space located in the Jose Mª Korta building in the University of the Basque Country Campus. Finally, the BCBL has extended its facilities with the recently created Junior Lab in Vitoria (120 m^2).

LABORATORIES

Miramón & Korta

The full complement of neuroscience methodologies is available, including EEG/ERP, MEG, and fMRI. All facilities are connected to a high-speed local network that also supports communication between user workstations.

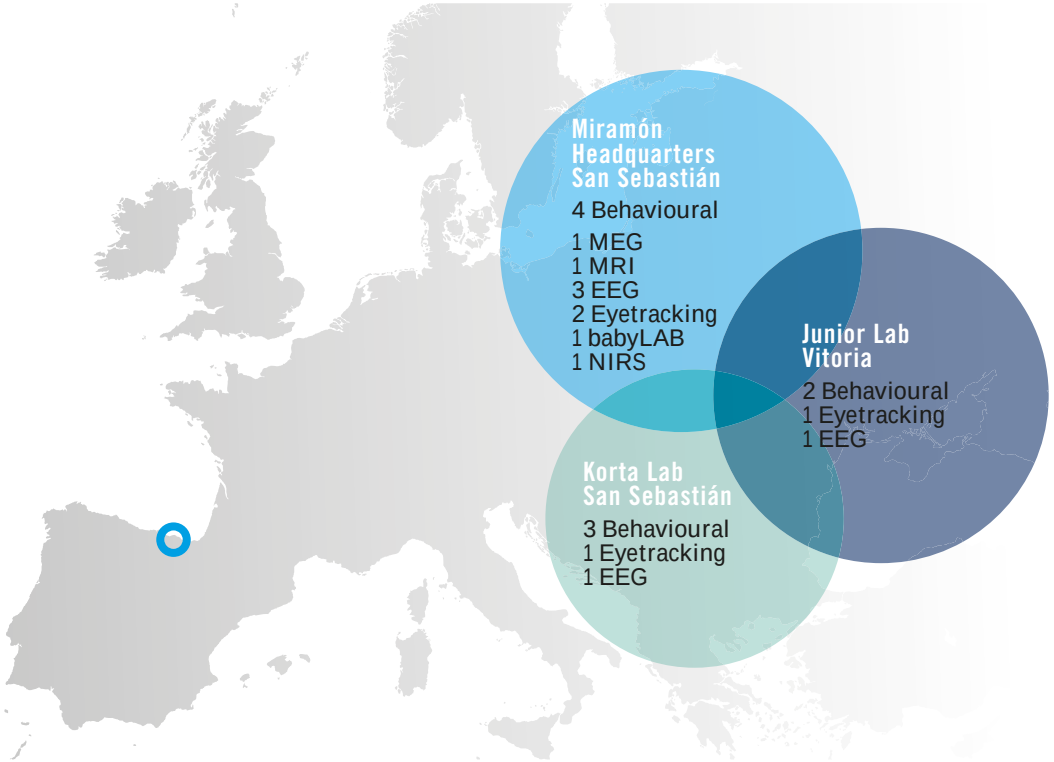
As far as possible, the same stimulus presentation and data recording hardware and software are employed across the experimental facilities, to ensure comparable experimental setups across different experimental methods/platforms (Behavioral, MEG, MRI, EEG, Eye Tracking, babyLAB and NIRS).

For special-purpose applications, a skilled technical group supports the installation and use of different hardware and software.

Junior Lab

As a consequence of the numerous projects that imply child participation, the idea of creating a lab inside a school was explored. Today, the Junior Lab is located in Carmelitas School in VITORIA. It is an external laboratory of the main BCBL Lab with significant potential and possibilities for exploring language development in children.

It is equipped with 2 behavioral cabins, 1 eye tracker and 1 EEG. The behavioral cabins have a touch screen in order to ease participant performance. The EEG complies with the main laboratories EEG standards. The eye tracker is a cutting edge device. It is special as it has a mirror system allowing participants to move during the experiment. This feature is very critical in the case of child participation.




bcbl
juniorlab

RESEARCH FACILITIES

_ Behavioral
_ MEG
_ MRI
_ EEG
_ Eyetracking
_ babyLAB
_ NIRS

Behavioral

Eight soundproof chambers are available to conduct behavioral experiments. Each chamber is equipped with a standardized, quality, experimental setup, which can collect reaction-time data such as push-button responses or naming latencies.

Chambers can be used for individual testing sessions with one experimenter monitoring individual participants, as well as for testing up to 4 participants simultaneously.

The hardware for each chamber includes monitors (ViewSonic G90FB 19" CRT), soundcards (Soundblaster Titanium X-FI, with ASIO support) and headsets (Sennheiser HMD 280 pro push button response boxes).

The standard software packages are DMDX and Presentation but the technical group can build and develop special-purpose hardware and software when the standard configuration does not provide the functionality for a particular study.

The lab is also equipped with a special sound booth in order to prepare and run production and perception experiments.

MEG

Magnetoencephalography (MEG) provides a non-invasive method for recording cortical activity with exceptional temporal resolution and fine spatial resolution.

The MEG facility at the BCBL is a 306-sensor (204 planar gradiometers and 102 magnetometers; arranged in a helmet configuration) Elekta Neuromag® device with 16 digital trigger lines and 8 auxiliary analog input channels. The setup will allow for the delivery of both auditory and visual stimuli, and recordings can be performed in either supine or sitting position. The MEG device also includes an integrated 64-channel EEG system (60 single channel and 4 differential electrodes) for simultaneous MEG and EEG recordings that can be acquired at a sampling rate of up to 8 kHz (5 kHz standard) in either AC or DC.

Throughout the experimental session, a participant's head position within the scanner is sampled so that the data can be linked to independently acquired anatomical MRI images.

The facility at the BCBL includes passive shielding to reduce external noise, as well as MaxFilter™ software, which filters artifacts as well as internal and external noise sources. For data analysis, the Elekta Neuromag® includes advanced analytical software, including powerful tools for visualization and source modeling of the recorded data.

The system includes a new Phantonics panel for auditory stimulation to avoid to artifacts.

MRI

The BCBL is equipped with a Siemens 3T Magnetom magnetic resonance imaging (MRI) device for functional, structural, and diffusion tensor imaging.

This system uses the Siemens total imaging matrix (TIM) coil system with a 32 channel RF coil, which provides high image quality and improved performance with iPAT (integrated parallel acquisition techniques) and excellent workflow. It comes with a TQ-engine (45mT/m @200 T/m/s) offering a large anatomical coverage with a maximum field of view (F0V) of 50 cm.

Siemens protocols allow for BOLD imaging and Resting State imaging, as well as T1-weighted anatomical scans. Diffusion-weighted images can be acquired using a spin echo echo-planar imaging sequence that provides at least 60 gradient directions.

Some new devices have been acquired in order to complete the setups for production experiments like the 2 perpendicular microphones that allow voice recordings during the scans.

EEG

The center is equipped with five EEG systems that are installed in four Faraday cage - soundproof chambers. Each chamber is equipped with a BrainAmp DC® amplifier.

Using the recording software (Brain Recorder®) all the amplifier options, including the switch from DC to AC recording mode as well as selecting different filtering bandwidths, can be controlled. The BrainAmp DC® is more stable than older EEG systems in a variety of applications, and it supports simultaneous EEG/TMS and EEG/MEG input to the Brain Computer Interface and Neurofeedback.

Two chambers are equipped with a 64-channel system and three chambers with a 32-channel amplifier. The BrainAmp DC® is a portable amplifier which connects to any laptop and can be powered with batteries. As a result, the 32-channel amplifiers can also be used for experiments outside the center (e.g., in schools or hospitals).

Each chamber is also equipped with sets of electrodes that can be arranged on EasyCaps® in whatever pattern needed for a given experiment. Each cap has 64 equidistant electrode positions (10%-System); several different sizes are available, including those suitable for children.

For off-line EEG/ERP analyses, Vision Analyzer® 2.1 software is available on each computer via a network key.

Our center is equipped with the hardware and software resources to carry out and analyze a wide range of on-line reading experiments and experiments using the visual world paradigm.

An EEG fMRI-compatible BrainAmp MR Plus (32 channels) has recently been acquired and multimodal type experiments can therefore be carried out.

Eyetracking

Our Lab has three Eyetracking systems which are one of the latest and most complete systems for eye tracking: EyeLink 2K (SR Research Ltd.).

EyeLink 2K provides an excellent sampling rate (2000 Hz) and is especially suitable for real-time data collection. EyeLink 2K can be used for monocular as well as binocular eye tracking, and the system is perfectly compatible with most contact lenses and spectacles. This system has a very high average accuracy, down to 0.15º. Many paradigms can be implemented in the EyeLink 2K, such as the visual world paradigm, the boundary technique (parafoveal previews) or silent sentence reading. The EyeLink 2K system uses a remote desktop mounting, which allows participants to be free of any head-mounted cameras.

babyLAB

In our state-of-the-art infant lab, a number of methods and techniques are available for discovering the first steps of human language development. The behavioral set-up supports the Visual Habituation, Head-turn Preference, and Intermodal Preferential Looking procedures to assess preverbal infants' general language skills (from 3 to 12 months of age), and to investigate older infants' syntactic and lexical knowledge up to 28 months of age.

In addition to behavioral and physiological methods, we are also equipped with EEG/ERP systems suitable for infants and children. Electrophysiological recordings are advantageous in infancy as they provide a direct and online measurement of processing abilities. Moreover, the exact same technique can be applied throughout the whole lifespan, making it possible to track language related developmental changes. Our EEG/ERP systems can also be integrated with the ECG system.

Finally the set-up is supplemented with a Near Infrared Spectroscopy (NIRS) and an Eye tracking device.

The BCBL babyLAB offers a cutting-edge research venue within an exceptional environment for comprehensively investigating monolingual and bilingual language development.

NIRS

Near -infrared spectroscopy is a light-based imaging technique. Our system, NIRScout, is an ultra-compact and scalable solution for applications where flexibility is the dominant concern. This system is ideally suited for longitudinal studies with children, combined EEG-functional NIRS studies and freely moving studies. For instance, it provides a flexible methodology for measuring cortical activity during overt speech production while avoiding some of the limitations of traditional imaging technologies. The BCBL Nirscout has eight illumination points and sixteen sensors, can enlarge, is EEG-compatible and has three caps from baby to infant studies available.

RESEARCH

_ LINES
_ PROJECTS

LINES

Language acquisition, representation and processing

_ Language acquisition
_ Language comprehension
_ Language production

1

The main aim of this research line is to understand how language is acquired, comprehended and produced. It contains three sub-lines of research: acquisition, understanding and production.

Language acquisition

The aim of this sub-line is to understand how language is acquired. In order to so, different processing levels are explored (e.g., phonological, lexical, syntactic). In this line, the processes are explored both in oral (predominantly Basque and Spanish) and signed languages, in monolingual and bilingual populations. Spoken signals are very complex, but our brain is able to decode and process them with extraordinary speed and accuracy. Up to now, most of the underlying mechanisms have not been uncovered. Over the last decades, phonology and phonetics have become privileged areas of experimentation in monolingual and bilingual acquisition. Moreover, the analysis of the acoustic signal can provide us with a set of results that could be applied to the computational replication of the characteristics of spoken language, such as automatic voice recognition, written-to-oral conversion, and semi-automatic translation. Other areas of interest in the field of language acquisition are morphology, the lexicon and syntax.

The main focus of this research line is the study of the decoding of the spoken signal (phonology, morphology, syntax and lexicon) by monolingual and bilingual babies with sophisticated experimental methods.

Language comprehension

This second sub-line studies the complex processes implicated in language understanding in different modalities. The processes intervening between the reception of a signal (acoustic, as in speech perception, or visual, as in reading or in sign language perception) and the generation of a unique meaning in the receptor's mind are explored. Similarly, research is carried out in order to determine to what extent the processes involved in language understanding and/or the cortical representation of language are universal or specific. Research in different oral languages is a key issue for answering this question, but in order to delimit modality-specific processes, the study of sign language processing becomes essential. Sign language is the natural language of the deaf and their main means of communication with respect to the world. Although these languages are expressed in a different modality from oral languages (visual vs. auditory), they share a set of characteristics. Similarly to the rest of human languages, it has been demonstrated that sign languages have phonological, morphological and syntactic structures.

Another important area of study concerns the processes implicated in reading. Reading is an important skill in modern society and one of its building blocks is the recognition of words.

One of the aims is to investigate the different codes (orthographic, phonological, syllabic, morphological) implicated in word recognition and the functional architecture of the mental lexicon.

Studying how reading is carried out in different languages will help us to explore the existence of different levels of importance in the different codes or different sub-lexical units in each of them. For this reason, cross-linguistic research is an important issue.

Language comprehension is being investigated at different levels: sublexical processes, word recognition, morphosyntactic, semantic and pragmatic processing.

Language production

This line explores the processes that a transmitter of a message carries out, from the generation of an idea to the emission of a series of sounds (in the case of spoken languages), a series of gestures (in the case of sign languages), or a series of gestures on a paper (in the case of written outputs). Production involves great computational complexity (as understanding does), requiring the concatenation of a series of intricate processes, such as the assignment of syntactic functions to the different phrasal elements, and the recovering of the corresponding lexical elements, phonological, phonetic and articulatory patterns, among others.

Research on the production processes of sign languages is crucial for determining which processes are universal to the human capacity of language, and which are modality-specific (auditory for oral languages, and visuo-spatial for sign languages). Production processes in patients are also studied within this research line.

2

Multilingualism

_ Neurocognition and processing
_ Educational neuroscience and lifelong learning
_ Cognitive consequences of multilingualism

Research on language acquisition, understanding and production in bilingual and multilingual individuals, with different ages of acquisition of their second language (e.g., native or late learners) and with different degrees of proficiency in their second language is the main focus of this line. Special attention is also paid to multilingualism within the school system and to the development of new educational technologies.

Neurocognition and processing

Phonology, morphology and syntax are the aspects of language most difficult to master when a second language is being learnt late in life, while lexical aspects are more easily acquired. The specific morphological and syntactic characteristics of Basque and Spanish offer a key opportunity for investigating the acquisition and processing of the two languages as first or second languages.

Sentence understanding involves the hierarchical organization of different phrase constituents, sometimes distant from each other, or the linkage of elements from two different sentences like an anaphoric pronoun and its antecedent, among other processes. Examining which strategies and which processes are used by monolingual and bilingual speakers during syntactically ambiguous sentence understanding, during agreement processes, or during anaphor resolution and antecedent assignment, is highly important for understanding the underlying cognitive mechanisms of this complex activity.

We compare the cortical representation of bilingual and monolingual individuals, which constitute a particular case of cerebral plasticity due to external influences. Different environmental factors have been proposed as determinants for the cerebral organization of language:
_ Second language age of acquisition
_ Proficiency in each language in understanding and production
_ Similarity between languages in their structure or modality

In order to investigate these and other questions, studies on lexical access and syntactic processing in monolingual and bilingual participants are carried out using behavioral and neuroimaging techniques.

Educational neuroscience and lifelong learning

Modern societies increasingly demand education based on scientific evidence. Reading and bilingualism are important skills in classroom settings that can benefit from new discoveries on human cognition research in the lab.

Children can learn two or more languages at very early ages, and people continue learning new languages throughout life, so we are all increasingly multilingual. This multilingual education, which is a highly desirable goal, both from a cognitive and from a social perspective in the Basque Country, involves among other things learning to read and math learning in L1 and in L2. We investigate the neural substrates of the reading acquisition process and its constituent cognitive components and the math learning process as well, with specific attention to individual differences and reading and math disabilities. We also investigate the

relationship between specific cognitive functions and the changes in neural activity that take place in the course of learning to read and math learning in L1 and in L2. We also investigate the effects of training different cognitive processes such as attention and inhibition in reading and math processing. All this research is carried out with children of school age but also with adults and the elderly.

We take advantage of information technologies in the development of diagnostic and training computerized tools for dementia patients and persons with different learning disabilities (i.e. Dyslexia, dyscalculia, SLI, ADHD, etc.). The aim is to develop computerized tools that include different tasks designed according to research knowledge on the acquisition, understanding and production of language and other cognitive processes, both in the typically developing population, in children with special educational needs and in dementia patients. We measure potential benefits of an intervention with these tools. The objective is to empirically validate the training packages by carrying out experiments that measure cognitive functioning and brain activity before and after a program intervention.

These kinds of experiments involve both typically developing children and individuals with special needs, such as those children with certain disorders, dementia patients, and children from different socioeconomic backgrounds. For example, some of the more important causes of educational failure are related to socioeconomic and/or immigrant status. The interaction of these variables with cognitive processes is very important for the study of reading acquisition, for the design of training programs aimed at children with reading disabilities and in order to predict the conditions for success of these interventions.

Cognitive consequences of multilingualism

We constantly need to adapt our behaviour to new task situations, requiring cognitive control. One of these situations is language control in bilinguals. In fact, language switching is frequently used to study language control in language production. We compare balanced and unbalanced bilinguals in different task domains and use this as an expertise model to study questions such as inhibition of irrelevant information in language and non-language task switching or the brain activation associated language and general control mechanisms. People can greatly vary in their level of language switching experience. Whereas monolinguals or unbalanced bilinguals have no or very little experience in language switching, balanced bilinguals can be considered experts in switching between languages. These bilinguals have probably developed an efficient, general language control mechanism, which is not available to monolinguals, or at least less efficient and less general. Several studies have suggested that being a bilingual, and the practice in language control that comes with it, improves general cognitive control capacities, even in non-verbal tasks. This sub-line investigates the cognitive and brain mechanisms underlying language control and general cognitive control by comparing monolinguals and bilinguals (balanced and unbalanced bilinguals) in several paradigms using different techniques.

3

Neurodegeneration, language and learning disorders

_ Language and learning disorders
_ Neurodegeneration of language and cognition

The study of specific developmental and learning disabilities has always been a source of information on psychological processes in typical development and functioning. In addition, it has the applied long-term value of improving diagnostic methods, the possibility of aiding in early detection and the development of treatments that could prevent or minimize the difficulties of the persons with these disabilities.

This line is divided in two research sub-lines:

Language and learning disorders

Language, developmental and learning disorders, such as aphasias, specific language impairment (SLI), dyslexia, dyscalculia, attention-deficit hyperactivity disorder(ADHD) and autism spectrum disorders (ASD), have serious emotional, personal and social consequences. They also entail important costs for the societies in which these people live.

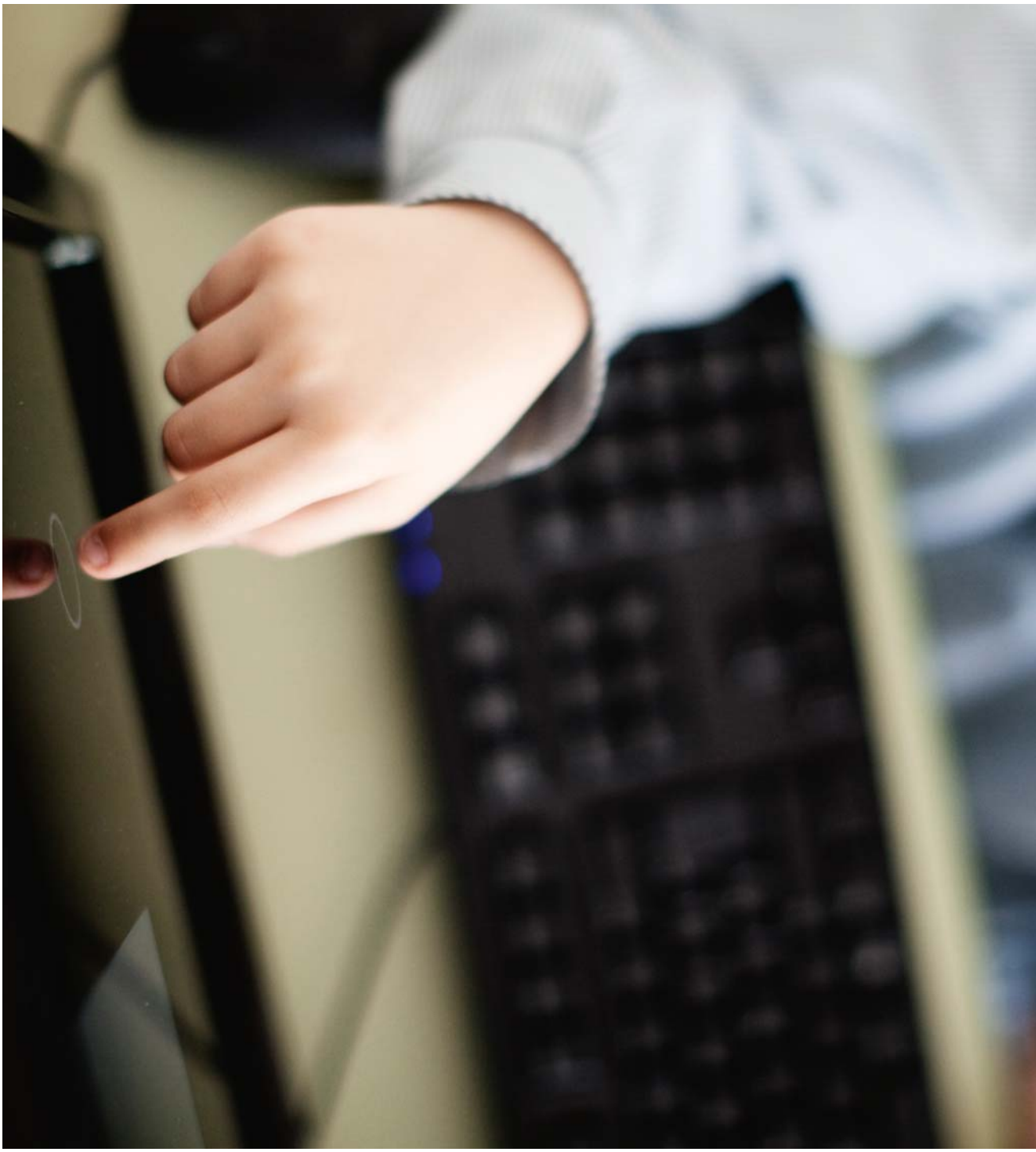
Learning and education are intimately related to brain developmental mechanisms. This research line centers on the study of the functioning and development of cognitive processes and the brain during the development of reading, mathematical thinking, attention and social and emotional processing, and its influence on the acquisition of language, attention, arithmetic and problem-solving in typical and atypical development. In particular, we study typical development and the development of children with Special Educational Needs (dyslexia, ADHD and dyscalculia) using social and economic variables, genetic markers, and neuronal and cognitive and behavioral measures.

Research into these disorders will increase our knowledge of cognitive and brain processes involved in language and learning processes and will facilitate improved tools for diagnosis and treatment. The eventual inclusion of disorders of a different nature, such as ADHD, SLI and ASD, permits a comparative analysis different components and aspects of language development. The combined expertise of different groups of the centre will thus be brought to bear on the language development of these populations with problems in language development, resulting also in applied studies.

Neurodegeneration of language and cognition

Neurodegenerative diseases are the centre of much attention, not only because of their scientific interest, but also due to their social implications. Among these disorders, Alzheimer's disease is perhaps one of the best known because it is close to the personal experience of many people. Symptoms described in various forms of dementia, such as Alzheimer's or semantic dementia, include important cognitive aspects such as language.

The phases of deterioration in dementia of the different components of language are being investigated. In particular, in Alzheimer's disease and in mild cognitive deficit, language disorders are some of the earliest expressions of the disease and constitute the most frequent cognitive difficulty after memory problems. They could therefore be used as early markers of the disease. Language components that could be most sensitive to decline in different types of dementia (Alzheimer Disease, Semantic Dementia, etc.) are being researched.



4

Advanced methods for cognitive neuroscience

_ Methods of magnetic resonance for cognitive neuroscience
_ Brain electromagnetic activity and neural coherence
_ Computational models of language

The advance of knowledge in neurocognition of language has been fuelled by the development of advanced methods of research. We pay special attention to research in three methodological areas, which correspond to three sub-lines of research.

Methods of magnetic resonance for cognitive neuroscience

Over the last years extraordinary technical developments have allowed us to register neural correlates of human activity while participants are performing tasks, perceiving or producing stimuli (for instance during language understanding and production). This has allowed us to advance in the understanding of brain and mind.

Techniques such as functional magnetic resonance imaging (fMRI) have opened a window to investigate the biological bases of complex process such as language. In particular, they have allowed the examination of changes in brain activation as well as functional and structural connectivity between brain areas. In addition, recent advances have shown the impact of genes on the neuro-physiological correlates and on cognitive performance in several cognitive abilities. The use of such advanced techniques, together with the appropriate theoretical background and the appropriate paradigms, facilitates the investigation of the biological bases of language processing in monolingual and bilingual individuals, the biological processes of learning and other cognitive processes such as reading in children with typical development and in those with learning disorders. In addition, they allow us to investigate the biological bases of cognitive impairment, deterioration and dementia, especially in those areas related to language.

This research line investigates the improvement of sequences for obtaining data (e.g., MRI sequences, image resolution, diffusion tensor imaging), as well as for the data analysis of brain activation and structural and functional connectivity.

Brain electromagnetic activity and neural coherence

Techniques such as electroencephalography (EEG) or magnetoencephalography (MEG) facilitate the on line investigation of the neural correlates and biological bases of complex processes such as language. In particular, by measuring neural synchronization and electrophysiological changes time locked to the presentation of stimuli, they provide fine grained temporal resolution in the investigation of neural activity. These techniques also permit us to estimate the neural sources of the electrophysiological signal through the application of advanced analysis techniques to the EEG signal. Other complex wavelets data analyses open new windows to extract new information from the EEG signal. It is possible to measure which types of waves (e.g., alpha, theta) are influenced in a particular experiment by a particular manipulation and the connectivity between regions. This research line will apply and investigate new analyses for extracting information from the signal obtained with EEG and MEG techniques.

Computational models of language

We devote one line of research to formal modeling of behavior and cognition. Clearly, developing theories that can be applied across experimental domains is an important step toward the goal of developing general theoretical principles of cognition. Indeed, it is only through careful empirical investigation of human cognition using appropriate mathematical models that the representations underlying different cognitive processes can be optimized.

The main aim is to develop and test computational models of cognitive processes both at a broad molecular level --and also at a neural level-- in the framework of cognitive neuroscience. One basic tenet of this line of research is that the proposed models will be biologically plausible.

More specifically, we focus on the cognitive modeling of language not only for typically developing adult individuals, but also for children and special populations. That is, we develop these computational and/or mathematical models using an approach that stresses the dynamic changes in the cognitive processes (e.g., the process of learning to read and the subsequent changes in the cognitive processes –i.e., models of language acquisition). For instance, we computationally model the acquisition process and examine the correlations between a model's performance and data from linguistic environments that children are exposed to. Furthermore, we also examine how the cognitive processes underlying language (at different levels) can be hindered in special populations (e.g., dyslexic and brain damaged individuals, Alzheimer patients, etc).

One obvious additional advantage of computational models is that they can easily be tested across a different range of techniques. This allows further refinement of the proposed models, and also increases the theoretical interest of the questions examined in the other research groups at the BCBL. In order to do so, researchers in these groups actively collaborate with the other groups at the BCBL.

2009 /12

PROJECTS

_ COEDUCA / CSD 2008 - 00048

_ ESPAL / HUM 2007 - 30271

_ LSE SIGN / PSI 2008 - 04016 - E/EPSIC

_ ITN LCG Language, Cognition & Gender

_ SEMA. The representation and processing of semantic knowledge: insights from Fronto Temporal Dementia and Alzheimer's Disease) PSI 2009 - 08889

_ SLI (Specific Language Impediments) in infants and children / 103/11

_ Tell me something I don't know - informativeness and knowledge of the real world in understanding language from a cognitive neuroscience perspective / PSI 2010 - 18087

_ Automaticity of Second Language Processing in Spanish - Basque Bilinguals / PSI 2010 - 17781

_ Phonological priming in children / AIB2010DE - 00391

_ Research into Dravet's Syndrome and untreatable channelopathies

_ The European Network on Word Structure / 09 - RNP - 089

_ Neural correlates in language production and superior executive functions in Bertsolaris

_ LARA

_ Training for superior cognitive skills project

_ Bi-literacy: Learning to read in L1 and in L2 / ERC - 2011 - ADG - 295362

_ The Role of Oscillatory Activity in the Lexical and Grammatical Plasticity of Language Learners / PSI 2011 - 24802

_ The Impact of Memory Reconsolidation on Vocabulary Acquisition: A Behavioral and Neural Investigation / PSI 2011 - 24048

_ Number Semantics in Bilinguals / PSI 2011 - 23995

_ LANG MIND

_ El lexicón trilingüe / Lexikoi hirueleduna / The trilingual lexicon PI 2012 - 74

_ Development of neural mechanisms involved in long-term memory retention and recuperation / PI 2012 - 15

_ Aprender un nuevo idioma / PSI 2012 – 32350

_ Procesamiento en lengua de signos, dactilología y lectura en sordos y codas / PSI 2012 – 31448

_ Bases del desarrollo neural de la recuperación de memorias episódicas PSI 2012 – 32093

_ Los conceptos en el Contexto / PSI 2012 – 32107

_ TRIBAL: Translation Recognition In Bilinguals Across Lifespan PSI 2012 – 32123

_ La Actividad cerebral Atípica oscilatoria, los déficits temporales de procesamiento y la dislexia del desarrollo / PSI 2012 – 32128

COEDUCA / CSD 2008 - 00048

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: CONSOLIDER INGENIO
TIME FRAME: 12/2008 - 12/2013
BUDGET: 4,000,000 Euros
PARTNERS: Universities of Granada, La Laguna, Murcia, Seville, CIC bioGUNE, BCBL
COORDINATOR: BCBL - PI Manuel Carreiras PhD

Despite the impressive technological and scientific advances of recent decades we still do not know why some children learn to read without any difficulty whereas others fail in this basic skill. In Spain, education is in urgent need of improvement according to the PISA report and is now facing major new challenges such as the integration of immigrants from different language backgrounds or the changes in teaching and learning resulting from information technologies. This proposal brings together leading scientists from many disciplines throughout Spain to create an innovative interdisciplinary research program (CONSOLIDER) designed to study the development of the two most central cognitive skills in education - reading and attention. The broader goal of this research will create specific recommendations for addressing the unique set of educational challenges and opportunities this country currently faces, with the long-term goal of improving learning and education systems. As learning and education are closely related to the processes of brain development, we aim to understand how the brain functions and changes during the development of reading and attentional-emotional processes, examining normal and abnormal development and the influence of genetic, cultural and socioeconomic variables as they play out in our country. Research will characterize typical developmental patterns of children in Spanish schools and those of children with special needs (dyslexia and ADHD), by using socioeconomic, genetic, neural and cognitive-behavioral measures. A novel aspect of this project will examine the effects of attention and literacy training on cognitive and brain changes. This is a unique opportunity to study these central issues from an interdisciplinary perspective within the specific context of learners in our country. More generally, investment in such cutting-edge research now could prove to be a decisive step to help situate Spain on the international frontier of scientific knowledge in this area.

ESPAL / HUM 2007 - 30271

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: ACCIÓN COMPLEMENTARIA (COMPLEMENTARY ACTION)
TIME FRAME: 07/2008 - 07/2010
BUDGET: 207,000- Euros
PARTNERS: ULL - University of La Laguna, UB-University of Barcelona, BCBL
COORDINATOR: BCBL - PI Manuel Carreiras PhD

The objective of this action is to create a basic framework of Spanish words (ESPAL) with a simple website interface, which would include orthographic, phonological and semantic indexes. The volume of this project would include about 300 million words. The database will be made available on the Internet and it will allow to perform various search by specifying different types of criteria. The framework of words would be an indispensable tool, which would contribute to boosting the impact and the quality of language research, and in particular, the study of the Spanish language. The research on language processing, carried out in the areas of Psycholinguistics and Cognitive Neuroscience, urgently needs this tool, which is already available in other languages, for example, in English and even in other languages pertaining to much smaller populations than the Spanish-speaking one, such as, French, Dutch and German.

LSE SIGN / PSI 2008 - 04016 - E/EPSIC

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: ACCION COMPLEMENTARIA (COMPLEMENTARY ACTION)
TIME FRAME: 06/2009 - 12/2011
BUDGET: 180,000 Euros
COORDINATOR: BCBL - PI Manuel Carreiras PhD

The objective of this action is to create a database of Spanish sign language signs (LSE_Sign), with a visual interface that allows them to be consulted in the same category using transparent codes. The database will contain approximately 5,000 Spanish sign language signs (LSE) and will be available to the public online. Searches can be performed in accordance with various criteria. This database will be a vital tool for linguistic research and for processing sign language that will help increase the impact and quality of research into Spanish Sign Language (LSE) in particular and into language in general. Research into processing sign languages, especially in the fields of Psycholinguistics and Cognitive Neuroscience, urgently requires a tool that enables us to perform a wide and controlled selection of adequate experimental materials for studying the influence of formal characteristics in recognizing signs.

ITN LCG LANGUAGE, COGNITION & GENDER

FUNDING AGENCY: Research Executive Agency - Commission of the European Commission
TYPE OF PROJECT: INITIAL TRAINING NETWORK, MARIE CURIE ACTION
TIME FRAME: 10/2009 - 10/2013
BUDGET: BCBL: 353,933 Euros; Total: 4,106,379 - Euros
PARTNERS: Universities of Heidelberg, Berlin, Ceske Budejovice, Fribourg, Modena, Padova, Sussex, Norges Teknisk, BCBL
COORDINATOR: Bern University - Scientific Coordinator Sabine Sczesny
SPANISH PI: Manuel Carreiras PhD

The Initial Training Network - Language, Cognition and Gender (ITN LCG) investigates European languages from an interdisciplinary perspective to expand current knowledge of how language influences and forms men and women's cognitive representations. Europe's diversity offers a unique opportunity to investigate the impact of language and culture in establishing and maintaining gender inequality. This issue has not yet been systematically addressed on a large scale, although the reduction of gender inequality is generally considered an important issue within Europe. Therefore, ITN LCG will provide a structured interdisciplinary research training program for young researchers in the emerging supra-disciplinary field of language, cognition, and gender to enhance the scientific understanding of this topic and improve the quality of initial research training in Europe. For the first time, these lines of research will be investigated from cross-language and cross-cultural perspectives by bringing together 10 complementary providers of research-training and 12 associated partners from the public and private sectors. ITN LCG has four interrelated research objectives: a) deriving indices for selected European languages that reflect the extent to which the features of a language result in gender related representations in speakers/listeners, b) investigating to what extent gender equality in formal language standards and the use of gender-fair language correlates with higher levels of socio-economic gender equality, c) analyzing the impact of language on gender stereotyping in social judgment and decision making, and d) developing and evaluating scientifically-based prototypes for guidelines and training tools for gender-fair communication in European languages. ITN LCG will strengthen the capability of its young fellows to contribute effectively to our knowledge-based economy and society, and will add to their intersectoral and transnational employability.

SEMA. THE REPRESENTATION AND PROCESSING OF SEMANTIC KNOWLEDGE: INSIGHTS FROM FRONTO TEMPORAL DEMENTIA AND ALZHEIMER'S DISEASE)

PSI 2009-08889

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 01/2010 - 12/2012
BUDGET: 298,000 Euros
PARTNERS: Hospital Donostia, Fundación Ingema, Cita Alzheimer, ULL, BCBL
COORDINATOR: BCBL - PI Manuel Carreiras PhD

The organization of the semantic system can be revealed by studying the breakdown of conceptual knowledge observed in diseases such as Alzheimer's Disease or frontotemporal dementia and one of its variants, Semantic Dementia using advanced techniques; and contrasting this with the intact system in appropriate elderly and young adult controls. We address this topic by focusing on the study of different levels of language processing (e.g. orthography, phonology, semantics) in comprehension and production. We examine deterioration and representation of abstract concepts, affective information in the mind/brain; as well as associative and semantic relations, morphological, orthographic and phonological knowledge, semantic knowledge in first and second languages, and sentence semantics. We assess the degree of deterioration, the duration of processing, and the neural correlates (structural and functional) of semantics, taking advantage of the unique opportunity to test patients with fronto-temporal dementia with a gene mutation that unfortunately will lead them to develop this neurodegenerative disease. Focusing on semantics, with an emphasis on similarities and differences across dementias, we integrate insights from cognitive psychology, neuropsychology and cognitive neuroscience in order to provide a theoretically sound, empirically tested, and cognitively/biologically plausible account of semantic conceptual representation and processing.

SLI (SPECIFIC LANGUAGE IMPEDIMENTS) IN INFANTS AND CHILDREN / 103/11

FUNDING AGENCY: Provincial Government of Gipuzkoa
TYPE OF PROJECT: PROGRAMA RED (NETWORK PROGRAM)
TIME FRAME: 09/2010 - 09/2012
BUDGET: 90,000 Euros
COORDINATOR: BCBL - PI Manuel Carreiras PhD

This project has the following objectives:

_ Investigate Specific Language Impediments (SLI's) in children aged between 8 - 28 months by evaluating the perception of speech and their speech production capacity, with a special focus on their phonetic capacities.

_ Identify the neuronal markers of SLI behavior in the pre-verbal stage.

_ Facilitate the development of early diagnostic tools that will enable preventative treatment of children with SLI's before their inclusion in the education system.

Most children are diagnosed with an SLI once they have started school. When these children start to receive adequate therapy, they have already experienced significant set backs in their educational performance, as their linguistic capabilities are weaker than average.

To provide effective preventative treatment prior to schooling, it is necessary to identify the impediment before they reach four years of age. However, at present there are no reliable tools to enable diagnosis at this early stage.

One of our research program's objectives is to facilitate the development of tools that would enable the adequate diagnosis of SLI's before children reach two years of age.

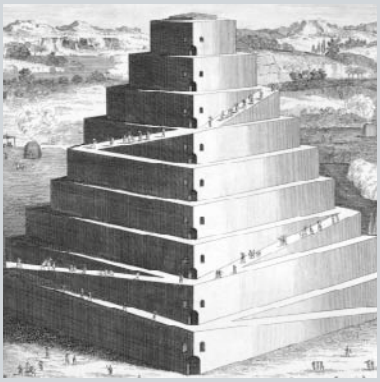
TELL ME SOMETHING I DON'T KNOW - INFORMATIVENESS AND KNOWLEDGE OF THE REAL WORLD IN UNDERSTANDING LANGUAGE FROM A COGNITIVE NEUROSCIENCE PERSPECTIVE / PSI2010-18087

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 01/2011 - 12/2013
BUDGET: 145,200 Euros
COORDINATOR: BCBL - PI Mante Nieuwland PhD

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. Whereas establishing truth-value has long been a subject of scientific investigation, the role of informativeness is not well understood. This research 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 aims to test the overall hypothesis that informativeness modulates the conceptual integration of linguistic input with knowledge from semantic memory. It will investigate when and where these processes take place in our brains, with the goal of addressing how they shape language interpretation and how they may differ across individuals. The initial step is to identify the neural signature of informativeness, and to map this signature onto neurocognitive accounts of language. This 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 the medial prefrontal cortex. 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 an understudied but essential aspect of pragmatics and language comprehension, the extraction of message information value, is performed in the brain.

AUTOMATICITY OF SECOND LANGUAGE PROCESSING IN SPANISH-BASQUE BILINGUALS / PSI2010-17781

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 01/2011 - 12/2013
BUDGET: 108,900 Euros
COORDINATOR: BCBL - PI Arthur Samuel PhD



Six experiments that will provide an innovative investigation of spoken language processing by Spanish-Basque bilinguals are proposed. The Basque Country offers a unique opportunity to address general theoretical questions regarding the automaticity of language processing in the bilingual mind.

Prior research, much of it conducted in our laboratory, has shown that listeners use a set of automatic processes that utilize information from lexical representations to improve recognition of phonetic segments. Given how much variation there is in speech, and given how noisy the signal is in many circumstances, the support provided through these automatic processes can be essential to successful word recognition. However, to date, demonstrations of these effects have been limited to studies of monolinguals hearing speech their native language. It remains to be shown whether this type of processing is available when listening to speech in a second language.

The population in the Basque Country provides an exceptionally appropriate test bed to address this issue, for several reasons. First, Basque and Spanish are in completely different language families. There has been excellent work done on bilingualism for cases in which the two languages are related (particularly for Catalan-Spanish and for Dutch-English bilinguals), but it is essential to study cases in which crossovers between the native language and the second language is minimal.

Second, due to historical circumstances, it is possible to encounter three types of bilinguals that differ in the timing and circumstances of learning the two languages in this area. This will permit us to clearly determine the role that age and an early learning environment have on the development of automatic language processes. Finally, the phonemic inventories of Spanish and Basque differ in ways that make it possible to prove whether sounds that are only present in a person's second language lack some of the automatic lexical support that is available to native language sounds.

PHONOLOGICAL PRIMING IN CHILDREN / AIB2010DE - 00391

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: ACCIONES INTEGRADAS (INTEGRATED ACTIONS)
TIME FRAME: 01/2011 - 12/2012
BUDGET: 8,000 Euros
PARTNERS: The University of Gottingen, BCBL
COORDINATOR: BCBL - PI Eiling Yee PhD

What are the processes that underlie infants' recognition of words? It is now clearly understood that adult word recognition also involves the activation of other words that are phonologically related to the word being recognized. The simultaneous activation of these phonologically related words suggests that words are represented in the adult brain depending on their phonological properties. This project will investigate the organization of words in the infant brain, with particular emphasis on the phonological relationships between words.

Previous research suggests that, by 24-months of age, infant word recognition is influenced by the prior presentation of phonologically related words. This further implies that word recognition involves the activation of other phonologically related words even in early infancy. The proposed research will examine this competitor activation process in more detail in order to better understand the processes involved in infant word recognition. Using a unique combination of modeling and experimental expertise, we will attempt to chart the processes underlying infant word recognition in three specific areas.

First, we will investigate the time-course of word recognition by varying the inter-stimulus interval between the presentation of the prime and the target. Second, we will investigate speech and the efficiency with which new words are incorporated into the lexicon, and their influence on previously learnt words. Finally, we will examine the influence of vocabulary size on infant word recognition using an artificial lexicon in the computer simulations, which will allow us to vary the size and structure of the lexicon according to our experimental hypotheses.

Together, the three streams of experimental and computational research outlined above will provide a unique perspective on the time-course of word recognition, and the mechanisms and processes underlying the efficiency of word recognition at this young age.

RESEARCH INTO DRAVET'S SYNDROME AND UNTREATABLE CHANNELOPATHIES

FUNDING AGENCY: DRAVET FOUNDATION
TYPE OF PROJECT: Private Foundation
TIME FRAME: 07/2011 - 06/2013
BUDGET: 200,000 Euros
COORDINATOR: BCBL - PI Manuel Carreiras PhD

The objective of this study is to characterize the various language-related deficits presented by children with Dravet's syndrome, given that this is one of the principal alterations manifested. This simultaneous EEG and spectroscopy study will allow us to characterize the intercritical patterns of epilepsy, electrophysiologically and metabolically, and to facilitate the location of the aforementioned potentials studied. This will contribute to a better understanding of the disease and the potential interventions at diagnostic and treatment level.

THE EUROPEAN NETWORK ON WORD STRUCTURE / 09 - RNP - 089

FUNDING AGENCY: European Science Foundation
TIME FRAME: 2011 - 2015
BUDGET: 565,000 Euros
PARTNERS: University of Antwerp (Belgium), University of Vienna (Austria), Jozef Stefan Institute (Slovenia), Université de Toulouse (France), Slovak Academy of Science (Slovak Republic), Helsinki University of Technology (Finland), Zurich University (Switzerland), Lund University (Sweden), National Research Council (CNR - Italy), Siegen University (Germany), Pazmany Peter Catholic University (Hungary), University of Zagreb (Croatia), Norwegian University of Science and Technology (Norway), BCBL.
COORDINATOR: Pisa University - PI Vito Pirelli PhD
SPANISH PI: Manuel Carreiras PhD

Morphologically complex words are common to all European languages. They represent a fundamental part of what we mean by human language knowledge and the basic building blocks of language productivity. Nonetheless, words remain a challenging realm of scientific inquiry, at the interface between lexicon and grammar, requiring integration of a number of orthogonal disciplines and approaches, ranging from psycho- and neuro-linguistics, to theoretical, variationist and historical linguistics, to memory processes and computational models of (sub)symbolic processing.

Scientists across Europe are currently pursuing important lines of work on word structure, mostly supported by nationally funded projects or bi-lateral cooperation programs. There nonetheless seems to be a growing need for a larger-scale integrated European effort, focusing on common medium-term objectives, to promote interdisciplinary cross-fertilization and synergy, and optimize research investments in terms of more convergent and complementary efforts. The European research scenario is particularly conducive to these goals, due to the robustly empirical character of its methodological stance and the unique range of relevant scientific domains where, at present, European scientists appear to have a huge potential for major breakthroughs.
By bringing together experts in various scientific domains and of different theoretical inclinations, this Research Networking Program intends to advance our current awareness of the theoretical, typological, psycholinguistic, computational and neurophysiological evidence about word and processing, with a view to promoting novel research and assessment methods for grammar architecture and language physiology. This will be achieved through knowledge networking, dissemination and scientific meetings over a four-year period.

NEURAL CORRELATES IN LANGUAGE PRODUCTION AND SUPERIOR EXECUTIVE FUNCTIONS IN BERTSOLARIS

TIME FRAME: 2011-2013
COORDINATOR: BCBL - PI Pedro Paz-Alonso PhD

The principal aim of research into neural correlates in language production and superior executive functions in Bertsolaris is to examine the access and storage of the representations of these experts' linguistic production, as well as the role of superior cognitive abilities in their production capacity. This study will therefore compare three groups of participants with various levels of experience in linguistically controlled rhyme and production: Professional Bertsolaris, Bertso Eskola students or verse production apprentices, and adults with no previous experience in this sense. In order to achieve an optimal comparison of these participant groups ability to perform the study tasks, the Bertso Eskolak students and the adults with no prior experience will be selected with equal age, years spent in formal education, lateralization or manual preference, intelligence and other variables related with language acquisition (e.g. mother tongue, learning other languages...) to the professional Bertsolaris.
The study participants will participate in three experimental sessions, each lasting approximately 2 hours. One initial behavioral study will examine their individual capacities, fluid reasoning, working memory, inhibitory control, attention networks and speed of processing information. In the second session, magnetic resonance will be used to collect brain function activation data in a fluid verbal task with semantic, phonological and rhyme conditions of varying difficulty (easy and hard). During this second session, data about brain structure and function with also be collected for the resting brain. Finally, in the third session, professional Bertsolaris and Bertso Eskolak students will perform a simple verse production task (Kopla or popular folk song) as well as a more discursive verse (Zortziko). Functional Magnetic Resonance Imaging will also be used in this session to examine the neural activations associated with the presentation of the subject of the verse, their preparation and their production.

LARA

TIME FRAME: 2011-2014
COORDINATOR: BCBL - PI Manuel Carreiras PhD

The LARA (Longitudinal Analysis of Reading Acquisition) project focuses on studying the precursors of reading and math. To achieve this, tasks have been designed to evaluate aspects ranging from the attentional, phonological, association extraction, sound-letter, to the basic processes of mathematical functioning such as the association of numeric symbols with the amount and automatic access to the amount. The LARA project also aims to compare a bilingual population with a monolingual population and so tasks have been designed in Castilian Spanish and Basque.

TRAINING FOR SUPERIOR COGNITIVE SKILLS PROJECT

TIME FRAME: 2011-2012
COORDINATOR: BCBL - PI Pedro Paz-Alonso PhD

We now know that some of the principal superior cognitive functions are susceptible to demonstrating major improvement following training in early and mid infancy. Some studies also suggest that such improvements, for example in attention, may be generalized to other cognitive dimensions or skills.
In line with the above mentioned, this project aims to find out to what extent specific abilities, (for example focusing attention, learning to read, learning mathematical concepts, etc.) are susceptible to improvement with training in children with learning difficulties. This study will help us improve our understanding of the mechanisms that determine such abilities and to design specific intervention programs to help improve the performance of such young children.

BI-LITERACY: LEARNING TO READ IN L1 AND IN L2 / ERC - 2011 - ADG - 295362

FUNDING AGENCY: European Research Council
TYPE OF PROJECT: ERC Advanced Grant
TIME FRAME: 2012 - 2017
BUDGET: 2,487,000 Euros
COORDINATOR: BCBL - PI Manuel Carreiras PhD

Learning to read is probably one of the most exciting discoveries in our life. Acquiring this unique human cognitive ability not only opens a new world of opportunities, but also changes our brain (Carreiras et al, 2009). Further opportunities and additional brain changes also occur when learning to read in a second language. Using a longitudinal approach, the research proposed examines how the human brain responds to two major challenges – first, the challenge of instantiating a complex cognitive function for which there is no genetic blueprint (learning to read in a first language, L1), and second, the challenge of accommodating to new statistical regularities when learning to read in a second language (L2). The findings from this project will provide a deeper understanding of (a) how general neurocognitive factors and language specific factors underlie individual differences – and reading disabilities– in reading acquisition in L1 and in L2; (b) how the neuro-cognitive circuitry changes and brain mechanisms synchronize while instantiating reading in L1 and in L2; (c) what the limitations and the extent of brain plasticity are in young readers. An interdisciplinary and multi-methodological approach is one of the keys to success of the present project, along with strong theory-driven investigation. By combining both we will generate breakthroughs to advance in our understanding of how literacy in L1 and in L2 is acquired and mastered. The research proposed will also lay the foundations for more applied investigations of best practice in teaching reading in first and subsequent languages, and devising intervention methods for reading disabilities.

THE ROLE OF OSCILLATORY ACTIVITY IN THE LEXICAL AND GRAMMATICAL PLASTICITY OF LANGUAGE LEARNERS / PSI 2011 - 24802

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 01/2012 - 12/2014
BUDGET: 96,800 Euros
COORDINATOR: BCBL - PI Doug Davidson PhD

The goal of this project is to investigate how oscillatory brain activity supports the learning of new second language (L2) vocabulary and grammar. Oscillatory dynamics are a characteristic feature of cortical function and an important determinant of neuronal plasticity. Physiological research has also shown important links between slow-wave oscillatory activity during sleep and the consolidation of memory. To date, however, most electrophysiological studies of language learning or memory have focused on event-related potential (ERP) measures of cortical function, very often using only native first-language materials. The three sets of experiments described here would adapt a well-known study-test memory paradigm to study L2 vocabulary and grammar learning using combined recordings of MEG and EEG. The first objective is to determine whether successful memory encoding of L2 words is related to theta band (3-6 Hz) oscillatory activity in frontal and temporal cortex using this paradigm. Second, the paradigm would be extended to encompass L2 grammar learning and generalization. Finally, the contribution of oscillatory activity to L2 memory consolidation would be examined by recording activity preceding, following and during sleep.

THE IMPACT OF MEMORY RECONSOLIDATION ON VOCABULARY ACQUISITION: A BEHAVIORAL AND NEURAL INVESTIGATION / PSI 2011 - 24048

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 01/2012 - 12/2014
BUDGET: 88,330 Euros
COORDINATOR: BCBL - PI Nicolas Dumay PhD

The goal of this project is to investigate how oscillatory brain activity supports the learning of new second language (L2) vocabulary and grammar. Oscillatory dynamics are a characteristic feature of cortical function and an important determinant of neuronal plasticity. Physiological research has also shown important links between slow-wave oscillatory activity during sleep and the consolidation of memory. To date, however, most electrophysiological studies of language learning or memory have focused on event-related potential (ERP) measures of cortical function, very often using only native first-language materials. The three sets of experiments described here would adapt a well-known study-test memory paradigm to study L2 vocabulary and grammar learning using combined recordings of MEG and EEG. The first objective is to determine whether successful memory encoding of L2 words is related to theta band (3-6 Hz) oscillatory activity in frontal and temporal cortex using this paradigm. Second, the paradigm would be extended to encompass L2 grammar learning and generalization. Finally, the contribution of oscillatory activity to L2 memory consolidation would be examined by recording activity preceding, following and during sleep.

NUMBER SEMANTICS IN BILINGUALS

PSI 2011 - 23995

FUNDING AGENCY: MICINN - Spanish Ministry of Science and Innovation
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 01/2012 - 12/2014
BUDGET: 68,970 Euros
COORDINATOR: BCBL - PI Elena Salillas PhD

This proposal aims first to understand how the access to number semantics can depend on the verbal code used by bilinguals and second, the impact of bilingualism on math developmental disorders. Based on preliminary data we propose that the Language of Learning Math (LoIM) has a privileged access to semantics. LoIM, which is independent of language dominance, may influence number semantic processing along the life span. The proposed studies will explore how known effects indexing access to semantics – the distance effect and the size effect - are dependent on LoIM in otherwise equally proficient bilinguals. To do so, we measure behavior and ERPs, which underscore cognitive processes not observed in reaction times. Preliminary results from these studies suggest that in fact, LoIM biases ERPs components known to reflect semantic access. We aim to explore this possibility thoroughly with three experiments. We will also use MEG to account for possible spatiotemporal neural differences between the two bilingual´s verbal codes in the access to core number representation. Crucially, our results aim to support modifications to the Encoding Complex Model, the only existent model for bilingual math processing. Secondly, we believe that the fact of being bilingual can have an impact on the prevalent case of developmental dyscalculia (DD): An already deficient math functioning can be aggravated by the complexity of using two verbal codes for math (eg. a linguistic context different from LoIM). We will use ERPs and fMRI techniques to describe the brain basis of this possible interaction. The present project addresses timely scientific issues such as format dependency in bilinguals access to number semantics. We think that the importance of LoIM for bilinguals and for bilingual DD should not be ignored. In turn, the questions addressed in the present project have both scientific and socio-educational impact.

LANG MIND

FUNDING AGENCY: Basque Government
TYPE OF PROJECT: Gaitek
TIME FRAME: 2012 -2014
BUDGET: 52,920 Euros
COORDINATOR: BCBL - PI Manuel Carreiras PhD

The overall objectives are as follows:

_ Develop proprietary Base Technology to position ourselves for the new Information Era and economic globalization.

_ Launch an internationalization process for the Latin American market.

_ Cover the life-long learning needs of the business world, particularly SME's by providing a tailored training service to meet the needs of each company.

_ Broaden the geographic area in which the company acts, exploring launches in new markets and deepening our current field of activity.

_ Find technology partners who will help us to advance and gain the advantage by including new technologies and collaborating in selling this technology.

_ Strengthen the strategy of standing out from the competition, using the development of proprietary technology as the base to do so.

EL LEXICÓN TRILINGÜE - LEXIKOI HIRUELEDUNA
THE TRILINGUAL LEXICON / PI 2012-74

FUNDING AGENCY: The Basque Government
TIME FRAME: 01/2012 - 12/2013
BUDGET: 23,924 Euros
COORDINATOR: BCBL - PI Jon Andoni Duñabeitia PhD

This project is focused on the research of the processes involved in the visual recognition of written words in trilingual communities, that is, amongst the individuals who are able to communicate in three different languages. Trilingualism is a widespread reality in the Autonomous Community of the Basque Country, as well as in many other territories with two official languages, where the population receives formal training in other languages, within the framework of educational programs. Nevertheless, no prior research has been carried out on the cognitive mechanisms involved in the control and usage of three languages spoken by trilingual individuals. This project will focus on this issue from the perspective of cognitive neuroscience, due to its importance from the perspective of basic research, as well as the application of this knowledge to the area of education.

On one hand, it will look into the variables that predict the behavioral response to reading in people whose native language is either Spanish or Basque, whose second language is another official language of the Basque Country (Spanish or Basque, as the case may be), and whose third language is English. The participants of various studies would have a lesser level of competence in the second language in comparison with their first language, as well as a lesser linguistic level in the third language than in the second one, despite the fact that they are capable of communicating in all three languages. The same participants will take part of experiments with silent reading of isolated words in each of those languages, involving a significant number of words during several different sessions. They will be aided by the new communication technologies, through a tactile response provided on devices, which are prepared to measure the response with the precision of up to a millisecond. These words would be presented in a multitude of intra-language variables, which have an impact on access to lexicon (ex: lexical and syllable frequency, length, orthographic proximity), as well as in-between languages variables (ex: orpho-phylological overlapping with words from another language, orthographic proximity between the languages). The results obtained from

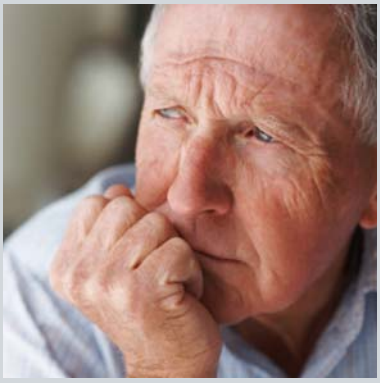
the reading experiment (reaction time and success ratio in the task of lexical decisions) will be subject to a multiple regression analysis, including all variables as predictive ones, for the purposes of finding out the relative weight of each of them in each language. Likewise, the analysis would be carried out by using mixed lineal models, for exploring the modulation of dependent variables in relation to various levels of independent variables and co-variables. The findings yielded by this research would allow to further define the processes involved in processing of words of the first, second and third languages and could ultimately be used for detecting the mechanisms of visual recognition of words that are shared between the languages, as well as those with substantial difference.

On the other hand, the project will focus on two automatic mechanisms that are undoubtedly linked to the processing of words of the second and third languages: spontaneous activation in translations and processes of inhibition of inactive languages during the task. Various studies have demonstrated that a word in the active language automatically activates the representation associated by translation into another language (ex: table -mesa). In balanced bilingual individuals with an early start, representation of the word's translation in the first language (L1) is automatically activated when they read a word in their second language (L2), and vice versa. In turn, research has demonstrated that in situation with medium levels of competence in the second language, co-activation of languages does not occur as automatically. Nevertheless, no similar research has been carried out in connection with automatic activation of the representations in a third language (L3) and its translations into L1 or L2. This project will find out whether the readers are able to automatically activate the translations in three languages. Therefore, we will use both behavioral and electrophysiological techniques. Trilingual participants will complete the tasks of lexical decision and of passive reading in experimental context involving concealed principles, which would allow to explore the degree of automation as far as relations between the words. In addition to using behavioral techniques, the researchers will also look into neural correlation of such effects by collecting electrophysiological data of the participants by virtue of brain's Potential Related to Events (PREs), in order to define the temporal direction of different processes implied therein.

For the purposes of exploring the mechanisms of inhibition connected with suppression of non-active languages when only one language is used, the research will look into the effects of the effort of changing the code or language in trilingual samples. The mere fact of reading two successive words in two distinct languages implies a significant cognitive effort, since the language activated by the first word must be inhibited in order to activate the language of the second word. The research focused on exploring the such effort in relation with visual recognition of words, both at behavioral and electrophysiological levels, have shown that the effort related to the switching a language is directly proportionate to a competence level in the language subject to inhibition. Nevertheless, no evidence has been obtained in relation to trilingual participants, since only bilingual studies have been carried out up to date. This project will intend to discover whether, after a reading in the third language, both the first and the second languages are inhibited, or only the native one. It will also focus on behavioral and electrophysiological effects (using PREs) arising from the suppression of less fluent languages (L2 and L3) upon performing a task of reading the words in L1.

DEVELOPMENT OF NEURAL MECHANISMS INVOLVED IN LONG-TERM MEMORY RETENTION AND RECUPERATION / PI 2012 - 15

FUNDING AGENCY: Basque Government
TIME FRAME: 01/2012 - 12/2013
BUDGET: 45,090 Euros
COORDINATOR: BCBL - PI Pedro Paz-Alonso PhD



It is often considered that learning depends on studying and memory testing mainly serves for the evaluation of learned materials. Recent behavioral research suggests that, in comparison with repeated studying, the practices of memory recuperation or repeated memory evaluation may lead to an increase of up to 150% of the volume of information retained over a long-term (Karpicke and Roediger, 2008). The empirical evidence produced by the research in Cognitive Neuroscience and Neuropsychology has shown the involvement of structures located in the medial temporal lobes (LTM: the hipocampus and parahippocampal gyrus) and in various regions of lateral prefrontal corex (CPFI, frontal, lateral, inferior) in the tasks of codification and recuperation of information stored in the long-term memory (Viard and cols, 2010). These brain areas are subject to significant maturative changes at the structural and functional levels, associated with behavioral improvements observed in relation to memory tasks from middle childhood until adulthood (Paz-Alonso at al. 2009; Shing at al. 2011).

Nevertheless, at the date we do not know the specifics of neural mechanisms that determine a positive outcome of the practices of recuperation in the consolidation of long-term memory. The principal objective of this research project is to identify the neural patterns of the positive effects of memory recuperation, as well as its development and refinement from middle childhood until the adulthood. For these purposes, we suggest to undertake a study of independent samples, employing magnetic resonance, over a total of 75 participants, distributed in three age groups for each study: 8-9 year old children, 11-12 year old children and adults.

The results of this project could make an important contribution to the scientific advances, both of theoretical and practical nature. From the theoretical perspective, this project has a capacity for examining the main hypothesis suggested in regard to the positive effects of recuperation practices, such as greater development of the footprint of memory, favorably affecting creation of additional routes for accessing

such information and the existence of appropriate transfer of processes due to the final recuperation operations, which are similar to those involved during the coding of information. Additionally, the results of this project could provide a break-through empirical evidence of the principle existing models regarding long-term memory consolidation (Standard Theory, Multiple Traces Theory), which suggest a distinct degree of implication of the LTM in the recuperation of already consolidated information. Lastly, this project has a potential of making a contribution to the development of the existing knowledge on refinement of neural networks and the white matter involved in the episodic memory tasks, which allow interaction between CPF and LTM areas. From the practical perspective, the results of this project could contribute to the development of educational programs on various subjects (for example, history, languages), aimed at populations of various ages and characteristics (for example, school-aged, university level, special education). Such programs could foster a more efficient learning, which implies a lesser time investment and a more permanent retainment of information, less subject to be forgotten.

APRENDER UN NUEVO IDIOMA / PSI 2012 - 32350

FUNDING AGENCY: MINECO
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 2013 -2015
BUDGET: 70,200 Euros
COORDINATOR: BCBL - PI Nicola Molinaro PhD

The present project faces second language learning from a different perspective compared to past research. More specifically we will evaluate the neurophysiological real-time correlates of the comprehension of statistical regularities (collocations) in Spanish and in English. Based on the findings emerging from previous EEG studies from our group, we will better constrain the brain regions specifically sensitive to the processing of collocations (as compared to regular compositional constructions) by focusing on the analyses of MEG brain activity (both evaluating increased magnetic responses and phase connectivity patterns). We will test different groups of native (both Spanish and English) speakers and proficient bilinguals in the two languages: we will evaluate both native vs. second-language processing and language attrition effects. To do this we will take advantage from both the MEG lab in the BCBL in San Sebastian and the collaboration with the MEG unit of the MRC center in Cambridge. Importantly, based on the fact that language teaching techniques nowadays focus more and more on getting students familiar with many types of collocational constructions, we will test Spanish students of English that either received such training or not, compared to Spanish speakers living in England with collocation configurations in English. The findings from this series of studies could provide insight concerning: (i) the brain regions involved in comprehending such statistical regularities, (ii) differential sensitivity to such construction in the native and in the foreign language, (iii) neurophysiological changes due to differential teaching techniques of a new language.

PROCESAMIENTO EN LENGUA DE SIGNOS, DACTILOLOGÍA Y LECTURA EN SORDOS Y CODAS / PSI 2012 - 31448

FUNDING AGENCY: MINECO
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 2013 -2015
BUDGET: 128,700 Euros
COORDINATOR: BCBL - PI Manuel Carreiras PhD

Sign languages present a unique and natural opportunity to investigate the mechanisms by which language is understood and processed, and to what extent these are universal or system-dependent. One of this project's objectives is to investigate the extent to which the mechanisms of sign processing and the cortical representation of language are affected by the type of language (oral or sign). As for the processing mechanisms, we will investigate the role played by sub-lexical units, such as some formation parameters (hand configuration and positioning), in recognising signs. As for the cortical representation of sign language, we will examine the extent to which understanding and producing an oral language and a sign language activate similar or different networks in deaf people and bi-lingual hearing people who speak two oral languages or one oral and another sign language.

We will also investigate orthographic processing in deaf people and in the hearing children of deaf people. To do so we will use reading and sign language. The sign language used is based on Spanish spelling (each letter of the alphabet is represented by a different hand sign) and forms part of the Spanish Sign Language (Lengua de Signos Española - LSE). For Spanish Sign Language users, sign language also provides an added orthographic connection that can strengthen the internal representation of words in Spanish, while allowing them to compensate for the difficulties which deaf people have connecting letters and sounds (graphemes and phonemes) . There seems to be a high level of correlation between the signing skill and reading skill of deaf readers. We will investigate how deaf people or their hearing children process words while reading and while signing, and to what extent phonology plays a role in these processes. Progress in this field is not simply interesting from a phonetic viewpoint, it may also have important practical implications as to how to teach deaf children, as most deaf children have difficulty reading.

BASES DEL DESARROLLO NEURAL DE LA RECUPERACIÓN DE MEMORIAS EPISÓDICAS / PSI 2012 - 32093

FUNDING AGENCY: MINECO
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 2013 -2015
BUDGET: 58,500 Euros
COORDINATOR: BCBL - PI Pedro Paz-Alonso PhD

Episodic memory, or the ability to consciously remember past events, is a complex cognitive process that is central to the human experience. In typically developing children, episodic memory improves rapidly during childhood, and then improves more slowly during adolescence. The neural bases supporting these improvements are not yet understood, but episodic memory function is thought to rely on a set of cognitive processes with different developmental trajectories that interact between each other to produce the final memory ouput. These cognitive processes include binding operations, semantic processing, and mnemonic control processes. Neuroscientific research has shown that the hippocampus plays a fundamental role in episodic memory, supporting the formation and retrieval of representations that relationally bind the different aspects of an event. In contrast, lateral prefrontal cortex is thought to play a supportive role in episodic memory, aiding mnemonic elaboration processes for semantically organized information and controlling the strategic retrieval of relevant memories through long-range projections to the hippocampus. It has long been assumed that the hippocampus-dependent binding mechanism is already in place by early childhood, and that the large changes in episodic memory observed during middle childhood and beyond result from the protracted development of the prefrontal cortex. Recent evidence, however, has challenged this view showing hippocampal changes in structure and function over development. Here, we propose to conduct the first developmental study aimed at unraveling the contribution of binding operations, semantic processes, and mnemonic control processes to age-related changes in episodic memory retrieval. In doing so, we will examine a total sample of 150 participants aged 8 to 24 in two separate studies (N = 75 in each study) using behavioral and MRI techniques. The present project seeks to 1) characterize the development trajectories of binding processes for verbal and visual item and relational episodic memory retrieval; 2) investigate the neurodevelopmental changes in regional functional specialization and task functional connectivity for item and relational episodic memory retrieval of semantic and non-semantic verbal information; and, 3)

examine the contribution of age-related changes in the integrity of memory- and language-related anatomical pathways to developmental changes observed in binding operations, semantic processing, and mnemonic control operations. The proposed research project is unique in its exploration of the dynamic interplay between changes in brain structure, function, and episodic memory performance over development.

LOS CONCEPTOS EN EL CONTEXTO / PSI 2012 - 32107

FUNDING AGENCY: MINECO
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 2013 -2015
BUDGET: 64,350 Euros
COORDINATOR: BCBL - PI Eiling Yee PhD

At first glance, conceptual representations (e.g., the concept of a lemon) seem static. That is, we have the impression that there is something that lemon "means" (a sour, yellow, mini American football-shaped, citrus fruit) and that this meaning does not vary. Yet mounting evidence suggests that the context in which we access a concept has a major influence on what knowledge about that concept is retrieved from memory. The aim of this project is to examine the influence of context (which we define broadly as not only short-term task goals, but also as the context that an individual brings via their abilities and long-term experience) on conceptual activation. We explore differences in the time course over which particular features of a concept are activated within a given context, and, also, we examine how the information that we Access about a concept changes across contexts.

The proposal is centered around five inter-related questions:

_ Can the time course over which a concept's features are activated be influenced by long-term experience such as distributional statistics in the language?

_ Can the time course over which a concept's features are activated be influenced by specific task contexts?

_ Do individual differences in cognitive control modulate context's influence on conceptual activation?

_ What are the neural mechanisms underlying dynamic conceptual activation?

The above four questions converge to raise a fifth:

_ In a multilingual society where bilingualism is the norm, how do individual differences in bilingual ability—specifically differences in long-term language use, as well as differences in cognitive control, influence conceptual dynamics?

Traditionally, in the study of semantic representations (and, in fact, in cognitive psychology more broadly), it has been assumed that only effects that can be demonstrated across a variety of tasks and contexts should be considered informative regarding the architecture of the system being investigated. Findings that are task- or context- dependent have often been dismissed because they are considered to be “strategic” — reflecting strategies that do not, by definition, generalize to different tasks or contexts. In this proposal, we take the opposite approach—we use such instances of task- and context- dependence to explore the conceptual system. In addition to advancing our knowledge of semantic memory, a better understanding of how the conceptual system interacts with context should have broader implications for understanding how humans adapt to a constantly changing environment.

TRIBAL: TRANSLATION RECOGNITION IN BILINGUALS ACROSS LIFESPAN

PSI 2012 - 32123

FUNDING AGENCY: MINECO
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 2013 -2015
BUDGET: 52,650 Euros
COORDINATOR: BCBL - PI Jon Andoni Duñabeitia PhD

Efficient reading is based on the correct recognition and processing of individual printed words, which constitute the primary building blocks of language processing. Accessing the semantic knowledge related to a printed word is undeniably preceded by the correct recognition of the individual letters that constitute that given string, and word processing is ultimately a convolution of ortho-phonological and morpho-semantic factors. This holds true for monolingual as well as for multilingual word processing. However, in the case of multilinguals, research has shown that the activation of a given word in a given language immediately co-activates the corresponding translation equivalents in the other languages known by a person. The present project focuses on how different orthographic and semantic factors associated with within-language and between-languages word processing exert an influence on translation recognition in perfectly balanced Basque-Spanish simultaneous bilinguals.

There is current disagreement on how and when the different sub-lexical and supra-lexical factors mediating the visual recognition and processing of translation equivalents exert a facilitative or inhibitory influence on translation processing. A correct understanding of the underlying mechanisms that lead to an univocal access to the shared meaning of a printed pair of translation equivalents is necessary in order to have a clear picture of how visually presented words are read and how they are successfully recognized by bilinguals, on the one hand, and of how different lexemes associated with the same concept coexist in the bilingual brain, on the other hand. One of the major aims of this project is to explore this issue in depth, taking a perspective that combines efforts of different techniques that can shed light on different aspects of translation recognition processes (i.e., behavioral and electrophysiological measures).

Besides, this project aims at investigating how conscious translation recognition processes are carried out by balanced simultaneous Basque-Spanish bilinguals of different ages, in order to characterize the mechanisms associated with bilingual word processing that remain

immutable across lifespan, and those that vary as a function of age. To this end, a series of large-scale behavioral studies using the translation recognition task and several electroencephalographic recordings will be carried out on a large number of participants of different age-ranges (children, young adults and old adults). These studies will try to clarify which factors of pairs of Basque-Spanish translation equivalents mediate translation recognition processes, and critically, how these factors exert a differential influence in different age groups. Until now, nearly all the experiments testing responsiveness of bilinguals to translation equivalents have exclusively explored young adults, and it remains to be seen the relationship between orthographic factors (such as the similarity between translation equivalents; i.e., cognates vs. non-cognates) and semantic factors (such as word concreteness; i.e., concrete vs. abstract words), on the one hand, and age-related normal cognitive decline, on the other hand. This research project will clarify how balanced simultaneous bilinguals of different ages process translation equivalents of different sub-lexical and supra-lexical characteristics, thus providing the scientific community with data that will enrich our knowledge of bilingual word processing across lifespan and of the relationship between cognitive decline and mental translation mechanisms.

LA ACTIVIDAD CEREBRAL ATÍPICA OSCILATORIA, LOS DÉFICITS TEMPORALES DE PROCESAMIENTO Y LA DISLEXIA DEL DESARROLLO / PSI 2012 - 32128

FUNDING AGENCY: MINECO
TYPE OF PROJECT: PLAN NACIONAL (NATIONAL PLAN)
TIME FRAME: 2013 -2015
BUDGET: 58,500 Euros
COORDINATOR: BCBL - PI Marie Lallier PhD

Developmental dyslexia is a neurocognitive disorder preventing 10-15% of the population from acquiring reading normally and is broadly thought to result from a phonological deficit. A growing body of evidence however suggests that, in at least some cases, developmental dyslexia stems from processing limitations in the visual domain. The multifactorial hypothesis of dyslexia postulates that reading difficulties can stem from at least two independent cognitive disorders: a phonological deficit, or a visual attentional span (VA Span) deficit. Recent pieces of work further suggest that the lack of consideration of the cognitive heterogeneity in dyslexia could explain more than three decades of inconsistent results in research assessing visual and auditory temporal processing in dyslexia. Indeed, when phonological deficits relate to difficulties in processing stimuli (auditory or visual) presented sequentially, i.e., every 150-250ms, VA Span disorders are associated with difficulties faced when several stimuli (visual or auditory) are to be encoded simultaneously, i.e., in less than 200ms.

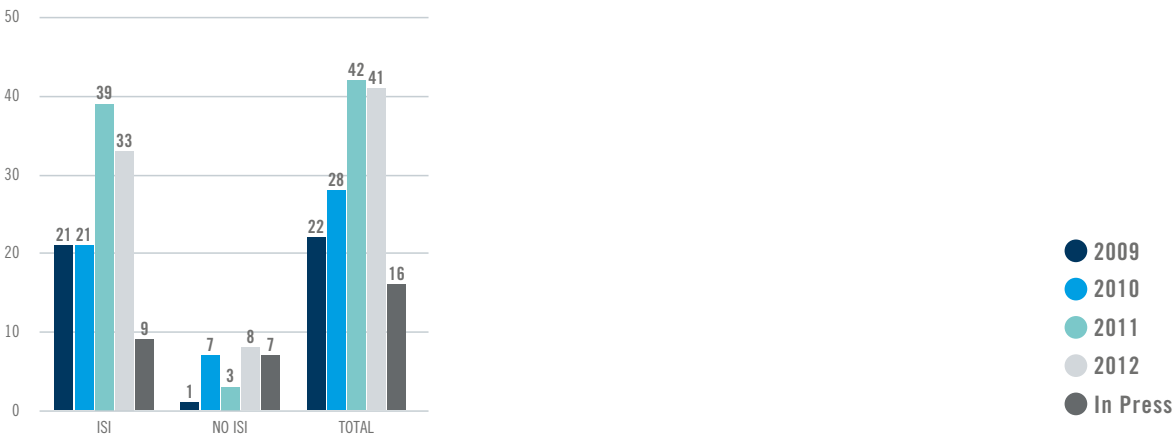
Going beyond behavioural evidence, the present project aims to identify the neurobiological dysfunctions subtending the dissociations previously reported regarding temporal processing deficits and cognitive disorders. Based upon recent evidence showing that different cerebral time scales for auditory processing are necessary for phonological (and reading) development, cerebral oscillatory activity at various frequencies will be recorded via magno-encephalography in Spanish skilled reader and dyslexic children matched for a number of skills. Knowing that both auditory and visual distinct temporal processing deficits predict phonological and VA Span disorders, we expect 1) atypical amodal oscillatory low frequency activity (3-4 Hz) to explain sequential processing deficits in dyslexic children with phonological problems, and 2) amodal oscillatory high frequency activity (25-35Hz) to explain simultaneous processing deficits in dyslexic children with VA Span deficits. We also expect to show a positive impact of a phonological/VA Span training on reading, and more importantly, on low/high cerebral oscillatory activity in dyslexic children taking part to the study. Importantly, the results of the

present project will contribute to develop a complete picture of the causes of developmental dyslexia taking into account the heterogeneity of its behavioural, cognitive, and cerebral manifestations, but will also have concrete outcomes such as the design of diagnostic and remediation tools for reading disorders in children learning to read in Spanish.

SCIENTIFIC PERFORMANCE

_ PUBLICATIONS
_ PARTICIPATION IN CONFERENCES
_ ORGANIZATION OF CONFERENCES & WORKSHOPS
_ SEMINARS
_ MASTER IN COGNITIVE NEUROSCIENCE OF LANGUAGE
_ DOCTORAL THESES

PUBLICATIONS



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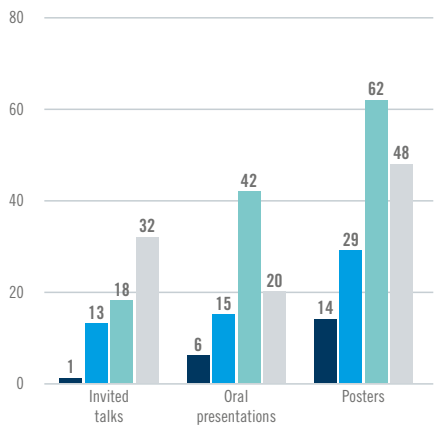
Paz-Alonso, P. M., Ogle, C. M., & Goodman, G. S. (in press). *Children's accuracy in "scientific case studies" of documented child sexual abuse: A review.* In M. Ternes, D. Griesel, & B. Cooper (Eds.), Applied issues in investigative interviewing, eyewitness memory, and credibility assessment. New York: Springer.

Perea, M., abu Mallouh, R., & Carreiras, M. (in press). *Early access to abstract representations in developing readers: Evidence from masked priming.* Developmental Science.

Yee, E., Chrysikou, E.G., Hoffman, E., & Thompson-Schill, S.L. (In press). *Manual experience shapes object representation.* Psychological Science.

Yee, E., Chrysikou, E.G., Thompson-Schill, S.L. Semantic Memory. (In press). *The Oxford Handbook of Cognitive Neuroscience.* Kevin Ochsner and Stephen Kosslyn (Eds.) Oxford University Press.

PARTICIPATION IN CONFERENCES



64
Invited talks

153
Posters

83
Oral presentations

2009
2010
2011
2012

2009

Carreiras, M. (July, 2009) *Reading: Cognitive processes and neural pathways.* Invited talk at Univesidad Autónoma de Madrid, Spain. INVITED TALK

Carreiras, C., Duñabeitia, J.A., Acha, J., and Perea, M. (June, 2009) *Breaking the boundaries: Transposed letter effects across lexeme and affix boundaries.* 6th International Morphological Processing Conference. Turku, Finland. ORAL PRESENTATION

Carreiras, M., Carr, L., Barber, H. & Hernández, A. (July, 2009) *El encuentro de la sintaxis y las matemáticas: Activación del sulco intraparietal derecho con la violación de la concordancia de número.* XXXII Congreso Interamericano de Psicología. Guatemala. ORAL PRESENTATION

Carrerias, M., Duñabeitia, J.A., Molinaro, N. & Estévez, A. (July, 2009) *La contribución diferencial de consonantes y vocales durante el reconocimiento visual de palabras: un estudio de ERPs.* XXXII Congreso Interamericano de Psicología. Guatemala. ORAL PRESENTATION

Carreiras, M., Gutiérrez-Sigút, E. & Baus, C. (July, 2009) *Procesamiento léxico en lengua de signos española (LSE).* XXXII Congreso Interamericano de Psicología. Guatemala. ORAL PRESENTATION

Carreiras, M. & Duñabeitia, J. A. (November, 2009). *Electrophysiological correlates of masked orthographic priming with high and low- frequency orthographic neighbors.* 50th annual meeting of the Psychonomic Society. Boston, USA. ORAL PRESENTATION

Cholin, J. Baus, C., & Carreiras, M. (September, 2009) *Effects of syllable frequency in language production and comprehension.* XXVI meeting of the european society for cognitive psychology. Kraków, Poland. ORAL PRESENTATION

Baus C., Costa A. & Carreiras M. (September, 2009) *Use it or loose it: on the effect of short time foreign language immersion on a native language.* 15th annual conference on Architectures and Mechanisms for Language Processing.Barcelona, Spain. POSTER

Carreiras, M., Vergara, M., Marín, A. & Perea, M. (March, 2009) *The processsing of consonants and vowels during letter identity and letter position assignment in visual word recognition.* 16th annual meeting of the Cognitive Neuroscience Society. San Francisco, USA. POSTER

Corral. J., Barber, H., va der Meij, M. & Carreiras, M. (March, 2009) *The time-frequency analysis of late positive components during language comprehension.* 16th annual meeting of the Cognitive Neuroscience Society. San Francisco, USA. POSTER

Cholin, J., Baus, M. & Carreiras, M. (November, 2009). *Syllable frequency effects in Language Production and Language Comprehension Tasks.* Poster presented at the 50th Annual Meeting of the Psychonomic Society. Boston, MA, USA. POSTER

Dimitropoulou, M., Duñabeitia, J. A., & Carreiras, M. (September, 2009) *The cognate effect and cross language neighborhood density.* 15th annual conference on Architectures and Mechanisms for Language Processing. Barcelona, Spain. POSTER

Dimitropoulou, M., Duñabeitia, J.A., Carreiras, J.A., & Grainger, J. (2009). *Transpositions Within Letter, Number, and Symbol Strings: Behavioral and Electrophysiological Evidence.* Poster presentation at the 50th Annual Meeting of the Psychonomic Society, Boston, U.S.A. POSTER

Duñabeitia, J. A., Dimitropoulou, M., Perea, M., & Carreiras, M. (September, 2009) *The syllable congruency effect revisited is it real?* 15th annual conference on Architectures and Mechanisms for Language Processing. Barcelona, Spain. POSTER

Duñabeitia, J.A., Molinaro, N., Perea, M., & Carreiras, J.A., (2009, November). *Transposed-Letter Effects Depend on the Lexicality of the Primes: Behavioral and Electrophysiological Evidence.* Poster presented at the 50th Annual Meeting of the Psychonomic Society, Boston, U.S.A. POSTER

Leone, B., Molinaro, N., & Barber, H. (September, 2009) *ERP correlates of objects and events: two sides of the verb "to be" in Spanish. Congress. 2009.* 15th annual conference on Architectures and Mechanisms for Language Processing. Barcelona, Spain. POSTER

van der Meij, M., Cuetos, F., Carreiras, M., and Barber, H. (2009, October). *Erp effects of code switches in late second language learners when reading.* 49th Annual Meeting of the Society for Psychophysiological Research. Berlin, Germany. POSTER

Molinaro, N., Barber, H., Leone, B., & Carreiras, M. (March, 2009) *An ERP study on number interference during agreement processing.* 22nd annual CUNY Conference on human sentence processing. Davis, California, USA. POSTER

Molinaro, N., Carreiras, M. (September, 2009). *Collocation constraints in sentence comprehension: a tool for investigating predictive mechanisms.* 15th annual conference on Architectures and Mechanisms for Language Processing.Barcelona, Spain. POSTER

Molinaro, N., Conrad, M., Carreiras, M., et al. *On the Functional Nature of the N400: The Lexical Interference created by Neighbor Frequency Effects.* 49th Annual Meeting of the Society-for-Psychophysiological-Research. Berlin, Germany. POSTER

Vergara, M., Marín, A. & Carreiras, M. (March, 2009). *ERP effects of sublexical processing in visual word recognition: Are syllabic effects modulated by syllabic structure.* 16th annual meeting of the Cognitive Neuroscience Society. San Francisco, USA. POSTER

2010

Carreiras, M. (May, 2010). *One brain and two languages: Language processing in bilinguals.* Paper presented in LASLAB, UPV/EHU. INVITED TALK

Carreiras, M. (May, 2010). *Advanced Research Seminar on Language Processing.* Paper presented at Master Universitario de Lingüística, UPV/EHU. INVITED TALK

Carreiras, M. (June, 2010). *Mechanisms of agreement.* Paper presented at the conference Psycholinguistics across the borders, Rovereto, Italy. INVITED TALK

Carreiras, M. (June, 2010). *Mechanisms of agreement.* Paper presented at the summer school Understanding Language: Forty Years Down the Garden Path, Donostia - San Sebastian, Spain. INVITED TALK

Carreiras, M. (July, 2010). *Language structure and brain areas.* Paper presented at Verbum Summer School of Linguistics, Vigo, Spain. INVITED TALK

Carreiras, M. (October, 2010). *Mechanisms of agreement.* Paper presented at MPI Colloquium series, Nijmegen, The Netherlands. INVITED TALK

Davidson, D. J. (2010, October). *Electrophysiological correlates of grammatical plasticity.* Invited presentation at the Donostia Workshop on Neurobilingualism, Donostia, Spain. INVITED TALK

Duñabeitia, J.A. (2010, October). *Accessing the mental lexicon.* Paper presented in the Faculty of Informatics, UPV/EHU. INVITED TALK

Duñabeitia, J.A. (2010, November). *Lectura y dislexia desde la neurociencia cognitiva.* Paper presented at the VII Congreso FNCE, Bilbao, Spain. INVITED TALK

Martin, A. E. (April, 2010). *From memory to deletion and back: Using ellipsis to study memory in sentence comprehension.* Invited talk at the Institute for Logic, Cognition, Language, and Information at the University of the Basque Country, Donostia-San Sebastián, Spain. INVITED TALK

Martin, A. E. (November, 2010). *From memory to deletion and back: Using ellipsis to study memory in sentence comprehension.* Invited talk at the Experimental Pragmatics Workshop at the Johannes-Gutenberg University, Mainz, Germany. INVITED TALK

Nieuwland, M.S. (March, 2010). *A cognitive neuroscience perspective on pragmatic informativeness.* ILCLI, Donostia-San Sebastian, Spain. INVITED TALK

Nieuwland, M.S. (November, 2010). *Online computation of relevance: Insights from electrophysiology.* Pragmatic Enrichment Workshop, Johannes Gutenberg-University Mainz, Germany. INVITED TALK

Acha, J., Carreiras, M., & Perea, M. (2010, November). *Masked syllabic priming revisited: The case of Diphthongs and Hiatus.* Word recognition miniconference for the 51st Annual Meeting of the Psychonomic Society. St. Louis, Missouri. ORAL PRESENTATION

Baus, C., Molinaro, N., Costa, A., & Carreiras, M. (October, 2010). *Influence of a brief linguistic immersion on lexical selection processes during speech production: A longitudinal ERP study.* Paper to be presented at the 'Donostia workshop on Neurobilingualism'. Donostia-San Sebastian, Spain. ORAL PRESENTATION

Carreiras, M. (May, 2010). *One*

Acha, J., & Perea, M. (April, 2010). *Letters or graphemes? An examination of basic coding units in visual word recognition.* SEPEX-EPS, Granada, Spain. ORAL PRESENTATION

Carreiras, M. and Acuñas, C. (July, 2010). *Language processing.* Paper presented at the Verbum Summer School of Linguistics, Vigo, Spain. ORAL PRESENTATION

Carreiras, M., Duñabeitia, J.A. & Dimitropoulou, M. (November, 2010). *Does L2 Proficiency Modulate Noncognate Masked Translation-Priming Effects?* Paper presented at the Psychonomic Society, 51st Annual Meeting, St. Louis, USA. ORAL PRESENTATION

Davidson, D. J. (2010, November). *Oscillatory correlates of speech motor control.* Presentation at the Annual Meeting of the DFG Priority Program 1234, Munich, Germany. ORAL PRESENTATION

Dimitropoulou, M., Duñabeitia, J.A., & Carreiras, M. (2010). *Oral presentation at the CRL meeting, UCSD, California, USA.* ORAL PRESENTATION

Duñabeitia, J.A., Molinaro, M., & Carreiras, M. (2010, April). *The recognition of mirror-letters and mirror-words: Insights from the masked priming paradigm.* Paper presented at the 1st Joint Conference of the SEPEX-EPS, Granada, Spain. ORAL PRESENTATION

Duñabeitia, J.A., Carreiras, M. (July, 2010). *Learning to read Spanish, Basque and English in Spain.* Paper presented at the workshop Neuro-cognitive determinants of second language literacy in young adults – A multilingual perspective, Donostia - San Sebastián, Spain. ORAL PRESENTATION

Duñabeitia, J.A., Dimitropoulou, M., Raphael, D., & Carreiras, M. (2010, October). *The more the merrier? ERP evidence of cognate word processing in trilinguals.* Paper presented at the Donostia Workshop on Neurobilingualism, Donostia, Spain. ORAL PRESENTATION

Leone, B.; Carreiras, M.; Candidi, M.; Aglioti, S. M. and Barber, H. (April, 2010). *Hands on the future: selective increase of corticospinal facilitation when reading the future tense of hand-related action verbs.* Paper presented at the 1st Joint Conference of the SEPEX-EPS, Granada, Spain. ORAL PRESENTATION

Mancini, S., Molinaro, N., Rizzi, L., & Carreiras, M. (June, 2010). *When Persons disagree: an ERP study of Unagreement in Spanish.* Paper presented at the 'Psycholinguistics across the borders workshop'. Rovereto, Italy. ORAL PRESENTATION

Molinaro, N.; Barber, H. A.; Mancini, S.; Carreiras, M. (April, 2010). *The asymmetric nature of agreement computation: Evidence from Spanish.* Paper presented at the 1st Joint Conference of the SEPEX-EPS, Granada, Spain. ORAL PRESENTATION

Molinaro, N., & Carreiras, M. (June, 2010). *Collocational constraints in sentence comprehension: A tool for investigating predictive mechanisms.* Paper presented at the 'Psycholinguistics across the borders workshop'. Rovereto, Italy. ORAL PRESENTATION

Perea, M.; Abu Mallouh, R.; Carreiras, M. (April, 2010). *The search of an input coding scheme: Transposed-letter priming in Arabic.* Paper presented at the 1st Joint Conference of the SEPEX-EPS, Granada, Spain. ORAL PRESENTATION

Avilés, A.; Carreiras, M. and Muente, T. (April, 2010). *Remembering and forgetting concrete and abstract words: A new window into semantic representation.* Poster presented at the 8th Sepex Conference, Granada, Spain. POSTER

Carreiras, M., Dimitropoulou, M., Grainger, J., & Duñabeitia, J. A. (November, 2010). *Character transpositions in letter, number, and symbol strings: behavioral and electrophysiological.* Poster presented at the 2nd Annual Neurobiology of Language Conference, San Diego, USA. POSTER

Conrad, M.; Spiegel, M. A.; Hansen, L.; Bajo, M. T.; Carreiras, M. and Jacobs, A. (April 2010). *A normative database with rating values of emotional content for 6.000 spanish words.* Poster presented at the 8th Sepex Conference, Granada, Spain. POSTER

Cholin, J., Monahan, P. J., & Hantsch, A. (September, 2010). *Syllable-frequency effects in monolingual and bilingual speakers.* Poster presented at the 6th International Workshop on Language Production. Edinburgh, UK. POSTER

Cholin, J., Rapp, B., & Miozzo, M. (September/October, 2010). *Bilingual Aphasia: A test-case for morphology.* Poster presented at the Donostia Workshop on Neurobilingualism, Donostia-San Sebastian, Spain. POSTER

Davidson, D. J., Maess, B., Knosche, T., Friederici, A. F. (2010, June). *A dynamic causal model for processing syntactic complexity during spoken sentence processing.* Poster presented at the 16th Annual Meeting of the Organization for Human Brain Mapping, Barcelona, Spain. POSTER

Dimitropoulou, M., Duñabeitia, J.A., Uribe-Etxebarria, O., Laka, I., & Carreiras, M. (October, 2010). *Electrophysiological correlates of the masked translation priming effect with highly proficient simultaneous bilinguals.* Poster presentation at the Donostia Workshop on Neurobilingualism, San Sebastián, Spain. POSTER

SCIENTIFIC PERFORMANCE
_ PARTICIPATION IN CONFERENCES

Dimitropoulou, M., Duñabeitia, J.A., & Carreiras, M. (October, 2010). *Does L2 proficiency modulate non-cognate masked translation priming effects?* Poster presentation at the Donostia Workshop on Neurobilingualism, San Sebastián, Spain. POSTER

Dimitropoulou, M., Duñabeitia, J.A., & Carreiras, M. (November, 2010). *Automatic Transliteration Effects in Biscriptal Readers: The Case of Greeklish.* Poster presented at the 51st Annual Meeting of the Psychonomic Society, St. Louis, USA. POSTER

Dimitropoulou, M., Duñabeitia, J.A., & Carreiras, M. (2010). *Automatic translit-eration effects in bi-scriptal readers: The case of Greeklish.* Poster presentation at the International Workshop on Neuroscience and Education, Seville, SPAIN. POSTER

Duñabeitia, J.A., Dimitropoulou, M., Laka, I., & Carreiras, M. (2010, April). *ERP evidence for masked translation and associative priming effects in highly proficient balanced bilinguals.* Poster presented at the 17th Annual Meeting of the Cognitive Neuroscience Society, Montreal, Canada. POSTER

Duñabeitia, J.A., Molinaro, M., & Carreiras, M. (2010, June). *The perception of mirror-letters and mirror-words: An ERP study on mirror reading.* Poster presented at the 16th Annual Meeting of the Organization for Human Brain Mapping, Barcelona, Spain. POSTER

Duñabeitia, J.A. & Carreiras, M. (November, 2010). *Challenging Feedback Mechanism from Lexico-Semantics to Orthography.* Poster presented at the 51st Annual Meeting of the Psychonomic Society, St. Louis, USA. POSTER

Ibanez, A. and Bajo, M.T. (April, 2010). *VIII SEPEX conference (1st joint conference of the EPS and SEPEX).* Cued language switching in sentence reading: control inhibition and the asymmetric switching cost. Granada, Spain. POSTER

Ibanez, A., Molnar, M., Carreiras, M. (2010). *The effects of non-linguistic cues on bilingual language use.* Neurobilingualism Conference. Donostia, Spain. September 30 – October 1. POSTER

Lallier, M., Carreiras, M., Tainturier, M. J., & Thierry, G. (2010). *Does the specific acoustic structure of a language shape auditory attention underlying speech perception?* The second Neurobiology of Language Conference, San Diego, California, November 11-12. POSTER

Lallier, M., Carreiras, M., Thierry, G., & Tainturier, M., J. (2010). *Orthographic transparency effects on the manifestations of developmental dyslexia: Evaluating the disorder in English monolingual dyslexic adults and Welsh-English bilingual dyslexic adults.* Donostia Workshop on Neurobilingualism, San Sebastian, Spain, September 30-October 2. POSTER

Lallier, M., Lassus-Sangosse, D., Prado, C., Valdois, S., & Kandel, S. (2010). *Dyslexia in Bilinguals: Does Language of Assessment Matter?* Donostia Workshop on Neurobilingualism, San Sebastian, Spain, September 30-October 2. POSTER

Mancini, S., Molinaro, N., Rizzi L., and Carreiras, M. (March, 2010). *When Disagreement is Grammatical: ERP Correlates of Unagreement in Spanish.* Poster presented at CUNY 2010, New York, USA. POSTER

Marín-Gutiérrez, A.; Avilés, A. and Carreiras, M. (April, 2010). *Semantic and affective priming in healthy seniors and alzheimer's disease.* Poster presented at the 8th Sepex Conference, Granada, Spain. POSTER

van der Meij, M.; Cuetos, F.; Carreiras, M. and Barber, H. A. (April, 2010). *Switching between languages: Erp study.* Poster presented at the 8th Sepex Conference, Granada, Spain. POSTER

Molinaro, N., Duñabeitia, J.A. and Carreiras, M. (June, 2010). *Feedback Regularization of Letter-like Numbers in Visual Word recognition.* Poster presented at the 16th Annual Meeting of the Organization for Human Brain Mapping, Barcelona, Spain. POSTER

Molnar, M, Gervain, J, Carreiras, M (2010). *Language discrimination by Spanish-Basque bilingual infants.* Donostia Workshop on Neurobilingualism. Donostia, Spain. September 30 – October 1. POSTER

Molnar, M., Polka, L., Baum, S., Steinhauer, K. (2010). *Vowel perception: how simultaneous bilinguals do it.* Donostia Workshop on Neurobilingualism. Donostia, Spain. September 30 – October 1. POSTER

Molnar M, & Mayor, J (2010). *The development of vowel categories in simultaneous bilinguals – A modeling approach.* Neurocognition of Language Conference. San Diego, CA. USA. November 10 –11.2010 POSTER

Nieuwland, M., Martin, A. & Carreiras, M. (October, 2010). *An event-related FMRI study on case and number agreement processing in native and proficient nonnative speakers of Basque.* Poster presented at the Donostia Workshop on Neurobilingualism, Donostia-San Sebastian, Spain. POSTER

Salillas, E., & Carreiras, M. (October, 2010). *Access to numerical magnitude depends on the language that a bilingual activates.* Poster presented at the Donostia Workshop on Neurobilingualism, Donostia-San Sebastian, Spain. POSTER

Savill, N., Lallier, M., Carreiras, M., and Thierry, G. (November, 2010). *ERP evidence of reduced automatic differentiation of words and consonant strings in English-Welsh.* Poster presented at the 2nd Annual Neurobiology of Language Conference, San Diego, USA. POSTER

Yetano, I., Duñabeitia, J.A., Carreiras, M. and de la Cruz-Pavía, I. (March, 2010). *Processing Postnominal Relative Clauses in Basque: An Inquiry into the Dependency Locality Theory.* Poster presented at CUNY 2010, New York, USA. POSTER

2011

Carreiras, M.(2011, July). *Neuro and Psycholinguistic Approaches to Language Processing.* Summer School of Linguistics 2011. University of Minho, Braga, Portugal. INVITED TALK

Carreiras, M. (2011, September). *Sentence processing in Bilinguals.* Science of Aphasia (SOA) XII: Neurocognitive Contributions to Bilingualism. Barcelona, Spain. INVITED TALK

Carreiras, M. (2011, September). *The Literate Brain; Reading: Cognitive processes and neural pathways.* LIBC colloquium. Universiteit Leiden, Belgium. INVITED TALK

Carreiras, M. (Septiembre 2011) *Una mirada desde la neurociencia.* Seminario Los retos de la Neurociencia en el siglo XXI. Observando el pensamiento y la plasticidad cerebral. UIMP, Valencia, Spain. INVITED TALK

Carreiras, M. (2011, November). *Word Reading: Cognitive Processes and Neural Pathways.* Colóquio Internacional de Leitura: Processamento da Língua Escrita. Lisboa, Portugal. INVITED TALK

Carreiras, M. (2011) *Cognitive processes and neural pathways.* Universidad Autónoma de Madrid, Spain. INVITED TALK

Cholin, J. (2011, September). *Storage versus Computation: Neuro- and Psycholinguistic Approaches.* Linguistics Department at University College London, London, UK. INVITED TALK

Cholin, J. (2011, October). *Syllables in Speech Production: Computation, Storage and Coordination.* 'Syllable-Workshop' (6th meeting of the German Science Foundation Priority Program 1234, Marburg, Germany) in Münster, Germany. INVITED TALK

Cholin, J. (2011, November). *Planning and execution in incremental speech production.* Colloquium at the Department of Computational Linguistics, University of Osnabrück, Germany. INVITED TALK

Davidson, D. J. (August, 2011). *Cognitive neuroscience of multilingualism.* Invited teaching at Letní škola lingvistiky (Linguistics Summer School). Dačice, Czech Republic. INVITED TALK

Hanulikova, A. (August, 2011). *Social information in language processing.* Talk presented at Letní škola lingvistiky (Linguistics Summer School). Dačice, Czech Republic. INVITED TALK

Hanulíková, A. (November, 2010). *Non-native production, perception and comprehension of the troublesome English dental fricatives.* Lectures on New Observations in Speech and Hearing, Institute of Phonetics and Speech Processing at the University of Munich, Germany. INVITED TALK

Molinaro, N. (September, 2011). *Building up expectations based on what we know (language? much more...).* Biomag laboratory, Helsinky, Finland. INVITED TALK

Nieuwland, M.S. (October, 2011). *Putting language in context.* Department of Psychology, University of Edinburgh, Scotland, UK. INVITED TALK

Salillas E. (2011, November). *Language of learning math and number semantics.* Universidad de Murcia, Spain. INVITED TALK

Samuel, A.G. (May, 2011). *Perceptual Learning of Speech: Now you See it, Now you Don't.* Keynote Talk at Psycholinguistics in Flanders (Antwerp). INVITED TALK

Samuel, A.G. (June/July, 2011). *How Lexical is the Lexicon?* Invited Talk at the Workshop in Honor of William Marslen-Wilson, Cambridge University, UK. INVITED TALK

SCIENTIFIC PERFORMANCE
_ PARTICIPATION IN CONFERENCES

Yee, E. (March, 2011). *How are Concepts Represented?* Converging Evidence for Distributed Representations from Eye Movements, fMRI, and Brain-damaged Patients. University of Nevada - Reno, Department of Psychology, USA. INVITED TALK

Acha, J., Laka, I., & Carreiras, M. (January, 2011). *The role of orthographic and phonological overlap in bilingual word recognition and naming.* Neuroscience and Education, Sevilla, Spain. ORAL PRESENTATION

Bederian-Gardner, D., Paz-Alonso, P.M., Hembacher, E., & Goodman, G. S. (2011, March). *Developmental differences in emotional true and false memories: The role of gist and monitoring processes Influence them.* Oral communication at the Society for Research in Child Development (SRCD) biennial meeting. Montreal, Canada.
ORAL PRESENTATION

Carreiras, M., & Saddy, D. (2011, September). *Neurocognitive Processing.* Consortium Workshop on Theoretical and Experimental Linguistics. NIAS Institute, Netherland.
ORAL PRESENTATION

Carreiras, M., Molinaro, N., Monahan, P., Helenius, P., & Duñabeitia, J.A. (2011, November). *From visual encoding to meaning: Processing numbers, letters and pictures.* Paper presented at the 52nd Annual Meeting of the Psychonomic Society, Seattle, USA.
ORAL PRESENTATION

Carreiras, M.(2011). *Designing a Spanish-English L2 Learning Project.* Paper presented at the conference Neuro-cognitive determinants of second language literacy in young adults- A multilingual perspective II. Chungli City, Taiwan ORAL PRESENTATION

Davidson, D. J. (October, 2011). *Electrophysiological characteristics of encoding and retrieval for second language vocabulary.* 17th Meeting of the European Society for Cognitive Psycholgy (ESCOP). Donostia, Spain. [Invited talk for a symposium organized by Tokowicz, N. & van Hell, J.: Bilingual word and sentence processing: Electrophysiological investigations. ORAL PRESENTATION

Davidson, D. J. (2011). *Electrophysiological characteristics of encoding and retrieval for L2 vocabulary.* Talk presented 6th meeting of the DFG Schwerpunktprogramm-1234 (German Science Foundation Priority Program 1234). Marburg, Germany.
ORAL PRESENTATION

Dimitropoulou, M., Duñabeitia, J.A., & Carreiras, M. (2011, September). *The balance in unbalanced bilingualism: Automatic co-activation of translations across languages.* Paper presented at the Aix-en-Provence Workshop on Bilingualism, Aix-en-Provence, France. ORAL PRESENTATION

Dimitropoulou, M., Carreiras, M., & Duñabeitia, J.A. (2011, October). *How does reading experience shape letter processing? Behavioral and electrophysiological evidence from preschoolers and novel readers.* Paper presented at the 17th Meeting of the European Society for Cognitive Psychology, Donostia, Spain. ORAL PRESENTATION

Dimitropoulou, M., Duñabeitia, J.A., & Carreiras, M. (2011, November). *Two words, one meaning: lexical organization and processing in bilinguals.* First NetWordS Workshop on understanding the Architecture of the Mental Lexicon: Integration of Existing Approaches. Pisa ORAL PRESENTATION

Duñabeitia, J.A., Molinaro, N., & Carreiras, M. (2011, September). *ERP evidence for mental rotation of letter strings in an alphabetic decision task.* Paper presented at the 17th Meeting of the European Society for Cognitive Psychology, Donostia, Spain.
ORAL PRESENTATION

Hanulikova, A. Davidson, D. & Carreiras, M. (June, 2011). *When men and women disagree in syntax: The effect of speaker´s identity on syntactic processing.* Talk presented at the 7th International Morphological Processing Conference.
ORAL PRESENTATION

Hanulikova, A., Dediu, D., Fang, Z., Hanulova, J., Huettig, F. (September, 2011). *Individual differences in the acquisition of a complex L2 phonology.* The Fourth A. Guiora Annual Roundtable Conference in the Cognitive Neuroscience of Language: 'Individual Differences in Second Language Learning', Max Planck Institute for Psycholinguistics.
ORAL PRESENTATION

Ibanez, A. and Carreiras, M. (January, 2011). *Reading comprehension and resistance of interference.* International workshop Neuroscience and Education. Sevilla, Spain.
ORAL PRESENTATION

Laka, I., Erdocia, K., Duñabeitia, J.A., Molinaro, N., & Carreiras, M. (2011, April) *Basque object relative clause advantage in proficient non-native bilinguals.* Paper presented at the 10th International Symposium on Psycholinguistics, Donostia, Spain.
ORAL PRESENTATION

Laka, I., Erdocia, K., Duñabeitia, J.A., Molinaro, N., & Carreiras, M. (2011, April). *Complex syntactic processing in very proficient non-natives elicits N400.* Paper presented at the 18th Meeting of the Cognitive Neuroscience Society, Chicago, USA.
ORAL PRESENTATION

Lallier, M., Kandel, S., Carreiras, M., & Tainturier., M.J. (2011) *Cross-linguistic interactions in visual attention processes underlying reading: Evidence from simultaneous bilingualism. In the Integrated Symposium "Cross-Linguistic Studies into Developmental Dyslexia: Possible Causes – a Phonological, Visual Attention Span (VAS) or Visuo-Spatial Memory Deficit?".* 8th British Dyslexia Association International Conference, Harrogate, United Kingdom, June 2nd-4th. ORAL PRESENTATION

Lallier, M. (2011) *Specifics of auditory and visual attention deficits in developmental dyslexia Workshop on Neuroscience and Education.* Seville, January 14th – 15th.
ORAL PRESENTATION

Martin, A.E., Nieuwland, M.S., Carreiras, M. (2011, September). *Event-related brain potentials index cue-based retrieval interference during sentence comprehension.* AMLaP 2011 Architectures and Mechanisms for Language Processing. Paris.
ORAL PRESENTATION

Molinaro, N., Monahan, P. Barber, H. A. & Carreiras, M. (2011, July). *MEG correlates of grammatical agreement processing in Spanish.* Paper presented at the 2011 Retecog Workshop, Madrid, Spain.
ORAL PRESENTATION

Molinaro, N., Carreiras, M., & Duñabeitia, J.A. (2011, September). *Contrasting meanings in minimal noun-adjective pairs: ERP correlates of oxymora interpretation.* Paper presented at the 17th Meeting of the European Society for Cognitive Psychology, Donostia, Spain. ORAL PRESENTATION

Molnar, M. Ibañez, A. & Carreiras, M.(2011, April). *The effects of non-linguistic cues on bilingual language use.* 10th International Symposium of Psycholinguistics. Donostia-San Sebastián. ORAL PRESENTATION

Nieuwland, M.S. & Martin, A.E. (March, 2011). *If the real world were irrelevant, so to speak: An event-related potential study on counterfactual comprehension.* Paper presented at CUNY, Palo Alto, CA, USA.
ORAL PRESENTATION

Nieuwland, M.S., Martin, A.E. & Carreiras, M. (April, 2011). *An event-related FMRI study on case and number agreement processing in native and proficient nonnative speakers of Basque.* Paper presented at CNS, San Francisco, CA, USA. ORAL PRESENTATION

Nieuwland, M. S., Martin, A. E., & Carreiras, M. (2011, April). *Brain regions that process case and number in native and proficient nonnative speakers of Basque.* Symposium talk presented at the 18th annual CNS. San Francisco, CA, USA. ORAL PRESENTATION

Nieuwland, M.S., Martin A.E., Carreiras, M. (2011, April). *Brain Regions Subserving Grammatical Processing Evidence from native and proficient Nonnative Basque Speakers.* Paper presented at Cognitive Neuroscience Society — 2011 Annual Meeting. San Francisco. ORAL PRESENTATION

Nieuwland, M.S. & Martin, A.E. (October, 2011). *If the real world were irrelevant, so to speak: An event-related potential study on counterfactual comprehension.* Paper presented at ESCOP, Donostia-San Sebastian, Spain. ORAL PRESENTATION

Paz-Alonso, P. M., Cómbita-Merchán, L., Bunge, S. A., & Rueda, M. R. (2011, March). *Developmental changes in monitoring the temporal context of memories.* Oral communication at the Society for Research in Child Development (SRCD) biennial meeting. Montreal, Canada. ORAL PRESENTATION

Paz-Alonso, P. M., Perez, A., & Carreiras, M. (2011, July). *Neural development of mnemonic control networks.* Oral communication at the ReteCog: Architectures of the Mind meeting. Madrid, Spain.
ORAL PRESENTATION

Paz-Alonso, P. M. (2011, August). *Neurodevelopmental changes in control over memory retrieval.* Oral communication at the 5th International Conference on Memory (ICOM). York, UK. ORAL PRESENTATION

Paz-Alonso, P. M., & Bunge, S. A. (2011, September). *Neurodevelopmental correlates of monitoring the temporal context of memories.* Oral communication and symposium organizer at the 11th International Conference on Cognitive Neuroscience (ICON). Mallorca, Spain. ORAL PRESENTATION

Perea, M., Abu Mallouh, R., Moret-Tatay, C. & Carreiras, C. (2011, June). *Are root letters compulsory for lexical access in Semitic languages? The case of masked form priming in Arabic.* 7th International Morphological Processing Conference. Donostia-San Sebastián.
ORAL PRESENTATION

SCIENTIFIC PERFORMANCE
_ PARTICIPATION IN CONFERENCES

Salillas, E. & Carreiras, M. (2011, April). *Language of learning math and number semantics. A bilingual ERP study.* 10th International Symposium of Psycholinguistics. Donostia-San Sebastián. ORAL PRESENTATION

Salillas E., Wicha N. (2011, April). *Arithmetic representations and the bilingual brain. Invited talk to the Symposiun Session "The bilingual brain".* 18th CNS Meeting. San Francisco. ORAL PRESENTATION

Samuel, A.G. (March, 2011). *Perceiving and Encoding Spoken Words: What Counts as Context?* Colloquium given at the Department of Psychology, University of Bristol. ORAL PRESENTATION

Samuel, A.G. & Dance, C. (April, 2011). *Phonemic Restoration in Spanish-English Bilinguals: An Assessment of Automaticity in Speech Processing.* Talk given at the Tenth International Symposium of Psycholinguistics. ORAL PRESENTATION

Samuel, A.G. (May, 2011). *Perceptual Learning of Speech: Now you See it, Now you Don't.* Colloquium given at the University of Geneva. ORAL PRESENTATION

Samuel, A.G. & Kraljic, T. (September, 2011). *Accents, Assimilation, and Auditory Adjustments.* Talk given at the European Society of Cognitive Psychology, ESCOP 2011. ORAL PRESENTATION

Samuel, A.G. & Kraljic, T. (November, 2011). *Accents, Assimilation, and Auditory Adjustments.* Talk given at the Psychonomic Society (Seattle). ORAL PRESENTATION

Yee, E., Chrysikou, E.G., Hoffman, E., Levesque, A., & Thompson-Schill, S.L. (2011, March). *Playing patty-cake while listening to words: A concurrent manual task interferes with comprehending the names of objects that are interacted with manually.* Talk presented at the 24th annual CUNY Conference on Human Sentence Processing, Stanford, CA. ORAL PRESENTATION

Yee, E., Chrysikou, E.G., Hoffman, E., Thompson-Schill, S.L (2011, August). *Playing patty-cake interferes with comprehending the names of manually experienced objects.* Talk presented at The 4th Workshop on Embodied and Situated Language Processing. ZiF, Center for Interdisciplinary Research Bielefeld University, Germany. ORAL PRESENTATION

Yee, E., Huffstetler, S., & Thompson-Schill, S. (September, 2011). *Roses are red. Jeans are blue. Frisbees are round, and triangles can be too.* Talk presented as part of: Interactions Between Vision and Language: The state of the art Symposium presented at the 17th Meeting of the European Society for Cognitive Psychology, San Sebastian, Spain. ORAL PRESENTATION

Abu Mallouh, R., García-Orza, J., Perea, M. & Carreiras, M. (2011, Abril). *Is there automatic access to numbers representations? The case of Indian numerals.* Poster presented at 10th International Symposium of Psycholinguistics, Donostia-San Sebastian, Spain. POSTER

Acha, J., Laka, I. & Carreiras, M. (2011, Abril). *The role of orthographic and phonological overlap in bilingual word recognition and naming.* Poster presented at 10th International Symposium of Psycholinguistics, Donostia-San Sebastian, Spain. POSTER

Baese-Berk, Melissa. (2011, September) *Does learning in perception and production occur on different time scales?* Poster presented at Architectures and Mechanisms for Language Processing, Paris, France. POSTER

Baese-Berk, Melissa M. (2011, November). *The time-course of learning in speech perception and production.* Poster presented at the 52nd Annual Meeting of the Psychonomic Society, Seattle, WA, USA. POSTER

Baus, C., Costa, A. & Carreiras, M. (2011, September). *On the effects of a brief L2 immersion on executive control.* Poster presented at Conference of the European Society for Cognitive Psychology, (ESCOP 2011), Donostia-San Sebastian, Spain. POSTER

Bien, H., Hanulikova, A., Weber, A., & Zwitserlood, P. (2011, September). *Sinking about speech: Acoustic similarity versus linguistic experience in prelexical processing.* Poster presented at the 17th Meeting of the European Society for Cognitive Psychology [ESCOP 2011], San Sebastian, Spain. POSTER

Bien, H., Hanulikova, A., Weber, A., & Zwitserlood, P. (2011, November). *Sinking about speech - Akustische Ähnlichkeit versus linguistische Erfahrung in Prälexikaler Sprachverarbeitung. 44. Herbsttreffen Experimentelle Kognitionspsychologie (HexKop 2011).* Center of Excellence - Cognitive Interaction Technology, University of Bielefeld, Germany. POSTER

Canal, P., Vespignani, F., Molinaro, N., Pesciarelli, F., & Cacciari, C. (2011, March). *Brain potentials differentiate compositional and non-compositional processing of Multi-Word Expressions: the case of idioms.* Poster presented at the CUNY 2011: Conference on Human Sentence Processing, Stanford, USA. POSTER

Carreiras, M., Molinaro, N., Monahan, P., Helenius, P., & Duñabeitia, J.A. (2011, September). *From Visual Encoding to Meaning: Processing Numbers, Letters and Pictures.* Poster presented at XI International Conference on Cognitive Neuroscience, (ICON XI). Mallorca, Spain. POSTER

Carreiras, M., Molinaro, N., Monahan, P., Helenius, P., & Duñabeitia, J.A. (2011, November). *From Visual Encoding To Meaning: Processing Numbers, Letters and Pictures.* Poster presented at 52nd Annual Meeting of the Psychonomics Society. Seattle, WA. U.S. POSTER

Combita, L., Abundis, A., Pozuelos, J. P., Paz-Alonso, P. M., & Rueda, M.R. (2011, August). *Interaction of dopamine-related genes and environment on preschoolers' executive function.* Poster presented at 15th European Conference on Developmental Psychology (ECDP). Bergen, Norway. POSTER

Costello, B., Gutiérrez-Sigut, E., Baus, C. & Carreiras, M. (June, 2011). *LSE Sign: a database tool for research into sign language processing.* Poster presented at FEAST (Formal and Experimental Advances in Sign Language Theory), Venice, Italy. 20-22 June, 2011. POSTER

Cholin, J., Hantsch, A., Monahan, P. J., & Carreiras, M. (2011, April). *Effects of different polarity: Syllable-frequency effects in Spanish and Basque.* Poster presented at the 10th International Symposium of Psycholinguistics. Donostia-San Sebastián, Spain. POSTER

Davidson, D. J, Carcedo, D. & Carreiras, M. (April, 2011). *Event-related fields in response to spoken words during Spanish-Basque lexical learning.* Poster presented at the 10th International Symposium of Psycholinguistics. Donostia, Spain. POSTER

Dimitropoulou, M., Duñabeitia, J.A., & Carreiras, M. (2011, April). *Does L2 proficiency modulate non-cognate masked translation priming effects?* Poster presented at the 10th International Symposium on Psycholinguistics, Donostia-San Sebastian, Spain. POSTER

Dimitropoulou, M., Carreiras, M., & Duñabeitia, J.A. (2011, November). *How does reading experience shape letter processing? Behavioral and electrophysiological evidence from preschoolers and novel readers.* Poster presented at the 52nd Annual Meeting of the Psychonomic Society, Seattle, USA. POSTER

Dumay, N., Sharma, D., Kellen, N., & Abdelrahim, S. (2011, September). *Setting the alarm takes longer than you think: the role of consolidation in acquiring words' emotional attributes.* Poster presented at the17th Conference of the European Society for Cognitive Psychology (ESCOP 2011), Donostia-San Sebastian, Spain. POSTER

Dumay, N., & Bowers, J.S. (2011). *Do voice details survive lexical consolidation?* Poster presented at the Meeting of the Experimental Psychology Society, University College London, UK. POSTER

Faurous, W., Dumay, N., & Mathey, S. (2011, September). *When words become negative: using a learning paradigm to explore the effect of emotions on lexical access.* Poster presented at the Conference of the European Society for Cognitive Psychology, (ESCOP 2011), Donostia-San Sebastián, Spain. POSTER

García-Orza, J., Perea, M., Abu Mallouh, R. & Carreiras, M. (2011, September). *Access to numbers quantity is not automatic: evidence from two versions of Indian numbers.* Poster presented at Conference of the European Society for Cognitive Psychology, (ESCOP 2011), Donostia-San Sebastián, Spain. POSTER

García-Pentón L, Iturria-Medina Y, Aleman-Gómez Y, Canales-Rodríguez EJ and Carreiras M (2011, September). *Anatomical changes in the bilingual brain: combining voxel-based morphometry (VBM) and diffusion tensor imaging (DTI). Front. Hum. Neurosci.* Conference Abstract: XI International Conference on Cognitive Neuroscience (ICON XI). Mallorca, Spain. POSTER

Gil-López, C., Perea, M., Moret-Tatay, C. & Carreiras, M. (2011, April) *Can masked priming effects be obtained with handwritten words?* Poster presented at 10th International Symposium of Psycholinguistics. Donostia-San Sebastián, Spain. POSTER

Hanulikova, A., Eisner, F., Weber, A. & Newman, R. (2011). *Adaptation to an unfamiliar accent by 2-year olds.* Poster presented at Fachbeirat at the Max-Planck-Institute for Psycholinguistics, Nijmegen, The Netherlands. POSTER

Hembacher, E., Paz-Alonso, P. M., Gallego, P., & Ghetti, S. (2011, March). *Encoding the gist: Neurodevelopmental correlates of false memories.* Poster presented at the Society for Research in Child Development (SRCD) biennial meeting. Montreal, Canada. POSTER

Ibáñez, A., Gómez-Ariza, C. & Carreiras, C. (2011, Abril). *Reading comprehension and resistance of interference.* Poster presented at 10th International Symposium of Psycholinguistics, Donostia-San Sebastián, Spain. POSTER

Lallier, M., Carreiras, M., Tainturier, M. J., & Thierry, G. (April, 2011). *Linguistic stress tunes the speed of auditory automatic attentional shifting: Evidence from Welsh-English bilingualism.* X symposium of psycholinguistics, Donostia, Spain, April, 13th-16th. POSTER

SCIENTIFIC PERFORMANCE
_ PARTICIPATION IN CONFERENCES

Mancini, S., Aviles, A., Molinaro, N., & Carreiras, M. (2011, March). *Tracking the effects of apparent and true person disagreement: an eye-movement study of Unagreement in Spanish.* Poster presented at the CUNY 2011: Conference on Human Sentence Processing, Stanford, USA. POSTER

Mancini, S., Molinaro, N., Aviles, A., & Carreiras, M. (2011, March). *Tracking the time course of agreement processing: Unagreement in Spanish.* Poster presented at the Amlap 2011: Conference on Human Sentence Processing, Paris, France. POSTER

Mancini, S., Molinaro, N., Aviles, A, & Carreiras, M. (2011, September). *The role of inflectional regularities in agreement comprehension: a comparison between Spanish and Italian.* Poster presented at 17th ESCOP Conference, Donostia-San Sebastián, Spain. POSTER

Martin, A. E., Nieuwland, M. S., & Carreiras, M. (2011, March). *Event-related brain potentials index cue-diagnosticity in sentence comprehension.* Poster presented at the 24th annual City University of New York Human Sentence Processing Conference (CUNY). Stanford, CA, USA. POSTER

Martin, A. E., Nieuwland, M. S., & Carreiras, M. (2011, April). *Event-related brain potentials index cue-diagnosticity in sentence comprehension.* Poster presented at the 10th Symposium of Psycholinguistics. Donostia-San Sebastián, Spain. POSTER

Martin, A. E., Nieuwland, M. S., & Carreiras, M. (2011, April). *Event-related brain potentials index cue-diagnosticity in sentence comprehension.* Poster presented at the 18th annual meeting of the Cognitive Neuroscience Society (CNS). San Francisco, CA, USA. POSTER

Massol, S., Midgley, K. J., Holcomb, P. J., & Grainger, J. (October, 2011). *When less is more: Feedback, priming, and the pseudoword superiority effect.* XVIIth Conference of the European Society for Cognitive Psychology (ESCOP 2011), San Sebastian, Spain POSTER

Mathey, S., Dumay, N., & Faurous, W. (2011, September). *Negative neighbours are activated faster than neutral ones: Evidence from a generation task.* Poster presented at Conference of the European Society for Cognitive Psychology (ESCOP), Donostia-San Sebastián, Spain. POSTER

May, L.,Gervain, J., Carreiras, M., & Werker, J.F. (2011, November). *Neural specialization for speech at birth: Comparing native and non-native language.* Poster presented at the Neurobiology of Language Conference (NLC), Annapolis, Maryland. POSTER

Molinaro, N., Carreiras, M., & Duñabeitia, J.A. (2011, March). *Electrophysiological correlates of the comprehension of novel meanings: Contrasting Oxymora and Pleonasms.* Poster presented at the CUNY 2011: Conference on Human Sentence Processing, Stanford, USA. POSTER

Molinaro, N., Carreiras, M., & Duñabeitia, J.A. (2011, April). *Electrophysiological correlates of the comprehension of novel meanings: Contrasting Oxymora and Pleonasms.* Poster presented at the 18th Meeting of the Cognitive Neuroscience Society, Chicago, USA. POSTER

Molinaro, N., Carreiras, M., & Duñabeitia, J.A. (2011, April). *Semantic integration of oxymora and pleonasms: Evidence from ERPs.* Poster presented at the 10th International Symposium on Psycholinguistics, Donostia, Spain. POSTER

Molinaro, N., Lizarazu, M., Monahan, P., Barber, H. A., & Carreiras, M. (2011, November). *The fronto-temporal network involved in agreement computation: Real-time MEG correlates.* Poster presented at the ISACM 2011 Meeting. Las Vegas, USA. POSTER

Molinaro, N., Monahan, P., Barber, H. A., & Carreiras, M. (2011, November). *MEG correlates of grammatical agreement processing in Spanish.* Poster presented at the third Neurobiology of Language Conference, Annapolis, MD, USA. POSTER

Molnar, M., Gervain, J., Carreiras, M. (September, 2011) *Language separation in Spanish-Basque bilingual infants.* Poster presented at Neurobilingualsim Conference. Aix-en-Provence, France. POSTER

Molnar, M., Gervain, J., Carreiras, M. (November, 2011) *Language separation in monolingual and bilingual infants of Spanish-Basque.* Poster presented at Neurobiology of Language Conference. Annapolis, USA. POSTER

Nieuwland, M. S., Martin, A. E., & Carreiras, M. (2011, April). *Brain regions that process case and number in native and proficient nonnative speakers of Basque.* Poster presented at the 10th Symposium of Psycholinguistics. Donostia-San Sebastián, Spain. POSTER

Nieuwland, M.S. (September, 2011). *Establishing propositional truth-value in counterfactual and real-world contexts during sentence comprehension: Differential sensitivity of the left and right inferior frontal gyri.* Paper presented at AMLaP, Paris, France. POSTER

Nieuwland, M.S. & Martin, A.E. (September, 2011). *If the real world were irrelevant, so to speak: An event-related potential study on counterfactual comprehension.* Paper presented at AMLaP, Paris, France. POSTER

Paz-Alonso, P. M., Hembacher, E., Gallego, P., & Ghetti, S. (2011, March). *Neurodevelopmental correlates of encoding processes underlying false-memory formation.* Poster presented at the 16th annual Cognitive Neuroscience Society (CNS) meeting. San Francisco, CA, US. POSTER

Paz-Alonso, P. M., Combita-Merchan, L., Bunge, S. A. & Rueda, M. R. (2011, June). *Developmental changes in monitoring the temporal context of memories.* Poster presented at the VIII Reunión de la Red Temática de Neurociencia Cognitiva (RNCC). Seville, Spain. POSTER

Pérez A, Iturria-Medina Y, Morris D, Canales-Rodríguez E, Haroon H, García L, Augath M, Logothetis N, Melie-García L and Parker G (2011, September). *Brain hemispheric structural efficiency and interconnectivity rightward asymmetry.* Poster presented at the XI International Conference on Cognitive Neuroscience (ICON XI), Mallorca, Spain. POSTER

Rueda, M. R., Pozuelos, J. P., Paz-Alonso, P. M., Combita-Merchan, L., & Abundis, A. (2011, March). *Metacognitive training and error detection in early childhood.* Poster presented at the 16th annual Cognitive Neuroscience Society (CNS) meeting. San Francisco, CA, US. POSTER

Salillas E., Carreiras M. (2011, September) *Language and math semantics. A bilingual ERPs study.* Poster presented at the XI International Conference on Cognitive Neuroscience (ICON XI), Mallorca, Spain. POSTER

Scharinger, M., Monahan, P. J., & Idsardi, W. J. (2011, April). *Acoustic and Categorical Effects of American English Front Vowel Perception.* Cognitive Neuroscience Society. San Francisco, US. POSTER

Scharinger, M., Lehtonen, M., & Monahan, P. (2011, June). *The Nature of Early Morphological Segmentation: Which (Sub) Lexical Properties Predict the Magnitude of Masked Morphological Priming?* Poster presented at the 7th International Morphological Processing Conference. Donostia-San Sebastián, Spain. POSTER

Silva-Pereyra, J.F., Prieto-Corona, B., Reynoso, V., Gutierrez-Sigut, E. & Carreiras, M. M. (2011, Abril). *An event-related potentials (ERP) study of co-reference resolution with demonstrative pronouns.* Poster presented at 10th International Symposium of Psycholinguistics, Donostia-San Sebastian, Spain. POSTER

Weber, A., Sumner, M., Krott, A., Huettig, F., & Hanulikova, A. (2011). *Sinking about boats and brains: Activation of word meaning in foreign-accented speech by native and non-native listeners.* Poster presented at the First International Conference on Cognitive Hearing Science for Communication, Linköping, Sweden. POSTER

Wright, Beverly A., Nicole Marrone, Melissa Baese-Berk, and Ann R. Bradlow. (2011, September). *Less pain more gain: Enhancing learning on perceptual and speech tasks by combining practice with periods of additional sensory stimulation.* Poster presented at Entertainment Software and Cognitive Neurotherapeutics Society Meeting. San Francisco, CA. POSTER

Yee, E., Ahmed, S., & Thompson-Schill, S.L. (2011, May). *Colorless green ideas (can) prime furiously.* Poster presented at the fifth Annual Rovereto Workshop on Concepts, Actions, Objects (CAOs), Rovereto, Italy.POSTER

Yee, E., Ahmed, S., & Thompson-Schill, S.L. (2011, September). *Priming in context: Colorless green ideas can prime furiously.* Poster presented at the 17th Annual conference on Architectures and Mechanisms for Language Processing. Paris, France. POSTER

Yee, E., Chrysikou, E.G., Hoffman, E., Thompson-Schill, S.L (2011, September). *Playing patty-cake interferes with comprehending the names of objects that are interacted with manually.* Poster presented at the 17th Meeting of the European Society for Cognitive Psychology, Donostia-San Sebastian, Spain. POSTER

Yee, E., Lupyan, G., & Thompson-Schill, S.L. (2011, November). *Made you look: Linguistic information can cause (instruction-violating) eye movements to irrelevant objects.* Poster presented at the 52st Annual Meeting of the Psychonomic Society, Seattle, WA. POSTER

Yee, E., Chrysikou, E.G., Hoffman, E., Thompson-Schill, S.L. *Performing a concurrent manual task makes it more difficult to classify the names of objects that are interacted with manually.* Cognitive Neuroscience Society, San Francisco, CA. April 2011. POSTER

Yetano, I., Duñabeitia, J.A., & Laka, I. (2011, June). *Agent-initial processing preference in Basque: A visual-world eye-movement experiment.* Poster presented at the 7th International Workshop on Morphology, Donostia-San Sebastian, Spain. POSTER

2012

Baese-Berk, M. (January, 2012). *Learning novel phonological categories in perception and production.* University of Michigan. INVITED TALK

Carreiras, M. (February 24, 2012). *Reading: Cognitive Processes and Neural Pathways.* Congreso "Procesos cognitivos y rutas neuronales" at Universidad Carlos III of Madrid. INVITED TALK

Carreiras, M. (March 13, 2012). *Mechanisms and pathways for reading and learning to read.II Latin American School for Education, Cognitive and Neural Sciences.* James S. McDonnell Foundation & Laboratorio de Neurociencia Integrativa, Universidad de Buenos Aires, Argentina. INVITED TALK

Carreiras, M. (June 8, 2012). *Word reading: cognitive mechanisms and neural pathways.* At the Division of International Studies, The University of Nottingham in Ningbo, China. INVITED TALK

Carreiras, M. (October 25, 2012). *Cognitive development of reading and writing. New opportunities to improve learning and lesion recovery in children.* XXIV Technical workshop Institut Guttmann, Barcelona, Spain. INVITED TALK

Carreiras, M. (November 30, 2012). *El cerebro alfabetizado: procesos cognitivos y sendas neuronales implicadas en la lectura.* Seminario en Universidad Miguel Hernández (UMH) de Elche y el Consejo Superior de Investigaciones Científicas (CSIC), Alicante. INVITED TALK

Costello, B. (March 16, 2012). *La investigación científica de la lengua de signos. ¿Cómo, y para qué?.* Invited lecture in the Sign Language Master at the University of Valladolid, Valladolid. INVITED TALK

Davidson, D. (February 17-18, 2012). *Mixed effects Modeling.* Workshop at DFG SPP-1234, German Science Foundation Priority Program 1234, in Marburg. INVITED TALK

Dumay, N. (September 19, 2012). *Bridging the gap between psycholinguistics and memory consolidation.* At the Universite libre de Bruxelles. INVITED TALK

Duñabeitia, J.A. (June, 2012). *Amazing bilinguals! How do bilinguals represent words from two languages in one mind?* At the Division of International Studies, The University of Nottingham in Ningbo, China. INVITED TALK

Duñabeitia, J.A. (2012, July). *Word Recognition and Production.* Series of lectures given at the 1st NetwordS summer school, Dubrovnik, Croatia. INVITED TALK

Frost, R. (November, 2012). *Towards a universal model of reading.* At University of Bordeaux, France. INVITED TALK

Frost, R. (December, 2012). *Literacy acquisition in a second language.* At University of Valencia. INVITED TALK

Hu, F. K., Fan, Z.W., Samuel, A.G. & He, S.C. (May, 2012). *Searching for Inhibition of Return in Complex Environments.* Symposium on: On the future of attention research and practice: Defining, measuring, and repairing the networks of attention. Dalhousie University, Canada. INVITED TALK

Hanulikova, A. (May 4, 2012). *Comprehending foreign accented speech.* University of Freiburg, Germany. INVITED TALK

Lallier, M. (February 21, 2012). *Simultaneous and sequential processing deficits in developmental dyslexia.* Workshop of part of a seminar series at the Department of experimental psychology, Cambridge, UK. INVITED TALK

Larraza, S. (March 26, 2012). *Nola hautematen dute euskalki aldagarritasuna natiboak ez diren hiztun trebeek?.* IKER-CNRS Research Center, Baionne. INVITED TALK

Mancini, S (June 18, 2012). *Anchoring Agreement in Comprehension.* Université de Geneve, Faculté de Psychologie et des Sciences de l'Education, laboratoire de Psycholinguistique. INVITED TALK

Martin, C.D. (November, 2012). *Semantic anticipation and integration in a second language.* Neurospin center, INSERM-CEA Cognitive Neuroimaging Unit, France. INVITED TALK

Molinaro, N. (June, 2012). *Reading frequent strings: The impact of collocational constraints in language comprehension.* At the Division of International Studies, The University of Nottingham in Ningbo, China. INVITED TALK

Molnar, M. (July, 2012). *Language separation in Spanish-Basque bilingual infants. University of Gottingen.* INVITED TALK

Monahan, P.J. (February, 2012). *From to Variation to Representation and Back.* University of Texas, Austin. INVITED TALK

Monahan, P.J. (February, 2012). *From to Variation to Representation and Back.* University of California, Irvine. INVITED TALK

Nieuwland, M.S. (March 7, 2012). *The truth is rarely pure and never simple': Neurocognitive mechanisms for establishing propositional truth-value in context.* Netherlands Organization for Scientific Research (NWO), Den Haag, Netherlands. INVITED TALK

Paz-Alonso, P.M. (July, 2012). *Instructor on Methods in Cognitive Neuroscience course focused on MRI entitled "Neuro- and psycholinguistic protocols for exploring the mental lexicon" at the 1st Networds (European Network on Word Structure) Summer School: Interdisciplinary approaches to exploring the mental lexicon.* Center for Advanced Academic Studies, Dubrovnik, Croatia. INVITED TALK

Samuel, A.G. & Pufahl, A. (March, 2012). *Encoding Words with Sounds, and Encoding Sounds without Words: How Lexical is the Lexicon?* Workshop, Tilburg, Netherlands. INVITED TALK

Samuel, A.G., Zhang, X., & Liu, S. (March, 2012). *The perception and representation of segmental and prosodic Mandarin contrasts in native speakers of Cantonese.* Workshop, Conference on Language contact: Linguistic variation, social variation and cerebral processing, Aix en Provence. INVITED TALK

Yee, E. (April, 2012). *How are Concepts Represented?* Neural and Behavioral Evidence for Distributed Representations. University of Waterloo, Canada. INVITED TALK

Yee, E. (April 16, 2012). *Experience influences object representations.* CCN Talk Series: 2011-2012, Center for Cognitiver Neuroscience, University of Pennsylvania,Usa. INVITED TALK

Yee, E. (June 14, 2012). *Word recognition: from sound to meaning.* University of Goettingen, Germany. INVITED TALK

Yee, E., Musz, L., & Thompson-Schill, S.(August 27 - 31, 2012). *Mapping the similarity space of concepts in sensorimotor cortex.* ESLP workshop in Newcastle, UK. INVITED TALK

Yee, E. (September 16 - 20, 2012). *Word meanings can be quite handy (and colorful!): The influence of non-linguistic context on meaning.* Workshop on Understanding the meaning of words and sentences: The role of non-linguistic processes. Tubingen, Germany. INVITED TALK

Baart, M., Vroomen, J., Shaw, K., & Bortfeld, H. (November, 2012). *Adults rely on phonetic cues when processing audiovisual speech, infants do not. Or do they?* Paper presented at Annual Meeting of the Psychonomic Society, Minneapolis, USA. ORAL PRESENTATION

Baart, M., Vroomen, J., Shaw, K., & Bortfeld, H. (November, 2012). *Infants' audiovisual speech integration does not hinge on phonetic knowledge.* Workshop on word recognition in monolingual and bilingual infants and adults, Donostia, Spain. ORAL PRESENTATION

Carreiras, M. (August 3, 2012). *Efectos del entrenamiento, el aprendizaje y el bilingüismo en las redes neurales.* II Congreso Mundial de Neuroeducación. El Centro Iberoamericano de Neurociencias, Educación y Desarrollo Humano -CEREBRUM y la Asociación Educativa para el Desarrollo Humano -ASEDH,Lima, Peru. ORAL PRESENTATION

Dumay, N. & Bowers, J.S. (May 10, 2012). *Do voice details survive lexical consolidation?* Paper presented at BAPS - SEPEX 1st joint Meeting, Liege, Belgium. ORAL PRESENTATION

Dumay, N., Damian, M.F., & Bowers, J.S. (November, 2012). *The impact of neighbour acquisition on phonological retrieval.* Paper presented at the Abstracts of the 53rd Annual Meeting of the Psychonomic Society (p. 62), Minneapolis, MN. ORAL PRESENTATION

Duñabeitia, J.A., & Carreiras, M. (September, 2012). *Subjects that matter: Processing correlates of Basque subject-verb agreement.* Paper presented at the AMLaP 2012, Riva del Garda, Italy. ORAL PRESENTATION

Duñabeitia, J.A., Casaponsa, A. & Carreiras, M. (May 10, 2012). *When multilinguals met orthography... Love at first sight.* Paper presented at BAPS - SEPEX 1st joint Meeting, Liege, Belgium. ORAL PRESENTATION

Gaudes, C.C., Karahanoglu, F.I., Lazeyras, F., Van De Ville, D. (May 2012). *Structured sparse deconvolution for paradigm free mapping of functional MRI data.* Paper presented at the 9th IEEE International Symposium on Biomedical Imaging (ISBI), vol., no., pp.322-325, 2-5. ORAL PRESENTATION

Lallier, M. Thierry, G., Carreiras, M. & Tainturier., M. J. (July 13, 2012). *Impact of Cross-linguistic Interactions on Reading and Visual Attention Span (VAS) skills: Evidence in Early Bilingual Adults.* Nineteenth Annual Meeting Society for the Scientific Study of Reading, SSSR 2012, Montreal, Canada. ORAL PRESENTATION

Mancini, S. Molinaro, N., Massol, S., Duñabeitia, J.A, & Carreiras. M. (September 6-8, 2012). *Subjects that matter: processing correlates of Basque subject-verb agreement.* Paper presented at the AMLaP Conference, Riva de Garda, Italy. ORAL PRESENTATION

SCIENTIFIC PERFORMANCE
_ PARTICIPATION IN CONFERENCES

Martin, C.D., Garcia, X., Breton, A., Thierry, G., Costa, A. (October, 2012). *From literal meaning to veracity in two hundred milliseconds.* Paper presented at Neurobiology of Language Conference, Donostia-San Sebastian, Spain. ORAL PRESENTATION

Molinaro, N., Lizarazu, M., Duñabeitia, J.A., & Carreiras, M. (November, 2012). *Consonants and vowels in visual word recognition: a MEG study.* Paper presented at the 2012 Annual Meeting of the Psychonomic Society, Minneapolis, USA. ORAL PRESENTATION

Paz-Alonso, P. M., & Carreiras, M. (May, 2012). *Neural changes in cognitive control and in reading induced by training executive functions.* Talk presented at the Second language acquisition: from brain plasticity to cognition. Jerusalem, Israel. ORAL PRESENTATION

Sadat, J., Martin, C.D., Costa, A., Alario, F.-X. (September, 2012). *Phonological neighbourhood in speech production revisited.* Oral presentation AMLaP conference, Riva del Garda, Italy. ORAL PRESENTATION

Samuel, A. (August 9, 2012). *Who's Talking and Who's Barking: Identity Effects on Phoneme Recalibration, and Indexical Effects on Word Recognition.* Keynote talk at FonHispania 2012, Santander, Spain. ORAL PRESENTATION

Samuel, A. (September 8, 2012). *Indexical Effects and Phonetic Recalibration: Episodic Properties of the Mental Lexicon.* Keynote talk at AmLap 2012, Riva del Garda, Italy. ORAL PRESENTATION

Samuel, A.G., & Larraza, S. (November, 2012). *Is Listening to Non-native (L2) Speakers Detrimental to Native (L1) Speakers?* Oral presentation at Psychonomic Society, Minneapolis, US. ORAL PRESENTATION

Samuel, A.G., & Larraza, S. (November, 2012). *Is Listening to Non-native (L2) Speakers Detrimental to Native (L1) Speakers?* Oral presentation at Psychonomic Society, Minneapolis, US. ORAL PRESENTATION

Samuel, A.G. & Pufahl, A. (Jan, 2012). *A Word with a Bird Beats a Bird with a Word.* Keynote talk at Auditory Cognitive Neuroscience Society, Tucson, AZ, US. ORAL PRESENTATION

Yee, E., Musz, E., & Thompson-Schill, S.L. (August, 2012). *Mapping the similarity space of concepts in sensorimotor cortex.* Talk presented at Embodied and Situated Language Processing. Newcastle Upon Tyne, UK. ORAL PRESENTATION

Baese-Berk, M. (November, 2012). *Does variability in production disrupt perceptual learning?* Poster presented at the 53rd Annual Meeting of the Pyschonomic Society, Minneapolis, MN, USA. POSTER

Baese-Berk, M. (July, 2012). *The role of production variability in perceptual learning.* Poster presented at the 7th International Workshop on Language Production, New York, NY. POSTER

Baese-Berk, M. and Samuel, A. (October, 2012). *Non-native perception and production of Basque sibilant fricatives.* Poster presented at the 164th Meeting of the Acoustical Society of America, Kansas City, MO, USA. POSTER

Baus C., de la Fuente-Núñez V., Branzi F., Martin C.D., Costa A. (2012). *How our brain represents the other's intention to speak: an ERP study on joint action during speech production.* International Workshop on Language Production, New York, USA. POSTER

Davidson, D.J.& Dijkgraaf, A. (August, 2012). *Encoding and retrieval of second language vocabulary.* Poster presented at the Biomag 2012, Paris, France. POSTER

Davidson, D., Hanulikova, A., & Carreiras, M. (August, 2012). *The effect of speaker's identity on syntactic processing. Evidence from verb-gender agreement in Slovak.* Poster presented at the Cognitive Science Society Conference in Japan, Sapporo. POSTER

Davidson, D., Pérez,A., & Bastarrika, A. (October, 2012). *Event-related spectral power to spoken words in an L2 retrieval practice paradigm.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Depowski, N., Gruenbaum, B, Shaw, K., Baart, M., & Bortfeld, H. (June, 2012). *Language-specific tuning of audiovisual integration in early development.* Poster presented at XVIII Biennial International Conference on Infant Studies, Minneapolis,USA. POSTER

Dimitropoulou, M., Duñabeitia, J.A., Laka, I., Carreiras, M. (October, 2012). *Cross-language ERP masked associative priming effects: Evidence from balanced bilinguals.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Dumay, N., Damian, M.F., Bowers, J.S. (September, 2012). *The impact of neighbour acquisition on phonological retrieval.* Poster presented at AMLaP 2012, Riva del Garda, Italy. POSTER

Dumay, N., Markus F. Damian, M.F., & Bowers, J.F. (July, 2012). *The impact of neighbour acquisition on phonological retrieval.* Poster presented at the 7th International Workshop on Language Production, New York, NY. POSTER

Dumay, N., Sharma, D., Kellen, N., & Abdelrahim, S. (May, 2012). *Setting the alarm: the role of consolidation in acquiring the emotional attributes of words.* Poster presented at Abstracts of the Joint Meeting of the Belgian Association for Psychological Science and the Spanish Society for Experimental Psychology (p. 123), Liège, Belgium. POSTER

Dumay, N., Sharma, D., Kellen, N., & Abdelrahim, S. (2012). *Setting the alarm: the role of consolidation in acquiring the emotional attributes of words.* Poster presented at Abstracts of the Meeting of the Experimental Psychology Society (p. 42), University College London, UK. POSTER

Duñabeitia, J.A., & Casaponsa, A. (June, 2012). *Bilingual word reading depends on basic statistical regularities: ERP evidence from masked priming.* Poster presented at the 2012 Meeting of the Organization for Human Brain Mapping, Beijing, China. POSTER

Foucart, A., Martin, C.D., Moreno, E., Costa, A. (2012). *Can you guess what I'm gonna say? Word anticipation in monolinguals and bilinguals during sentence reading.* Neurobiology of Language Conference, Donostia-San Sebastian, Spain. POSTER

García, L., Pérez, A., Iturria, Y. & Carreiras, M. (June, 2012). *Anatomical connectivity changes in the bilingual brain.* Poster presented at the 2012 Meeting of the Organization for Human Brain Mapping, Beijing, China. POSTER

Gil-Lopez C., Carreiras M., Salillas E. (november, 2012). *Bilingual number codes: Interactions between verbal and visuospatial WM components. An ERP study.* Poster presented at The Psychonomic Society Annual Meeting, Minneapolis, US. POSTER

Hanulikova, A., Dediu, D., Fang, Z., Basnakova, J., & Huettig, F. (August, 2012). *Individual differences and phonetic aptitude in the earliest stages of L2 acquisition.* Poster presented at the Cognitive Science Society Conference in Japan, Sapporo. POSTER

Lallier, M., Carreiras, M., Tainturier, M.J., & Thierry, G. (March 31, 2012). *Orthographic transparency shapes pre-orthographic visual processing: Evidence from bilingualism.* Poster presented at ESRC Centre for Research on Bilingualism in Theory & Practice, Bangor, UK. POSTER

Lallier, M., Carreiras, M., Tainturier, M.J., & Thierry, G. (October, 2012). *Orthographic transparency shapes pre-orthographic visual processing: Evidence from bilingualism.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Lizarazu, M., Carreiras, M., Lavado, I., Zarraga, A., & Molinaro, N. (August, 2012). *Beta Oscillations Related to the N400m During Word Reading.* Poster presented at the Biomag 2012, Paris, France. POSTER

Lizarazu, M.,Zarraga, A., Carreiras, M. & Molinaro, N. (October, 2012). *Mutual Information MEG connectivity during word reading.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Mancini, S., Molinaro, N., Massol, S., Duñabeitia, J.A. & Carreiras, N. (April, 2012). *When the speaker is present: processing different person specifications in Basque subject-verb agreement.* Poster presented at the 19th Meeting of the Cognitive Neuroscience Society, Chicago, USA. POSTER

Mancini, S., Quiñones, I, Molinaro, N., & Carreiras, M. (October, 2012). *Persons are not numbers: disentangling agreement information in the brain.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Martin, A.E., Monahan P.J., & Samuel A.G. (March, 2012). *Vowel identification shaped by phrasal gender agreement expectation.* Poster presented at CUNY 2012, New York, US. POSTER

Martin, A.E., Nieuwland M.S., & Carreiras, M. (March, 2012). *Cue-based retrieval interference during ellipsis: ERP evidence.* Poster presented at CUNY 2012, New York, US. POSTER

Massol, S., Carreiras, M. & Duñabeitia, J.A. (October, 2012). *Forget about those consonants... if you can!* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Massol, S., & Duñabeitia, J.A. (September, 2012). *Are DOOR and DEER completely unrelated words? ERP evidence from a perceptual matching task with overlapping consonants.* Poster presented at AMLaP 2012, Riva del Garda, Italy. POSTER

Massol, S., Molinaro, N., & Carreiras, M. (November, 2012). *Lexical access id not a bottle-neck to semantics.* 53rd annual meeting of the Psychonomic Society. Minneapolis, MN, USA. POSTER

Molinaro, N., Lizarazu, M., Duñabeitia, J.A., & Carreiras, M. (June, 2012). *Letter identity in visual word recognition: MEG correlates of relative position priming.* Poster presented at the 2012 Meeting of the Organization for Human Brain Mapping, Beijing, China. POSTER

SCIENTIFIC PERFORMANCE
_ PARTICIPATION IN CONFERENCES

Molinaro, N., Lizarazu, M., Duñabeitia, J.A., & Carreiras, M. (August, 2012). *The different role of consonants and vowels in visual word recognition: MEG correlates of relative position priming.* Poster presented at the Biomag 2012, Paris, France. POSTER

Molnar, M., & Baese-Berk, M. (July, 2012). *The role of language context and language dominance in the development of bilingual infant babbling.* Poster presented at the 7th International Workshop on Language Production, New York, NY. POSTER

Musz, E., Yee, E., & Thompson-Schill, S.L. (April, 2012). *Mapping the Similarity Space of Concepts in Sensorimotor Cortex.* Poster presented at Cognitive Neuroscience Society, CNS 2012, Illinois, Chicago. POSTER

Nieuwland, M.S. (March, 2012). *Propositional truth-value and the comprehension of 'impossible' counterfactual worlds: Evidence from event-related potentials.* Poster presented at CUNY 2012, New York, US. POSTER

Paz-Alonso, P.M., Rueda, M.R., Guerra, S., Oliver, M. & Carreiras, M. (October, 2012). *Neural changes in reading induced by training executive functions.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Pérez, A., Molinaro, N., Mancini, S., Barraza, P. & Carreiras, M. (June, 2012). *Oscillatory dynamics related to the Unagreement pattern in Spanish.* Poster presented at the 2012 Meeting of the Organization for Human Brain Mapping, Beijing, China. POSTER

Quiñones, I., Molinaro, N., Mancini, S. Hernández, J.A., & Carreiras, M. (October, 2012). *Monitoring disagreement conflicts but integrating unagreement mismatches: fMRI evidence.* Poster presented at Society of the Neurobiology of Language, San Sebastian, Spain. POSTER

Salillas, E., Barraza, P. & Carreiras, M. (April, 2012). *Early verbal traces activated during size comparison.* Poster presented at Cognitive Neuroscience Society, CNS 2012, Illinois, Chicago. POSTER

Salillas, E., & Carreiras, M. (October, 2012). *When language shapes numerical processes.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Scharinger, M., Monahan, P.J., & Idsardi, W.J. (July, 2012). *Rapid extraction of dialect information from the speech input: Consequences for phonology.* Poster presented at the 13th Conference on Laboratory Phonology 13, University of Stuttgart. POSTER

Shaw, K., Depowski, N., Baart, M., & Bortfeld, H. (November, 2012). *Relative influence of language familiarity and congruency in early audiovisual integration.* Poster presented at Annual Meeting of the Psychonomic Society, Minneapolis, USA. POSTER

Su, J., Mancini, S., Carreiras, M., & Molinaro, N. (June, 2012). *"Clitic agreement", an ERP study.* Poster presented at the 2012 Meeting of the Organization for Human Brain Mapping, Beijing, China. POSTER

Su, J., Molinaro, N., Chien, J., Tsai, P., Wu, D., & Carreiras, C. (October, 2012). *Gender processing of reflexive pronouns in Mandarin Chinese.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Yee, E., & Altmann, G. (September, 2012). *Balancing long-term syntactic knowledge against short-term experience: The case of the missing adjective.* Poster presented at AMLaP 2012, Riva del Garda, Italy. POSTER

Yee, E., & Heller, D. (November, 2012). *Looking more when you know less: Goal-dependent eye movements during reference resolution.* Poster presented at the Annual Meeting of the Psychonomic Society, Minneapolis. POSTER

Yee, E., Musz, E., & Thompson-Schill, S.L. (May, 2012). *Mapping the similarity space of concepts in sensorimotor cortex.* Poster presented at workshop on Concepts, Actions and Objects: Functional and Neural Perspectives, Rovereto, Italy. POSTER

Yee, E., Musz, E., & Thompson-Schill, S.L. (October, 2012). *Mapping the similarity space of concepts in sensorimotor cortex.* Poster presented at Society for the Neurobiology of Language, San Sebastian, Spain. POSTER

Zhang, X., & Samuel, A.G. (Nov, 2012). *Perceptual learning in optimal and adverse conditions.* Poster presented at Psychonomic Society, Minneapolis. POSTER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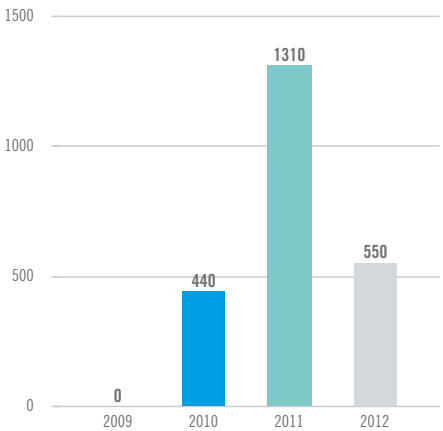
ORGANIZATION OF CONFERENCES & WORKSHOPS

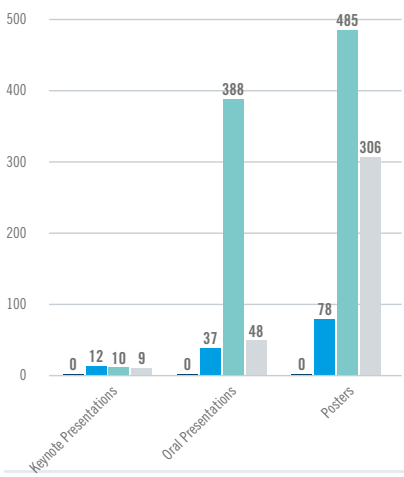
CONFERENCES ATTENDEES



2300
Total conferences attendees

Conferences 7
Workshops 4
Upcoming 2

SCIENTIFIC PRESENTATIONS



1373
Total scientific presentations

Keynote presentations 31
Oral presentations 473
Posters 869

Even before the construction of the facilities, the BCBL started to play an active role in the promotion of research in cognitive neuroscience and language starting with the organization of international conferences and workshops.

These events offer the possibility to address the various challenges of our activity simultaneously, since international conferences are a natural environment for excellent research, the first step to internationalization, and the best opportunity for young researchers to learn and interact with the world leaders in the field.

Apart from purely scientific events, the BCBL has also promoted open conferences for the general public called “Brain Talks,” and some researchers have also participated in open conferences organized by other institutions. The aim of these events is to popularize neuroscience, in general, and cognitive neuroscience and language, in particular in society at large.

The “ESCoP 2011 – 17th Meeting of the European Society for Cognitive Psychology” and Brain Talks I – “Education shapes the infant brain” (Michael Posner) are outstanding examples of events organized by the BCBL, being both scientific and public conferences.

COGNITIVE NEUROSCIENCE:
NEW CHALLENGES AND FUTURE DEVELOPMENTS

BCBL Scientific Opening Ceremony. 21 May, 2010

MAIN FIGURES:

CHAIRMAN: Manuel Carreiras
ATTENDEES: 200
KEYNOTE PRESENTATIONS: 6

This first conference organized by the BCBL was the Center's official launch in the international scientific community. The Keynote Lectures were given by the members of the BCBL advisory board:

_ Anne Cutler, Max Planck Institute for Psycholinguistics, The Netherlands."Native listening: How the native language shapes listening to speech".
_ Ron Mangun, Center for Mind and Brain, University of California at Davis, USA. "The Mind´s Eye: How the brain creates human experience".
_ William Marslen-Wilson, MRC Cognition and Brain Sciences Unit, Cambridge, UK. "Language from the inside: Neurocognitive substrates for speech comprehension".
_ Jay McClelland, Stanford University, USA. "Decision Neuroscience: Can the brain approximate rationally?"
_ Michael Posner, University of Oregon, USA. "Evolving attentional networks and the development of self regulation".
_ Tim Shallice, University College of London, UK, and SISSA, Italy. "The organization of supervisory processes".

DONOSTIA WORKSHOP ON LANGUAGE PROCESSING

2 July, 2010

MAIN FIGURES:

CO-ORGANIZERS: Manuel Carreiras (BCBL) and Itziar Laka (University of the Basque Country)
ATTENDEES: 45
INVITED TALKS: 9

The Donostia Workshop on Language Processing was devoted to discussing the cognitive and brain mechanisms of language processing. The workshop was held in the Auditorium of the BCBL and was jointly organized with Itziar Laka from the University of the Basque Country.

INVITED SPEAKERS:

Gerry Altmann (University of York, UK), Thomas G. Bever (University of Arizona, USA), Luciano Fadiga (University of Ferrara and The Italian Institute of Technology, Italy), Yosef Grodzinsky (McGill University, Canada), Sonja A. Kotz (Max Planck Institute for Brain and Cognitive Sciences, Germany), Colin Phillips (University of Maryland, USA), Gary Dell (University of Illinois, Urbana-Champaign, USA), Maryellen MacDonald (University of Wisconsin-Madison, USA) and Michael K. Tanenhaus (University of Rochester, USA).

NEURO-COGNITIVE DETERMINANTS OF SECOND LANGUAGE LITERACY IN YOUNG ADULTS - A MULTILINGUAL PERSPECTIVE

29 - 30 September, 2010

MAIN FIGURES:

CO-ORGANIZERS: Manuel Carreiras (BCBL) and Ram Frost (The Hebrew University of Jerusalem, Israel).
ATTENDEES: 35
INVITED TALKS: 10

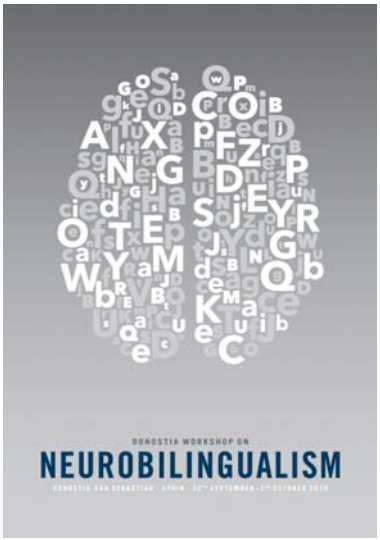
This workshop, jointly organized with Ram Frost (The Hebrew University of Jerusalem, Israel), was intended for sharing the latest results in second language literacy, taking advantage of the presence of renowned scientists in this area, who were attending the Donostia Workshop on Neurobilingualism, also organized by the BCBL.

INVITED SPEAKERS:

Ovid Tzeng (Academia Sinica and National Central University,Taiwan), Denise Wu (Academia Sinica and National Central University, Taiwan), Heikki Lyytinen (University of Jyvaskyla, Finland), Ayumi Seki (Tottori University, Japan), Ram Frost (The Hebrew University, Israel), Jon Andoni Dunabeitia (BCBL, Spain), Jay Rueckl (University of Connecticut and Haskins Laboratories, USA), Jason D. Zevin. (The Sackler Institute, Cornell University, USA), Jim Magnuson (University of Connecticut and Haskins Laboratories, USA), Merav Ahissar (The Hebrew University, Israel) and Ken Pugh (Haskins Laboratories, USA).

DONOSTIA WORKSHOP ON NEUROBILINGUALISM

29 September - 2 October, 2010



MAIN FIGURES:

CHAIRMAN: Manuel Carreiras
ATTENDEES: 160
KEYNOTE PRESENTATIONS: 6
ORAL PRESENTATIONS: 18
POSTER PRESENTATIONS: 78

Multilingualism plays an increasingly important role in society today. In Europe and throughout the world, many and different languages co-exist in the same population. In addition, globalization has promoted contacts between different languages and cultures that previously did not interact. Consequently, the world population is increasingly multilingual.

The goal of the Donostia workshop on Neurobilingualism (a successor of the Rovereto Workshop on Bilingualism, the Ghent Workshop on Bilingualism and the Bangor Workshop on Neurobilingualism) was to bridge cognitive and neural perspectives on multilingual language processing and to foster discussion and productive collaborations.

This workshop brings together multidisciplinary research on neurobilingualism, including psychological, linguistic, computational, neurobiological and formal perspectives. The scientific program consists of keynote lectures, discussions, oral presentations and poster sessions.

INVITED SPEAKERS:

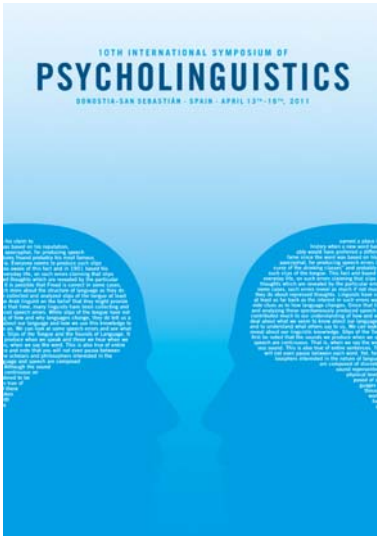
_ Laura-Ann Petitto. University of Toronto, Canada.
_ Agnes Kovacs. Hungarian Academy of Sciences, Hungary.
_ Michael Dorman. Arizona State University, USA.
_ Jonathan Grainger. CNRS and University of Provence, France.
_ Douglas Davidson. BCBL, Spain.
_ Nuria Sebastian. Universitat Pompeu Fabra, Spain.

DISCUSSANTS:

_ Albert Costa. Universitat Pompeu Fabra, Spain.
_ Guillaume Thierry. Bangor University, UK.

10TH INTERNATIONAL SYMPOSIUM OF PSYCHOLINGUISTICS

13 - 16 April, 2011



MAIN FIGURES:

CHAIRMAN: Manuel Carreiras
ATTENDEES: 220
KEYNOTE PRESENTATIONS: 4
ORAL PRESENTATIONS: 35
POSTER PRESENTATIONS: 94

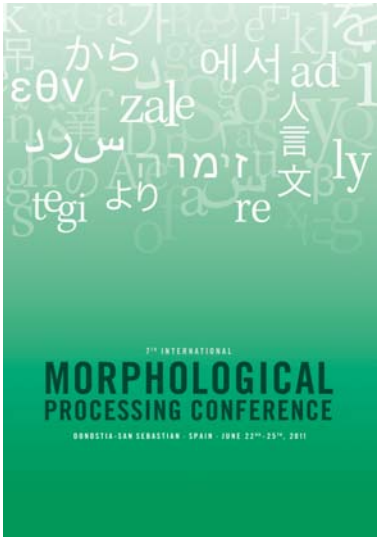
The first Symposium of Psycholinguistics was held in Tenerife in 1993, where the goal was to bring together researchers (Spanish or Spanish-speaking, or those located in Spain) who were presenting work at international conferences and publishing abroad. While Spanish was the language used in previous symposia, there was a consensus that this made it difficult to truly engage the invited speakers during discussions. Consequently, we felt as though we were missing out on valuable input from the speakers that could have enriched our projects or promote collaborations. So we changed the official language of the Symposium to English in the "10th International Symposium of Psycholinguistics". This important change has opened the Symposium to a wider community; however, the idea was not to turn it into an entirely different symposium or workshop. Research in Romance languages (Spanish, Catalan, Galician, Portuguese, French, Italian, etc.) as first or as second languages, and also research using Basque is underrepresented, and this symposium could fill this gap by enhancing their visibility. As we all know, there is a clear and enduring bias to build models of language processing based on data collected in English alone. In this respect, the Symposium was aimed to contribute to the growing amount of psycholinguistic data collected in other languages, with the larger goal of moving toward a comprehensive theory of language processing that is built on data from as many languages as possible.

INVITED SPEAKERS:

_ Riitta Salmelin. Low temperature laboratory. Helsinki, Finland.
_ David Poeppel. New York University. New York, USA.
_ Jamie I. D. Campbell. University of Saskatchewan. Saskatoon. Canada.
_ Sharon Thompson-Schill. University of Pennsylvania, USA.

7TH INTERNATIONAL MORPHOLOGICAL PROCESSING CONFERENCE

22 - 25 June, 2011



MAIN FIGURES:

CHAIRMAN: Manuel Carreiras
ATTENDEES: 140
KEYNOTE PRESENTATIONS: 1
ORAL PRESENTATIONS: 26
POSTER PRESENTATIONS: 33

The first International Morphological Processing Conference was held in Aix-en-Provence in 1999, organized by Ram Frost and Jonathan Grainger. The goal of the conference was to bring together researchers interested in the role of morphological processing during word recognition. It started as a small workshop with a few invited guests. In that first meeting, we enjoyed not only an intensive workshop but also a memorable conference dinner, followed by drinks, which were memorable as well.
This conference attempted to address, via the papers, posters, and debates put forth here, the hot theoretical issues in morphological processing. Since our field is advancing and new questions can be explored with novel experimental methods, we were able to outline the future directions of the field. Finally, we celebrated the official retirement of William Marslen-Wilson, who made very important and enduring contributions to the field.

INVITED SPEAKER:

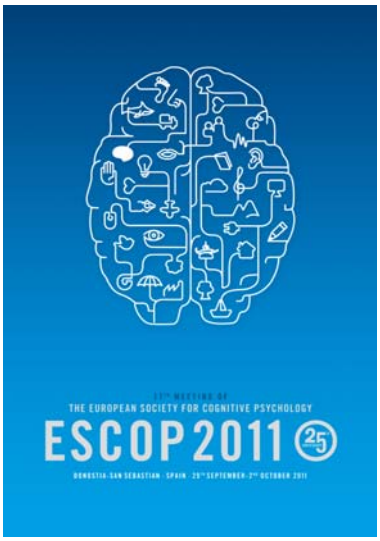
_ William Marslen-Wilson. MRC Cognition and Brain Sciences Unit, UK.

PODIUM DISCUSSION

_ Alec Marantz (New York University) vs. Dave Plaut (Carnegie Mellon University)

ESCOP 2011 - 17TH MEETING OF THE EUROPEAN SOCIETY FOR COGNITIVE PSYCHOLOGY

September 29 - October 2, 2011



MAIN FIGURES:

CHAIRMAN: Manuel Carreiras
ATTENDEES: 950
KEYNOTE PRESENTATIONS: 5
SYMPOSIA: 32 (171 talks)
ORAL PRESENTATIONS: 156
POSTER PRESENTATIONS: 358

The ESCoP 2011 conference was an example of the BCBL's consolidation in international conference organization, since it had the honor to host the most important European conference in cognitive psychology.

The conference was not initially planned for Donostia-San Sebastián in 2011, but Nuria Sebastián and Axel Cleeremans encouraged us to take up this challenge, using some very convincing arguments!

On the scientific side there were five keynote lectures, two plenary symposiums, one joint initiative of APS and ESCOP entitled "Where is embodiment going?" and a second one organized by ESCAN (European Society of Cognitive and Affective Neuroscience) entitled "Feedback processing and the brain". In addition there were 32 symposiums, 156 oral presentations, and 358 posters scheduled in 7 parallel sessions during 4 days.

We would like to thank the many people whose effort in the planning and organization made this event possible. We would like to express our deep gratitude to the members of the scientific and the organization committees. In addition, we would like to especially thank the people involved in the day- to- day activities of conference organization.
It was a pleasure and an honor for the BCBL to host the 17th ESCoP conference during the 25th anniversary of the society.

INVITED SPEAKERS:

_ Cathy Price. University College London, UK
_ Conferencia Sepex: Robert Zatorre. McGill University, Quebec, Canada
_ The Broadbent lecture: Randi Martin. Rice University. USA
_ The Bertelson award: Antonino Vallesi. SISSA, International School for Advanced Studies. Italy

The program also included a special event in the opening ceremony: Pintxos on my mind: When gastronomy meets cognitive psychology, which combined science and pleasure in a city that is renowned for the high quality of its award-winning restaurants.
_ Invited speaker: Dana Small. Yale University, USA.
_ Invited chefs: Andoni Aduriz and Eneko Atxa. Basque Culinary Center, Spain.


ESCOP 2011


bdbl


bdbl


bdbl
ESCOP 2011

13TH NEURAL COMPUTATION AND PSYCHOLOGY WORKSHOP
NCPW 13 CONFERENCE

12 - 14 July, 2012

This well-established and lively workshop aimed at bringing together researchers from different disciplines such as artificial intelligence, cognitive science, computer science, neurobiology, philosophy and psychology to discuss their work on models of cognitive processes. Previous themes have encompassed categorization, language, memory, development, action.
The Rumelhart Memorial Travel awards, generously funded by Professor Jay McClelland, provided funding to support travel costs for students presenting at the conference.

INVITED SPEAKERS:

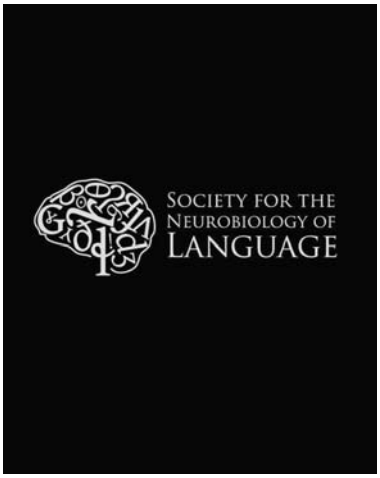
_ Mark Seidenberg. Hilldale and Donald O. Hebb Professor, University of Wisconsin-Madison, USA.
_ James McClelland. Director, Center for Mind, Brain and Computation, Stanford University, USA.
_ Randall C. O'Reilly. Professor of Psychology and Neuroscience, Institute of Cognitive Science, University of Colorado. USA.

MAIN FIGURES:

CO-ORGANIZERS: Julien Mayor and Pablo Gómez
ATTENDEES: 100
KEYNOTE PRESENTATIONS: 3
ORAL PRESENTATIONS: 32
POSTER PRESENTATIONS: 31

NLC 2012, NEUROBIOLOGY OF LANGUAGE CONFERENCE

25 - 27 October, 2012



MAIN FIGURES:

PROGRAM COMMITTEE: Marta Kutas, Jeffrey Binder, Manuel Carreiras, Greg Hickock and Steven Small
ATTENDEES: 450
KEYNOTE PRESENTATIONS: 6
ORAL PRESENTATIONS: 16
POSTER PRESENTATIONS: 275

The Society for the Neurobiology of Language (SNL), founded in November of 2010, is a NIH funded non-profit organization whose overarching goal is to foster progress in understanding the neurobiological basis for language via the interdisciplinary exchange of ideas. Thus a major goal of the society is to bring together scientists with different perspectives and methodological approaches to the study of language and related systems. To this end, SNL holds an annual scientific meeting that highlights recent research and hosts lively debates on a wide range of topics including neural mechanisms underlying perceptual, cognitive, motor, and linguistic processes used to produce and to understand language in both children and adults, and drawing on a range of methods from purely behavioral to neurophysiological and neuroanatomical measures, and from neuro-stimulation and neuropsychological approaches to animal models. Keynote lectures from leading scientists working outside the field, but in areas highly relevant to the neurobiology of language, augment the scientific program at the annual meeting and further promote cross-disciplinary interaction. In addition, SNL distributes news and information throughout the year via a monthly newsletter and promotes career development via scholarship awards to outstanding junior scientists.

SEMINARS

The BCBL organizes research seminars to be given by invited external speakers. All these seminars take place at the BCBL Auditorium, are opened to the scientific community of the area and are announced at **www.bcbl.eu/activities_and_seminars/seminars**

Bob Slevc
Rice University, USA
12 February 2010

Elizabeth Redcay
Laboratory of John Gabrieli, MIT, USA
12 February 2010

Manuel Perea
Universitat de Valencia, Spain
16 February 2010

Gary Morgan
Deafness, Cognition and Language Research Centre, City University - London, UK
25 February 2010

Lourdes Pietrosemoli
University of the Andes, Colombia
25 March 2010

Ram Frost
The Hebrew University of Jerusalem, Israel
7 May 2010

Päivi Helenius
Low Temperature Laboratory - Helsinki University of Technology, Finland
13 May 2010

Margaret Gillon Dowen
University of Nottingham, Ningbo, China
15 June 2010

Jacques Mehler
SISSA-ISAS, Italy
28 June 2010

Marina Nespor
Universitá di Milano Bicocca, Italy
28 June 2010

Ina Bornkessel-Schlesewsky
University of Marburg, Germany
30 June 2010

Cees Van Leeuven
Katholieke Universiteit Leuven, Belgium
5 July 2010

Eugenio Rodríguez
Universidad Católica de Chile
6 July 2010

Helen Neville
University of Oregon, USA
21 October 2010

Urtzi Etxeberria
IKER-CNRS, France
3 December 2010

Karolina Rataj
Adam Mickiewicz University, Poznań, Poland
9 December 2010

David Wilkinson
University of Kent, UK
16 December 2010

Annika Hulten
Helsinki University of Technology, Finland
11 January 2011

Ira Noveck
Laboratoire CNRS sur le Langage,
le Cerveau et la Cognition, Paris, France
17 February 2011

James Morgan
Brown University, USA
23 February 2011

Delphine Dahan
University of Pennsylvania, USA
3 March 2011

Dan Swingley
University of Pennsylvania, USA
17 March 2011

María Fernández Seara
Fundación para la Investigación Médica Aplicada,
Pamplona, Spain
22 March 2011

Jean-François Démonet
Inserm, Toulouse, France
24 March 2011

Karsten Steinhauer
McGill University, CA
12 April 2011

Phaedra Royle
McGill University, CA
12 April 2011

Sonja Kotz
MPI for Human Cognitive and Brain Sciences, Germany
12 May 2011

Javier Borge
Universidad de Zaragoza, Spain
19 May 2011

Matthias Schlesewsky
Mainz Universität, Germany
26 May 2011

Emmanuel Dupoux
EHESS, Paris, France
2 June 2011

Carlo Semenza
University of Padua, Italy
3 June 2011

Jukka Hyönä
University of Türku, Finland
9 June 2011

Michael Siegal
University of Sheffield, UK
16 June 2011

Sylvia Bunge
Berkeley, US
20 June 2011

Cathi Best
University of Western Sydney, Australia
30 June 2011

Gail McKoon
Ohio State University, USA
5 July 2011

Roger Ratcliff
Ohio State University, US
5 July 2011

Wolf Blecher
Max Planck Institute for Biological Cybernetics,
Tuebingen, Germany
5 August 2011

Meghan Sumner
Stanford University, US
6 September 2011

Thomas Bever
University of Arizona, US
13 September 2011

Adam Ussishkin
Arizona University, AZ, US
14 September 2011

Jeff Bowers
University of Bristol, UK
15 September 2011

Dennis Norris
MRC Cognition and Brain Science Unit, Cambridge, UK
6 October 2011

Sachiko Kinoshita
Macquarie University, Sydney, Australia
13 October 2011

Mairead McSweeney
University College London, UK
20 October 2011

Usha Goswami
University of Cambridge, UK
27 October 2011

Rasha Abdel Rahman
Humboldt-Universität zu Berlin, Germany
24 November 2011

Sylvianne Valdois
Université de Grenoble and CNRS, France
1 December 2011

Clara Martin
Universitat Pompeu Fabra, Barcelona, Spain
13 December 2011

Andrew Mayer
The Mind Research Network, USA
10 January 2012

Adrian Staub & Chuck Clifton
University of Massachusetts at Amherst, USA
12 January 2012

Blair Armstrong
Carnegie Mellon University, USA
17 January 2012

Kay Bock
University of Illinois, Urbana-Champaign, US
26 January 2012

Frederic Roux
Max Planck Institute for Brain Research, Germany
31 January 2012

Alessandro Tavano
University of Leipzig, Germany
2 February 2012

Jared Linck
University of Maryland, USA
14 February 2012

James McQueen
Radboudt Institute, NL
16 February 2012

Patricia Román
Universidad de Granada, Spain
21 February 2012

Andrea Caria
University of Tuebingen, Germany
23 February 2012

Sebastien Roux
Center National de la Reserche Scientifique,
Paris, France
28 February 2012

Zhenguang Cai
University of Plymouth, UK
1 March 2012

Kate Nation
University of Oxford, UK
8 March 2012

Peter Hagoort
Max Planck Institute for Psycholinguistics, NL
22 March 2012

Matt Goldrick
University of Chicago, USA
03 May 2012

Thomas Gunter
Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
10 May 2012

Denes Szucs
Cambridge University, UK
17 May 2012

Richard Wise
Imperial College of London, UK
24 May 2012

Nuria Sebastian
Universitat Pompeu Fabra, Spain
25 May 2012

Russell Epstein
University of Pennsylvania, USA
30 May 2012

Alexis Hervais-Adelman
University of Geneva, Switzerland
31 May 2012

Inge-Marie Egisti
University of Conneticut, USA
5 June 2012

Juliane Britz
Université of Geneve, Switzerland
14 June 2012

Marc Brysbaert
University of Ghent, Belgium
21 June 2012

Phil Holcomb
Tufts University, USA
28 June 2012

Alison Trude
University of Illinois at Urbana-Champagne, USA
11 September 2012

Geoff Aguirre
University of Pennsylvania, USA
27 September 2012

Roberto Hornero
University of Valladolid, Spain
18 October 2012

Karen Emmorey
San Diego State University, USA
29 October 2012

Caroline Niziolek
Universuty of California at San Fransisco, USA
30 October 2012

Mathieu Bourguignon
Universite Libre de Bruxelles, Belgium
31 October 2012

Guillaume Thierry
Bangor University, UK
29 November 2012

Mariuanne Latinus
University of Glasgow, UK
14 December 2012

Paul Boersma
University of Amsterdam, NL
17 December 2012

MASTER IN
COGNITIVE
NEUROSCIENCE
OF LANGUAGE

bcbl

BASQUE CENTER
ON COGNITION, BRAIN
AND LANGUAGE

www.bcbl.eu

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Universidad del País Vasco
Euskal Herriko Unibertsitatea

MASTER IN COGNITIVE NEUROSCIENCE OF LANGUAGE

The BCBL collaborates with the Department of Basque Philology of the University of the Basque Country in the design, organization, and teaching of this Master's Degree. It was recognized by the Spanish Ministry of Science and Education as an Official Master's Degree in research, which allows the degree holder to pursue a research career by developing a PhD thesis.

One of the aims of this graduate program, launched in October 2011, is to train interdisciplinary researchers in the Cognitive Neuroscience of Language to advance further and transfer this knowledge to the areas of Health and Education.

The duration of the program is one academic year with 60 ECTS credits. The students develop research skills through the mentorship of experts and by completing internships and the Master's Research Project at the end of the program. The BCBL offers several scholarships for students enrolled in this Master's program.

MAIN FIGURES:

ACADEMIC DIRECTOR: Manuel Carreiras
DURATION: One academic year, 60 ECTS (European Credits Transfer System)
LANGUAGE OF INSTRUCTION: English
LECTURERS: 28
STUDENTS ENROLLED:
2011 - 2012: 5
2012 - 2013: 12. Selected from 60 international applicants

COMPULSORY COURSES	CREDITS
Methods in cognitive neuroscience	6
Quantitative methods	6

OPTIONAL COURSES:

Advanced Electrophysiological methods	3
Advanced Hemodynamic methods	3
Cognitive psychology	3
Computational neuroscience	3
Developmental language disorders and educational neuroscience	3
Language and deafness. English	3
Language disorders: Aphasia and Dementias	3
Linguistics	3
Multilingualism, cognition and neuroscience	3
Neuroanatomy	3
Neurobiology and Molecular Genetics	3
Scientific writing and presenting	3
Sentence and discourse processing	3
Speech processing and language acquisition	3
The mental lexicon	3
Trends and Advances in Cognitive Neuroscience	3

FINAL MASTER'S DISSERTATION AND PROJECT:

Master's Project	24

DOCTORAL THESES

El procesamiento morfológico en el reconocimiento visual de palabras.
Jon Andoni Duñabeitia

_ Supervisor: Manuel Carreiras
_ Defended in 2009 (Summa cum laude)

Influence of a Brief Second Language Immersion on Linguistic and Cognitive Processing.
Cristina Baus Márquez

_ Supervisors: Manuel Carreiras and Albert Costa
_ Defended in 2010 (Summa cum laude)

Morphosyntactic Processing in Bilinguals - ERP Evidence.
Margaret Gillon Dowens

_ Supervisors: Manuel Carreiras and Horacio Barber
_ Defended in 2011 (Summa cum laude)

Procesos de reconocimiento visual de palabras en escolares sordos.
Silvia Baquero Castellanos

_ Supervisor: Manuel Carreiras
_ Defended in 2011 (Summa cum laude)

ERP studies on the syntax-semantics interplay during language comprehension.
Barbara Leone-Fernandez

_ Supervisors: Manuel Carreiras and Horacio Barber
_ Defended in 2011 (Summa cum laude)

Correlatos electrofisiológicos del code-switching en españoles aprendiendo ingles.
Maartje Van der Meij

_ Supervisors: Manuel Carreiras and Horacio Barber
_ Defended in 2011 (Summa cum laude)

SCIENCE OUTREACH AND VISIBILITY

_ SCIENCE OUTREACH ACTIVITIES
_ BCBL IN THE MEDIA
_ PARTICIPA WEBSITE

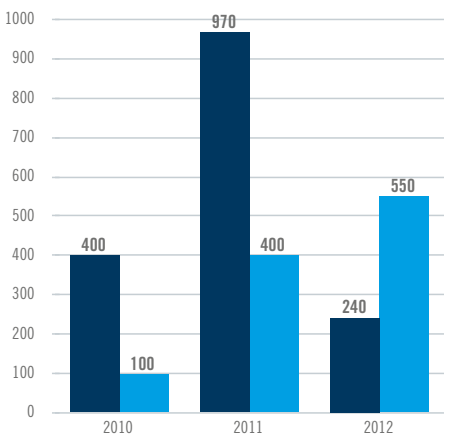
SCIENCE OUTREACH ACTIVITIES

The Brain Talks series is an initiative that has emerged from the BCBL with the aim of sharing knowledge with the society in the area of cognitive neuroscience.

Our goal is to organize open talks for the general public taking advantage of the presence of the invited speakers in the scientific conferences we held in San Sebastián.

The Brain Talks endeavor to make cognitive neuroscience more accessible and understandable to the society, using a less scientific language than in regular neuroscience conferences. Furthermore, the Brain Talks are filmed in video and uploaded to the BCBL's Youtube channel: http://www.youtube.com/user/OutreachBCBL

SCIENCE OUTREACH CONFERENCES ATTENDEES



Brain Talks

Other science outreach conferences

BRAIN TALKS I

20 May, 2010
Michael Posner, University of Oregon, USA
Education shapes the infant brain

Formal schooling is usually thought to start at 5-6 years of age, but of course learning begins much earlier. The shaping of brain networks related to language, arithmetic and self-regulation begins in infancy. Experimental studies have revealed how brain networks change with early experience and how these changes influence learning during the school years. Bilingual training has important consequences not only for language but also for attention and self-regulation. Parenting quality interacts with genetic differences to influence the attention and behavior of the child. These new findings support important roles for parents and society in the success of children.

BRAIN TALKS II

30 September, 2010
Nuria Sebastián, Universitat Pompeu Fabra, Spain
El bilingüe en la cuna: El aprendizaje de dos lenguas desde el nacimiento

Different studies with pre-verbal children in bilingual environments have revealed important similarities, and also important differences, in the manner in which mono-lingual children and bilingual children resolve the problem of language acquisition. In this conference I will review the studies that show how babies can differentiate the languages in their environment, how they learn the sounds of the languages and how they learn their first words. These studies provide important clues on the mechanisms that babies use to learn two different languages at the same time and to become bilingual adults in the future.

BRAIN TALKS III

13 April, 2011
David Poeppel, NY University, USA
Lenguaje en el cerebro: Qué debes saber
para hacer amigos y ser influyente

Of the great scientific challenges of our time, two stand out: understanding the structure of the universe and understanding the structure and function of the human brain. The brain is unimaginably complex. However, by studying a system that is central to human function and one that we are beginning to understand better and better – speech – we can get insight into some fundamental properties of brain function. The things we learn about language and about the brain are sometimes surprising, sometimes useful, and always amusing. I will illustrate some of these unexpected principles based on recent neurobiological studies.

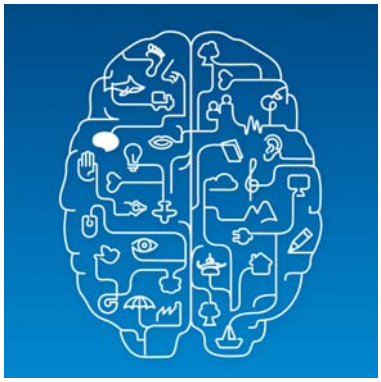
BRAIN TALKS IV

22 June, 2011
Itziar Laka, University of the Basque
Country, Spain
La vida secreta de las palabras

Words have a secret life, hidden from our senses. In this conference, with the help of literature and science, we will reveal some of these secrets: what are they made of? When did they begin to exist? Although we might think that words are made of sounds or letters, this is only an illusion. Words are an essential part of human beings from the origin of our species, and maybe even earlier. In human beings, words are organized into systems with an almost limitless ability of expression, different in their essence from other systems of animal communication. Although some animals, such as songbirds have different languages and dialects, only humans are bilingual or multilingual. Hence bilingualism is a characteristic that is exclusively human, whose effect on the mind can be detected in the first months after birth and last until the final years of our lives.

BRAIN TALKS V

29 September, 2011
Dana Small (Yale University, USA), Eneko Atxa and Andoni Aduriz (Basque Culinary Center, Spain)
Pintxos on my mind: When gastronomy meets cognitive psychology



When we “taste”, we also touch the food or drink in our mouths and sense its odor via retronasal olfaction. The term flavor describes this multimodal experience. The aim of this lecture will be to describe how the independent sensations of taste, touch and smell converge to create unitary flavor percepts and how, through experience, the brain encodes these “flavor objects” and their associated physiological significance to guide eating behaviors. Psychophysical and neuroimaging data will be presented to support the existence of a binding mechanism, possibly residing in the somatomotor mouth area, that underlies illusory processes that bring taste, touch and smell into a common spatial receptive field to facilitate integration. It is argued that activation of these illusory mechanisms result in flavor perceptions and in the encoding of these independent sensory inputs as flavor objects within insular cortex. These flavor objects are then associated with the post-ingestive consequences of feeding to result in flavor preference formation.

The Brain Talk started with a gastronomic performance offered by renowned chefs like Andoni Aduriz and Eneko Atxa, and continued with the speech of Dana Small.

BRAIN TALKS VI

13 July, 2012
Gary Lupyan, University of Wisconsin-Madison, USA.
Why are there so many languages and why are some so complicated?

There exist over 6,000 languages. Why are there so many and how did some become so complicated?

For example, in English we say “this” and “that.” Spanish provides three options: este, ese, aquel.

In comparison, Inuktitut provides dozens of ways for specifying where “this” is. Recent evidence suggests that such differences can be explained by viewing language as an adaptive system. On this “linguistic niche” hypothesis, languages differ because they are learned and used in different social and demographic environments.

I will review evidence in support of this hypothesis and discuss some consequences for understanding the role of language in cognition.

BRAIN TALKS VII

28 October, 2012
Karen Emmorey, San Diego State University, USA.
The signing brain: What sign languages reveal about human language and the brain

Sign languages are understood by the eye rather than by the ear and are produced by the hands rather than by the tongue. In addition, many signs (but few words) have a resemblance between their form and their meaning; for example, the sign in Spanish Sign Language (LSE) meaning “to hammer” has the same form as the pantomimed action of hammering.

Given these striking differences between sign and speech, I ask the following questions: Are the same key brain areas involved in producing and comprehending spoken and signed languages? Does the brain distinguish between pantomimes and signs?

The “yes” answers to these questions show that the human brain is designed for language, regardless of whether language is visual-manual or auditory-vocal.

With the aim of promoting neuroscience in Spanish society, the BCBL has also participated in conferences organized by other institutions:

2010

Carreiras, M. (2010, November). "El lenguaje del Cerebro". Lecture by invitation at the Week of Science, San Sebastian, Spain.

2011

Costello, B. (2011, October). Con las manos en mente. ¿Qué nos puede aportar la investigación sobre la lengua de signos (LSE)? Conference on Sign Language, FASICAM (Federación de Asociaciones de Personas Sordas de las Islas Canarias), La Laguna, Tenerife, Spain.

Duñabeitia, J.A. (2011, November). La neurociencia cognitiva en las aulas: Una necesidad y una obligación. Lecture by invitation at the Jornades PrisMa, Girona, Spain.

Duñabeitia, J.A. (2011, June). Neurociencia aplicada a la educación: ¿Utopía o realidad? Lecture by invitation at the Jornada Educación para el Futuro, Futuro para la Educación, Vitoria-Gasteiz, Spain.

Paz-Alonso, P.M. (September, 2011). "Neurodevelopmental Correlates of Episodic Memory", class in the summer course "Childhood brain development and genetics" at the International University of Andalucia (UNIA), Spain.

Costello, B. (2011, October). "La investigación de LS. ¿Qué relevancia tiene para la interpretación?" Lecture by invitation at the Conference on Sign Language, Bilbao, Spain.

2012

Carreiras, M. (2012, February). Neurociencia, Lectura y Literatura. Ateneu Barcelonés, Barcelona.

Carreiras, M. (2012, February). Neurociencia, Lectura y Literatura. Ciclo de conferencias, Claves Neurobiológicas de la Sociedad CSIC y SENC, Madrid.

Carreiras, M. (2012, February). La bendición de Babel: varias lenguas en un cerebro. Jakin-mina, UPV-EHU, Donostia.

Carreiras, M. (2012, February). Aprender idiomas cambia nuestro cerebro. Congreso "Ciclo Educar para el Futuro" de Ibercaja, Obra Social, Zaragoza.

Carreiras, M. (2012, March). Neurociencia, lectura y bilingüismo. Universidad de Santiago de Compostela, Santiago de Compostela.

Carreiras, M. (2012, May). Un cerebro y dos lenguas: procesamiento del lenguaje en bilingües. Presentación del documento 'Euskal Eskola Publikoa Haratago'en EHIGE, BIHE y Sarean.

Molinaro, N. (2012, May). La retórica, poesía y su influenca en la actividad cerebral. Café Hika Ateneo de Bilbao, para el ciclo Eureka Cafè, Bilbao.

SCIENCE WEEK

In 2010 the BCBL participated in different activities organized during Science Week in San Sebastián. The activities of Science Week intend to bring the world of research closer to society, especially to University scholars and students.

In addition to the lecture given by Manuel Carreiras, "The language of the brain," the BCBL participated in two activities of Science Week:

The science tent on the University Campus

Together with 20 research groups from the University of Basque Country, the BCBL presented an exhibition of different studies related with cognitive neuroscience and language. For three days university students and students from the schools of San Sebastián visited the tent and were given a demonstration of the attractiveness of the research field of brain and language, with the intention of promoting interest in science and the scientific vocation among the youths.

Science museum

In this case, the activity focused on the youngest public, children who visited the museum accompanied by their parents, who were offered different interactive games related with the basic structure of the brain, the cognitive functions and perception.

BCBL IN THE MEDIA

For BCBL the first level of dissemination and communication is the dissemination of the results of research, which is taking place through the usual channels: publications in scientific journals of international prestige and participation in congresses and international meetings.

At the second level, on the other hand, our communication activities will purse the following main objectives:
_ To publicize the existence of the BCBL and position it at the local, national and international levels as the Research Center in Excellence in Cognitive Neuroscience and Language.
_ To make the knowledge generated in the BCBL available to the society by disseminating to society at large the scientific advances achieved.

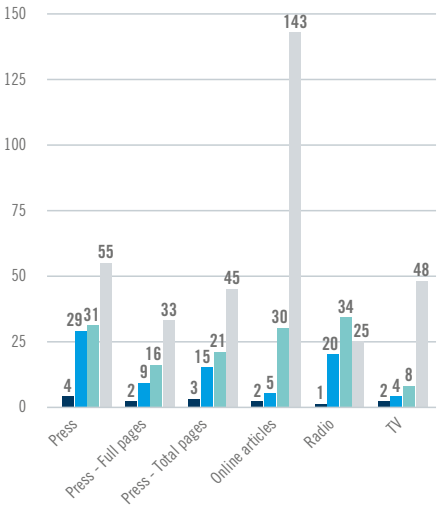
Since 2009, the presence of the BCBL in the communications media has shown a positive development, both in the number of appearances and in their quality. After starting with mentions in local media in 2009, since 2010 a monthly presence in the national communication media has been achieved.

In this respect, in addition to achieving certain public recognition in the communication media thanks to the different milestones attained by the center (opening ceremony, relevant scientific articles, research project development, etc.), the BCBL is consulted by different media as an expert adviser in cognitive neuroscience, management in the scientific field and promoting the scientific vocation among the young.

On the other hand, in addition to its off-line media presence (press, TV and radio), since 2011 the BCBL has deployed a new on-line communication strategy. Since the BCBL is conscious of the importance of on-line tools for dissemination and communication, it has created corporate channels in the main social networks: Facebook, Twitter, Google+, Youtube and

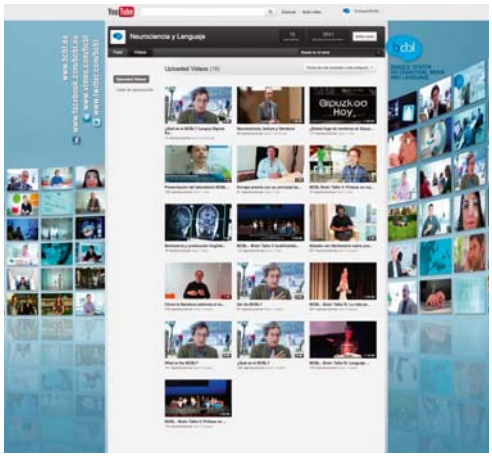
Vimeo. Using these channels, the BCBL sends a daily communication related with cognitive neuroscience and language, which is followed and forwarded by the followers of these channels.

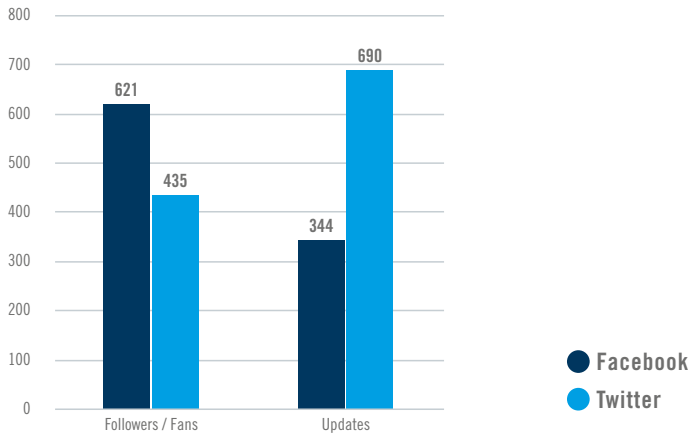
An exceptionally innovative aspect of the BCBL's on-line communication is the initiative Open Cognitive Neuroscience, which is based on the publication in YouTube of short videos (2 minutes) related with the BCBL's research areas. Each time a researcher from the center publishes a scientific article in a prestigious scientific journal, s/he briefly explains the finding using language directed at the society at large.



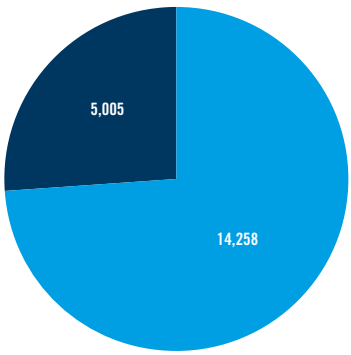
411
Total media appearances

2009
2010
2011
2012

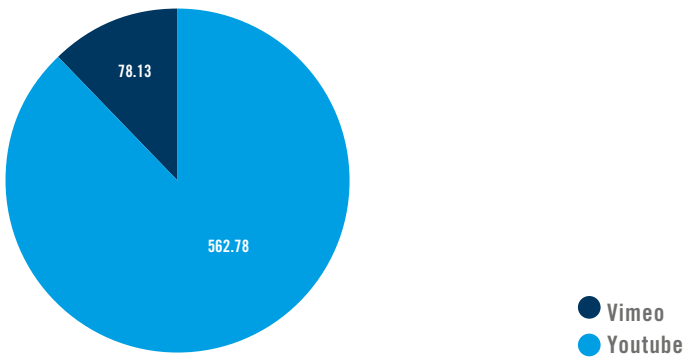




PLAYS
TOTAL: 19,263



TOTAL DURATION OF VIEWS (in days)
TOTAL: 640.91



PARTICIPA WEBSITE

Since the summer of 2011, the BCBL has a web application that allows participants to join the BCBL database very easily from their home and to manage their participation in the experiments:

_ When a new experiment is saved in the application, the participants with the needed characteristics are informed by mail.

_ They can use the Participa application to book an appointment at an available time.

_ They can cancel the appointment in advance if they are not going to be able to attend the meeting.

_ They can also check the experiments they have attended over time.

Figure 1:
Link to access the Participa Website

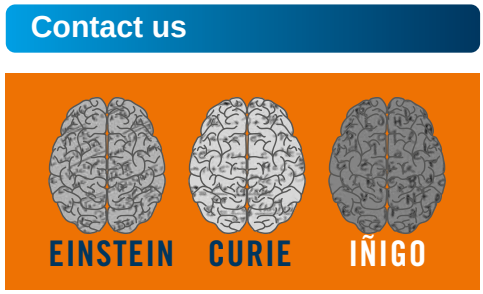


Figure 2:
Home page of the Participa Website

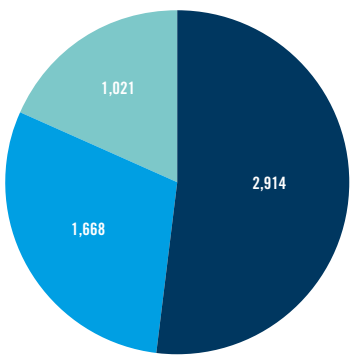
These are the main figures regarding participants and participations at the end of 2012:

_ 2,914 participants have been added to the database by Participa Website.

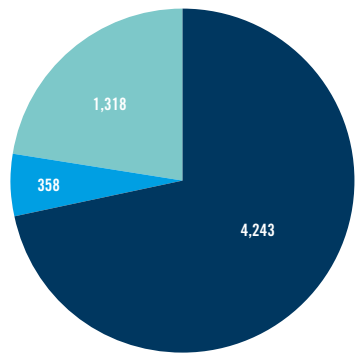
_ 1,668 baby participants (from 0 to 3 years old), recruited mainly in hospitals when born.

_ 1,021 junior participants (from 6 to 14 years old)

5,603 PARTICIPANTS



5,919 PARTICIPATIONS



adults
babies
children

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