

Annual Report LIBC 2008

INTRODUCTION

The Leiden Institute for Brain and Cognition (LIBC) started on January 1, 2006 as an interfaculty center for interdisciplinary research on brain and cognition based on collaboration between the Leiden University Medical Center (LUMC) and the Faculties of Humanities (FdGW), Mathematics and Natural Sciences (W&N), and Social and Behavioural Sciences (FSW) of Leiden University. The official opening of the LIBC was on September 21, 2006.

The organizational structure of the LIBC consists of a Board ('Raad van Toezicht'), formed by the deans of the participating faculties, a Program Board ('Programmaleiding'), and a Management Team (MT) in charge of daily operations.

Management Team:

Dr. Serge A. Rombouts (Radiology, LUMC & Psychology, FSW); chair
Prof. dr. Eveline Crone (Developmental Psychology, FSW)
Prof. dr. Niels O. Schiller (Department of Linguistics, FdGW & Cognitive Psychology, FSW)
Dr. Sander Nieuwenhuis (Cognitive Psychology, FSW)
Dr. Nic van de Wee (Psychiatry, LUMC)

Program Board:

Prof. dr. Mark van Buchem (Radiology, LUMC); chair
Prof. dr. Lisa Cheng (Linguistics, FdGW)
Prof. dr. Bernhard Hommel (Cognitive Psychology, FSW)
Prof. dr. Carel ten Cate (W&N)

Board:

The deans of the LUMC and the Faculties of Humanities, W&N and FSW.

Scientific Advisory Board:

Prof. dr. Ron de Kloet (Leiden University); chair
Prof. dr. Harold Bekkering (Donders Institute & Radboud University, Nijmegen)
Prof. dr. David Norris (Donders Institute & Radboud University, Nijmegen)
Prof. dr. Frans Zitman (Leiden University)
Prof. dr. Zwitserlood (Münster University, Germany)

Researchers studying brain and cognition can collaborate within the framework of the LIBC. They can submit their research projects to the LIBC. After review and approval, they will also become affiliated with the LIBC (for details on admission, see our website www.libc-leiden.nl). LIBC researchers are generally affiliated with one or more faculties of Leiden University. An LIBC researcher shares knowledge and expertise with other LIBC researchers, participates in the various meetings (colloquia and lab meetings), and has access to the shared facilities of the participating Faculties (see 'Equipment'). These shared facilities are essential for the success of the LIBC.

Senior Researchers:

Dr. Lenneke Alink (FSW)
 Prof. dr. Marian Bakermans (FSW)
 Dr. Guido Band (FSW)
 Dr. Mieke Beers (LUMC)
 Dr. Szilvia Biro (FSW)
 Prof. dr. Paul van den Broek (FSW)
 Prof. dr. Mark van Buchem (LUMC)
 Prof. dr. Carel ten Cate (W&N)
 Dr. Yiya Chen (FdGW)
 Prof. dr. Lisa Cheng (HUM)
 Prof. dr. Eveline Crone (FSW)
 Dr. Martine Coene (FdGW)
 Dr. Lorenza Colzato (FSW)
 Dr. Crit Cremers (FdGW)
 Prof. Eric van Dijk (FSW)
 Dr. Bernet Elzinga (FSW)
 Prof. dr. Johan Frijns (LUMC)
 Prof. dr. Bernhard Hommel (FSW)
 Prof. dr. Vincent van Heuven (FdGW)
 Dr. Wido la Heij (FSW)
 Dr. Natasja van Lang (Curium)

Dr. Claartje Levelt (FdGW)
 Dr. Catharina van Meel (FSW)
 Dr. Sander Nieuwenhuis (FSW)
 Prof. dr. Melly Oitzl (W&N/LUMC)
 Dr. Ir. Thijs van Osch (LUMC)
 Dr. Serge Rombouts (FSW/LUMC)
 Dr. Sophie van Rijn (FSW)
 Dr. Karin Roelofs (FSW)
 Prof. dr. Niels Schiller (LUCL/FSW)
 Prof. dr. Philip Spinhoven (FSW)
 Prof. dr. Hanna Swaab (FSW)
 Prof. dr. Johan Rooryck (FdGW)
 Wouter Teeuwisse (LUMC)
 Dr. Mattie Tops (FSW)
 Dr. Frank van der Velde (FSW)
 Prof. dr. Sjoerd Verduyn Lunel (W&N)
 Prof. dr. Arie Verhagen (FdGW)
 Prof. dr. Robert Vermeiren (Curium)
 Prof. dr. Michiel Westenberg (FSW)
 Dr. Nic van de Wee (LUMC)
 Prof. dr. Marinus van IJzendoorn (FSW)

Post-docs:

Dr. Ingrid Christoffels (FSW)
 Dr. Lesya Ganushchak (FSW)
 Dr. Berna Guroglu (FSW)
 Dr. Meike Grol (FSW/LUMC)

Dr. Najmeh Khalili-Mahani (FSW/LUMC)
 Dr. Dirk Köster (FSW/FdGW)
 Dr. Joyca Lacroix (FSW)
 Dr. Cédric Koolschijn (FSW)

PhD students:

Soghra Akbari Chermahin (FSW)
 Evelinda Baerends (LUMC)
 Wouter van den Bos (FSW)
 Henk Cremers (FSW)
 Saskia van Dantzig (FSW)
 Suus van den Eijkhoff-van Rijn (FSW)
 Margarita Gulian (FdGW)
 Bregtje Gunther Moor (FSW)
 Sita ter Haar (W&N & FdGW)
 Pascal Haazebroek (FSW)
 Annemiek Hammer (FdGW)
 Anne-Laura van Harmelen (FSW)
 Caroline van Heijningen (W&N)
 Marie-José van Hoof (GGZ)
 Marieke Jepma (FSW)
 Dietsje Jolles (LUMC/FSW)
 Andre Keizer (FSW)
 Sietske Kleibeukers
 Linda van Leijenhorst (FSW)

Gert-Jan Lelieveld (FSW)
 Paul Meens (CURIUM)
 Marc Molendijk (FSW)
 Anika Noort (FSW)
 Jessie Nixon (LUCL)
 Nicole Oei (FSW)
 Merel Pannebakker (FSW)
 Madelon Riem (FSW)
 Henk van Steenberg (FSW)
 Kalinka Timmer (FdGW/FSW)
 Marie José van Tol (LUMC)
 Daniil Umanski (FdGW)
 Ilya Veer (LUMC/FSW)
 Rinus Verdonschot (FdGW/FSW)
 Stephan Verschoor (FSW)
 Jurriaan Witteman (FdGW)
 Nelleke van Wouwe (FSW)
 Sharon Zmigrod (FSW)

MA/MSc/MPhil students

Lars van Lenteren (FdGW)

Narges Gharavi (FSW)

EQUIPMENT

The participating faculties share facilities for brain and cognition research. These are available for LIBC researchers, and are important binding factors within the LIBC. Availability of these facilities is essential for the success of the LIBC.

Available equipment

- 3T and 1.5T MRI scanners at the Department of Radiology.
- An MRI dummy scanner at the Department of Radiology.
- Linux computer systems for MRI data analyses at the Department of Radiology.
- Three electrophysiological labs at the The Faculty of Social and Behavioural Sciences (64 and 128 channel EEG).
- Psychophysiological Lab at the The Faculty of Social and Behavioral Sciences.
- Two infant labs at the The Faculty of Social and Behavioral Sciences.

Recent acquisitions

- On September 6, 2007 the Minister of Economic Affairs opened the C.J. Gorter Center for high field MRI. This center includes a new whole body 7T MRI system at the Department of Radiology, the first of its kind in The Netherlands, including a new team of MRI scientists.
- On February 1, 2008, a fully equipped, state-of-the-art baby lab has opened its doors to study language development in babies.

LIBC PROJECTS

Many new collaborations were established to perform interdisciplinary research on brain and cognition. These projects can be categorized into six categories: attention and action control, cognitive development, cognitive robotics, language processing, pathology (brain diseases), neuroimaging methodology.

Attention and Action Control

Cognitive Development

Cognitive Robotics

Language Processing

Pathology

Neuroimaging Methodology

Title project	Neuromodular basis of human creativity			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Soghra Akbari-Chermahini			
Faculty /department	Psychology-FSW			
Funding	Iranian ministry of education			
Duration	from	ongoing	until	November 2010
Supervision*	Hommel (Psychology – FSW)			
Short description project	Human creativity has been claimed to rely on the neurotransmitter dopamine, but evidence is still sparse. We study the relationship between individual performance in divergent and convergent thinking and indicators of dopaminergic functioning, like spontaneous eye blink rates.			

Title project	Development of the social brain: changes in brain mechanisms underlying cooperation and competition			
Type of project	X	PhD		
		Postdoc		
		Different, namely		
Name researcher	Wouter van den Bos			
Faculty /department	Psychology-FSW			
Funding	Psychology-FSW			
Duration	from	November 2006	until	November 2010
Supervision*	Professor dr. Eveline Crone (Psychology – FSW), Professor dr. Michiel Westenberg (Psychology – FSW)			
Short description project	During adolescence, there is a transition from competitive to collaborative social decision-making, which may underlie the development of the ability to act according to the concept of reciprocal exchange. Drawing from neuropsychological and neuroimaging studies, we hypothesize that interactions between prefrontal cortex and emotion-related brain regions are important for the development of social collaboration and reciprocal exchange. Further, we hypothesize different neural circuits and developmental trajectories for decisions made for different social partners, with a shift in the significance from parents to peers. We will study the neural correlates of developmental change in competition and collaboration using behavioral, autonomic and fMRI recordings in the Trust Game paradigm, and we will relate this development to perspective taking and social maturity levels in adolescence.			

Title project	Prefrontal emotion regulation in social anxiety disorder			
Type of project		PhD	Hendrik Roelof Cremers	
		Postdoc		
		Different, namely		
Name researcher	Hendrik Roelof Cremers			
Faculty /department	FSW			
Funding	VIDI Dr. K. Roelofs			
Duration	From	1 juli 2008	until	31 juni 2012
Supervision*	Dr. Karin Roelofs Professor dr. Philip Spinhoven FSW			
Short description project	This fMRI project investigates the prefrontal regulation of emotions and emotional behavior in relation to social anxiety. There is increasing evidence that social anxiety disorder (SAD) is associated with a failure in prefrontal emotion regulation. Moreover, findings in animal and human studies suggest that social submissiveness and social anxiety are associated with increased activity of stress hormones, such as cortisol. The present fMRI-project will investigate the involvement of frontal and limbic structures and their connectivity during emotion regulation tasks in patients with SAD, such as prefrontal inhibition and social approach-avoidance tasks. Second the effects of stress and stress hormones on prefrontal emotion regulation will be investigated			

Title project	The morphosyntactic development of children with a cochlear implant. A comparison with children using hearing aids, normally hearing children and children with SLI.			
Type of project	2	PhD		
	1	Postdoc		
	1	Different, namely	Data-assistant	
Name researchers	M.Coene, A.Hammer, A.Verbist, I.Tyriard			
Faculty /department	LUCL			
Funding	NWO			
Duration	from	1-1-2005	until	31-12-2009
Supervision*	Professor dr.J.Rooryck (FdGW, LUCL) Dr.M.Coene (FdGW, LUCL) Prof.dr.S.Gillis (CNTS, University Antwerpen)			
Short description project	Cochlear implants (CI), electronic devices which replace the cochlear function via electrical stimulation of the auditory nerve, have recently been implanted in very young infants, i.e. below 6 months of age. Current research indicates that implantation which occurs before the onset of language development typically triggers an improvement in the child's speech perception and production. Far less is known about the effect of cochlear implantation on the morphosyntactic development of these children. This is precisely the topic of the present research project: the morphosyntactic development of young children with CIs will be compared to 3 other groups: hearing impaired (HI) children who wear conventional H(earing)A(ids), children with Specific Language Impairment (SLI) and a control group of hearing children with a normal language development. In particular, the (dis)similarities in the acquisition pattern of functional categories in the nominal, as well as the verbal domain will be investigated. We adopt Locke's (1997) developmental theory of language according to which the analytical stage of language acquisition is activated by a stage in which lexical material is collected. Children who are delayed in this lexical acquisition stage will be unable to store sufficient lexical items within the appropriate time window in order to activate their analytical mechanism. It is predicted that fewer sensory exposure or fewer effective exposure during a particular stage of language development results in temporary or permanent processing deficits. The sub-projects focus on two particular aspects of morphosyntax: (i) the acquisition of determiners, and (ii) the acquisition of tense. Both qualify as ideal case-studies in this respect: for CI- (and HI-) children, determiners, as well as tense morphemes, have been defined as non-salient elements that can be easily missed in incoming speech; for SLI-children, they might serve as clinical grammatical markers. The analysis is based on natural production data from a homogenous population of 10 monolingual Dutch-speaking CI-children who suffer from severe congenital hearing loss and are implanted before the age of 2.			

Title project	Cognitive control in bilingual speech. VENI project: How do we switch from hersen to brain? The neural correlates of bilingual language control in speaking and translating			
Type of project		PhD		
	x	Postdoc		
		Different, namely		
Name researcher	Ingrid Christoffels			
Faculty /department	Psychology – FSW			
Funding	NWO & FSW			
Duration	from	11-2006	until	2011/2012
Short description project	<p>The ability of bilinguals to speak in the language they intend is remarkable, given that their language representations in the brain overlap. Despite this overlap, they are able to control their language output as well as interference between the languages they speak. Although bilingualism is of increasing importance in most cultures, the neuro-cognitive basis of language control is poorly understood. The project aims at advancing our understanding of the neural correlates of bilingual language control by combining insights from psycholinguistics and neuroscience. Using fMRI and EEG the neural correlates will be investigated of (1) the state of the language system during single-language production (without the need of activating the second language), (2) the control applied when changing language intentionally, (3) the flexible adjustments in the language system in a mixed-language-context, and (4) the state of the language system during translation. Moreover, new behavioral and fMRI studies study the role of response conflict in translation.</p> <p>The project will complement current psycholinguistic knowledge on language control with new and fundamental insights in its neural basis. In general, insights in language control are instrumental not only for the training of professional translators, but also for understanding and treating language deficits and the design of language education of the general public.</p>			

Title project	The Neural Correlates of Route Choice			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Ludger van Dijk			
Faculty /department	Cognitive Psychology Unit			
Funding	TU Delft (1 st geldstroom)			
Duration	from	01/12/2008	until	01/12/2009
Supervision*	Serge Rombouts (Radiology – LUMC and Psychology – FSW), Henk van Zuylen (University of Delft), Bernhard Hommel (Psychology – FSW).			
Short description project	<p>Behavioral studies have shown that people, when making traveling choices, often choose sub optimal routes. They, for example, tend to develop strong behavioral preferences that cause people to take the same way home every day, even when traffic information provides for a better alternative. This behavior is a major cause of congestion on the roads. This study investigates the neural correlates of route choice and of the prevalence of route preferences, with the use of an event-related fMRI experiment. We expect that repeatedly making choices through traffic concerning route choice and departure time will result in a preferred route and that this behavioral preference is reflected in activation of specific brain regions. Subsequently, within the scanner the characteristics of the 'preferred choice' will be altered, making it an undesirable choice. We expect to find differences in brain activation between conditions where the preferred route is taken versus the non-preferred route. Furthermore, we expect different neural and behavioral responses on negative feedback, after choosing the preferred versus the non-preferred route and accompanying subsequent choice.</p> <p>24 right-handed, healthy adult subjects will participate in one experimental session lasting 35 minutes. The total duration of the experiment will be 70 minutes, including a 10 minute training session outside the scanner and 4 blocks inside the scanner, necessary for obtaining reliable ROIs, lasting 8 minutes each.</p>			

Title project	The neuro-cognitive basis of self-monitoring in speech production			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Lesya Ganushchak			
Faculty /department	Psychology - FSW and Linguistics – FdGW			
Funding	NWO – VICI Schiller			
Duration	from	September 2003	until	September 2009
Supervision*	Professor dr. Niels Schiller (Linguistics – FdGW and Psychology – FSW).			
Short description project	<p>This project is a NWO VICI project, transferred from Maastricht to Leiden (Schiller). It concerns the control process of self-monitoring during the production of language. This is a multidisciplinary project, in which the departments of Psychology (FSW), in particular Cognitive Psychology (Christoffels, Köster, Ganushchak, Schiller), and Linguistics (FdGW) (Ganushchak, Schiller) collaborate. This project started (at Maastricht University) in September 2003 and will run through September 2008.</p>			

Title project	Changes in effective connectivity during learning in health and neurodegenerative disease			
Type of project		PhD		
	x	Postdoc		
		Different, namely		
Name researcher	Meike Grol			
Faculty /department	Radiology – LUMC and Psychology – FSW			
Funding	LIBC			
Duration	from	January 2007	until	January 2011
Supervision*	Dr. Serge Rombouts (Radiology – LUMC and Psychology – FSW) Professor dr. Mark van Buchem (Radiology – LUMC)			
Short description project				

Title project	A psycholinguistic model for infants' production development			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Margarita Gulian			
Faculty /department	Faculty of Humanities			
Funding	NWO VIDI			
Duration	from	01.09.2007	until	01.04.2012
Supervision*	Dr. Claartje Levelt (Faculty of Humanities) Professor. dr. Niels Schiller (FdGW & FSW))			
Short description project	The main task of the project is to look at the productions of two year-old children and draw conclusions about their underlying psycholinguistic speech model. This is done by means of production experiments and detailed acoustic analysis of young children's utterances.			

Title project	The neural substrate of social rejection in adolescence			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Bregtje Gunther Moor			
Faculty /department	Psychology - FSW and Psychology - University of Amsterdam			
Funding	Until 1.5.2008: UvA-MAGW NWO From 1.5.2008: NWO- MaGW open competition)			
Duration	from	01-05-2007	until	01-05-2011
Supervision*	Professor dr. Eveline Crone (Psychology – FSW), Professor dr. M.W. van der Molen (Psychology – UvA).			
Short description project	Adolescence is characterized by many changes in social behavior. To date, very little research had examined the neurobiological basis of these changes. The focus of this project is on the social-reorientation from parents to new social networks. During this reorientation, there is heightened sensitivity to social cues from peers. More specifically, the primary goal of the current research is to examine the neural correlates of adolescent social rejection within the framework of the Social Information Processing Network model (Nelson et al., 2005). By comparing different age groups (from childhood to adulthood), we aim to discover developmental trajectories in brain regions involved in the processing of signals of social exclusion and social acceptance.			

Title project	Neurocognitive development of social decision-making: Part II			
Type of project		PhD		
	X	Postdoc		
		Different, namely		
Name researcher	Berna Güroğlu			
Faculty /department	FSW / Developmental Psychology			
Funding	LIBC & VIDI project Eveline Crone			
Duration	from	Jan 2008	until	Jan 2011
Supervision*	Professor dr. Eveline A. Crone (Psychology – FSW) Dr. Serge Rombouts (Radiology – LUMC and Psychology – FSW)			
Short description project	Neuropsychological and neuroimaging studies in adults have demonstrated that two networks, namely the emotion-inducing and the emotion-regulation network, play a crucial role in social decision-making process. Recent studies on cognitive decision-making, including research from our own laboratory, show that the emotion-regulating network that relies on parts of the prefrontal cortex (PFC) does not reach maturation until late adolescence. Various concepts such as trust and fairness facilitate reciprocity in social interactions. Our previous study on social decision-making has focused on the trust and cooperation related aspects of social interactions demonstrated developmental changes in behavior and neural circuits which are important for the theory of mind (i.e., our ability to anticipate what others are thinking) (van den Bos, van Dijk, Westenberg, Rombouts, & Crone, in preparation). This study further aims to examine the processes that underlie fairness related aspects of social decision-making, as well as to understand functional brain maturation that subserves developmental changes in social decision-making. Thus, the main objective is to examine the development of brain regions that are known to be important for social decision-making in adults and to examine whether there are different developmental trajectories for these brain regions that underlie changes in behavior from late childhood into adulthood.			

Title project	Towards the template: the early vocal development of songbirds and human infants		
Type of project	x	PhD	
		Postdoc	
		Different, namely	
Name researcher	Sita ter Haar		
Faculty /department	Behavioural Biology (IBL) & Linguistics (LUCL)		
Funding	LIBC		
Duration	from	September 2007	until 2011
Supervision*	Professor dr. Carel ten Cate (Biology – W&N) Dr. Claartje Levelt (Linguistics - FdGW) Professor dr. Niels Schiller (Linguistics – FdGW & Psychology – FSW)		
Short description	This project concerns the relation between the development of infant speech and bird song.		

Title project	A Neuroscientific Approach to Feature Integration in Cognitive Robotics		
Type of project	x	PhD	
		Postdoc	
		Different, namely	
Name researcher	Pascal Haazebroek		
Faculty /department	Psychology-FSW		
Funding	European Union, IST-FP6-IP-027657		
Duration	from	01-04-2006	until 01-04-2010
Supervision*	Professor dr. Bernhard Hommel (Psychology – FSW) Professor dr. Frank van der Velde (Psychology – FSW) Dr. Nies Huijsmans (LIACS – W&N).		
Short description project	<p>Current robot systems are often equipped with control mechanisms that are based on predefined action sequences. For a humanoid robot to survive and be useful in a changing environment, however, action control must interact with perceptual processes.</p> <p>Integration of perceptual features and sensorimotor action features seems necessary. This project focuses on the neurocognitive basis of this integration, covering aspects as top-down attention modulation, novelty detection and action affordances. Knowledge of the structure and dynamics of the human brain is used to develop and implement a cognitive architecture for a humanoid cognitive robot.</p>		

Title project	The effects of childhood abuse on the brain: moderation by genetic vulnerability factors		
Type of project		PhD	2x
		Postdoc	
		Different, namely	
Name researcher	Anne-Laura van Harmelen en Marc Molendijk		
Faculty /department	FSW, Clinical, Health and Neuropsychology Unit		
Funding	NWO (VIDI)		
Duration	from	1 juni 2008	until 31 mei 2013
Supervision*	Dr. Bernet Elzinga (UL, FSW Clinical, Health and Neuropsychology Unit, co-promotor) Professor dr. Brenda Penninx (VU, dept of Psychiatry, promoter) Professor dr. Philip Spinhoven (UL, FSW Clinical, Health and Neuropsychology Unit, promoter)		
Short description project	<p>Childhood abuse, including emotional, physical, and sexual abuse, is a major public health problem that affects 10-20% of the population. It is increasingly acknowledged that there is a wide variation in individual responses to childhood abuse, which is (at least in part) related to genetic vulnerability factors. In vulnerable individuals, childhood abuse may result in a broad range of psychopathological disorders (including depression and posttraumatic stress disorder), involving dysfunctions in affect and memory. The first aim of the present proposal is to investigate the impact of childhood abuse on brain structures and functions related to affect and memory across a variety of mood disorders. Because of the large individual variation in responses to stress, the second aim is to elucidate genetic vulnerability factors (related to MR/GRgenes and BDNF) that may moderate the effects of childhood abuse on brain structures and functions. The third aim is to investigate dysregulations in stress reactivity (including the HPA-axis) and emotional responsivity in vulnerable genotypes. The first two aims will be investigated in a large (NESDA) cohort of 2,850 individuals with a range of psychopathology (e.g., from no, to mild, and severe anxiety and depression) and adverse childhood experiences. To further elucidate the processes that may mediate the effects of childhood abuse, experimental studies measuring physiological and emotional stress reactivity will be conducted in genetic vulnerable individuals. By applying a multidisciplinary approach, important knowledge will be acquired on how genetic vulnerability factors moderate neurobiological, neuroendocrinological, and cognitive responses to childhood abuse. Such an integrative, transdiagnostic approach is very much needed to increase our understanding of the specific pathways underlying maladaptive changes related to childhood abuse. These insights may in turn help to advance our knowledge on the treatment and prevention of these adverse effects.</p>		

Title project	The role of the locus coeruleus in the regulation of goal-directed behaviour			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Marieke Jepma			
Faculty /department	Psychology - FSW			
Funding	NWO (VIDI)			
Duration	from	1-10-2006	until	1-10-2010
Supervision*	Dr. Sander Nieuwenhuis (Psychology – FSW)			
Short description project	Animal research has indicated an important role for the noradrenergic system in the regulation of behavioral state and attention. This work has led to the theory that the noradrenergic system is critical for the facilitation of responses to motivationally significant stimuli. Despite this knowledge, there have been very few empirical studies of noradrenergic function in humans, probably in part because of the methodological challenges involved. The goal of this project is to develop measures and procedures to study the activation dynamics of the human noradrenergic system, and to characterize the functional consequences of these activation dynamics for human attention and performance. We will pursue this goal using a combination of various methods, including brain imaging techniques (EEG/fMRI), psychopharmacological interventions, and pupillometry.			

Title project	Practice makes the brain work better: interactions between practice and brain maturation			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Dietsje Jolles			
Faculty /department	Radiology – LUMC and Psychology – FSW			
Funding	LIBC			
Duration	from	01-01-2007	until	31-12-2010
Supervision*	Dr. Serge Rombouts (Radiology – LUMC and Psychology – FSW), Professor dr. Eveline Crone, (Psychology – FSW), Dr. Meike Grol (Radiology – LUMC and Psychology – FSW), Professor dr. Mark van Buchem (Radiology – LUMC)			
Short description project	Working memory is important for learning new information and is associated with recruitment of the lateral prefrontal cortex. It is not yet known how the maturation of this function is influenced by maturation (age) of neural circuitry on the one hand and by practice on the other hand. Using training paradigms in children of several age groups, we will be able to study the effects of age and practice independently and to test whether age differences are still present after substantial practice.			

Title project	The neurocognitive basis of feature integration in perception and action			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	André Keizer			
Faculty /department	Psychology – FSW			
Funding	le geldstroom			
Duration	from	08-06-2005	until	08-06-2009
Supervision*	Professor dr. Bernhard Hommel (Psychology – FSW), Dr. Serge Rombouts (Radiology – LUMC and Psychology – FSW), Dr. Lorenza Colzato (Psychology – FSW)			
Short description project	Distributed representational systems like the human brain require some kind of binding mechanism to integrate information about the different features of a given to-be-represented event. Previous studies have revealed behavioral effects of feature binding in perception, action planning, and across perception and action. The current project investigates the functional and neurophysiological basis of these binding phenomena by analyzing the after-effects of the co-occurrence of two or more features: if the co-occurrence of two features X and Y does indeed create a binding between their neural codes, a subsequent encounter of X should activate the neural codes of Y even in the absence of it. Using fMRI, this rationale will be applied to investigate the integration of visual features, visual and auditory features, and sensorimotor integration in young and elderly subjects.			

Title project	Neural correlates of morphological priming in speech production		
Type of project		PhD	
	x	Postdoc	
		Different, namely	
Name researcher	Dirk Koester		
Faculty /department	Psychology – FSW		
Funding	VICI project (Niels O. Schiller)		
Duration	from	01.08.2005	until 31.03.2009
Supervision*	Professor dr. Niels Schiller (Psychology – FSW and Linguistics – FdGW)		
Short description project	The project investigates the temporal and spatial neurocognitive correlates of morphological priming and their independence of semantic and phonological processes. Employed methods are event-related brain potentials, functional magnetic resonance imaging and behavioural analyses. The investigated language is Dutch which has a rich morphological inventory.		

Title project	Semantische en pragmatische integratie op discourse-niveau: op weg naar ‘neuro-pragmatics’		
Type of project		PhD	
		Postdoc	
	1	Different, namely	MA student
Name researcher	Lars van Lenteren		
Faculty /department	FdGW/Dutch		
Funding	Nvt		
Duration	from	2008	Until June 2009
Supervision*	Professor dr. Niels Schiller (FdGW & FSW), Professor dr. Arie Verhagen (FdGW), Dr. Guido Band (FSW)		
Short description project	The occurrence of double negation (such as not impossible) in natural languages is remarkable, because logically two negating elements cancel each other out. Verhagen (2002, 2005) proposes a solution to this logical problem of double negation, by assuming that the function of sentential negation is to create coherence between sentences containing opposing information. Thus, not impossible does not equal possible. To test Verhagen's hypothesis, event-related potentials were recorded from 30 native speakers of Dutch while reading sentences in which evoked expectations are cancelled either by double negations or their unnegated counterparts. Words such as possible elicit a larger N400 than impossible, suggesting that, in this specific type of context, sentential negation makes it easier to connect a sentence to the present discourse..		

Title project	A neuro-cognitive analysis of decision-making: developmental changes and individual differences		
Type of project	x	PhD	
		Postdoc	
		Different, namely	
Name researcher	Linda van Leijenhorst		
Faculty /department	Psychology/FSW		
Funding	FSW		
Duration	From	August 2005	until August 2009
Supervision*	Professor dr. Eveline Crone (Psychology – FSW) Professor dr. Michiel Westenberg (Psychology – FSW)		
Short description project	Adolescence is a period of major change in decision-making capability. Neuropsychological studies show that successful decision-making depends on a number of component processes that are separable on a neural level. Developmental changes across childhood have been observed for three key component processes of decision-making, including the ability to (a) process performance feedback, (b) update performance strategy, and (c) anticipate direct and future outcomes. Importantly, these functions rely on separate regions within the prefrontal cortex, and the development of these functions follows different trajectories. A review of the literature suggests that functions that rely on lateral prefrontal cortex, including feedback processing and updating, mature relatively early (around the age of 12) whereas functions that rely on ventromedial prefrontal cortex, including risk estimation and outcome anticipation, do not reach mature levels until late adolescence. These dissociable trajectories suggest that poor decision-making across childhood may be associated with the contribution of different processes and associated brain regions. The current research program uses fMRI and autonomic recordings to study the underlying processes that contribute to developmental changes in decision-making across childhood and adolescence. This approach provides an integrative, bio-behavioral method to examine which components contribute to poor decision-making across different stages of development, an approach that is currently lacking in the developmental literature		

Title project	The neural emotion circuitry of normal developing, depressed/anxious and traumatized adolescents: an FMRI study of cross-sectional and longterm associations		
Type of project	PhD	Paul Meens Mirjam Rinne Marie-Jose van Hoof	
	Postdoc	-	
	Different, namely	-	
Name researcher	Paul Meens will perform the scanning of the adolescents. Mirjam Rinne and Marie-Jose van Hoof will perform most of the behavioral measurements.		
Faculty /department	Coordinating center is Curium-LUMC, center for Child- and Adolescents Psychiatry. Cooperating centers are: LUMC departments of Psychiatry, Neuroradiology, and Central Clinical Chemical Laboratory; GGZ Kinderen en Jeugd Rivierduinen; Psychotrauma centrum Rivierduinen; Kinder- en Jeugdtraumacentrum Haarlem; and Child and Family studies University Leiden.		
Funding	None, although we applied for two fundings (Hersenstichting and an internal funding of Rivierduinen)		
Duration	from	December 2008	until December 2012-2013
Supervision*	<ul style="list-style-type: none"> - Prof. Dr. Robert Vermeiren and Dr. Natasja van Lang, both from Curium-LUMC - Dr. Nic van der Wee, Adult Psychiatry of LUMC - Prof. Dr. Francien Lamers-Winkelmann, Kinder- en Jeugdtraumacentrum Haarlem, VUMC - Prof. Dr. Rien van IJzendoorn and Prof. Dr. Marian Bakermans-Kranenburg, both from Center for Child and Family Studies, University of Leiden - Dr. Henriette Klasen, GGZ Kinderen en Jeugd Rivierduinen [advisors for FMRI studies in adolescents: Dr. Eveline Crone, FSW]		
Short description project	<p>Rationale: Depression, anxiety disorders, and trauma related disorders are highly prevalent psychiatric disorders of childhood and adolescence. While emotion regulation processes are inherently linked to these disorders, models including this aspect in relation to anxiety/depression and the consequences of trauma are mainly based on findings from adults. Only a limited number of studies have examined the development of the emotion regulating brain circuitry in childhood or adolescence, and even less have studied the relationship with psychopathological phenomena. In addition, research on the effects of treatment on the developing emotion regulation brain circuitry is lacking. Examining if treatment leads to structural and functional changes in the emotion brain circuitry may carry substantial clinical relevance, as it may stimulate the identification of predictors for treatment response or long-time efficacy.</p> <p>Objective: To examine the neural emotion circuitry in adolescents aged 12-18 years with anxiety or depressive disorders (i.e., with internalising disorders), with childhood sexual abuse, and in healthy controls. The two patient groups will be compared to controls, with regard to emotion regulating skills and the related structure and function of the neural emotion circuitry. More specifically we aim to examine to what extent a) the two patient groups have adopted an attention bias for negative emotions, and b) to what extent effective psychotherapy leads to a reduction of this bias that is associated with structural and functional changes in the neural emotion circuitry.</p> <p>Study design: $N = 3 \times 30$ adolescents will be included in this study. They will be invited to undergo structural MRI and perform a face-attention task in a 3T scanner on three different points in time: 1) before treatment; 2) 3-4 months after the start of treatment, and 3) 6-months after the start of treatment.</p> <p>Intervention: The adolescents from the two patient groups will be tested before and after their regular 3-4 months standardised psychotherapy, based on cognitive behavioural therapeutic principles (CBT), and at follow-up. The healthy controls will also be tested three times during the same time intervals as the patient groups.</p> <p>Main study parameters: The main study parameters are collected during the face-attention task that probes attention intensity during presentation of emotional faces in different attention states. The task is presented in the 3T MRI scan, during which subjects' response time and scores on the presented emotional faces are used as parameters. We are specifically interested in contrasts between each of the patient groups separately and the control group on reaction times and scores: (1) for fearful versus neutral faces; (2) for happy versus neutral faces.</p> <p>Nature and extent of burden and risks associated with study participation: There are no known risks for adolescents when in a MRI scanner. The burden for the adolescents will be the noise in the MRI scanner and the time it takes to perform the MRI scanning and behavioural measurements. For the scanning, all adolescents will get noise protection, and will get accustomed for being in a scanner and performing the task by lying in the dummy-scanner prior to the actual scanning. Each adolescent will be tested for no longer than 30 minutes in a total scanning time of 45 minutes. In addition, the total time needed for adolescents and their parents to perform all measurements will be no more than 2-3 hours per measurement.</p> <p>Study procedure: The study consists of four phases. In Phase I, three pilot studies are conducted to investigate the applicability of the face-attention task first: (a) to examine the validity of the emotional faces of the task outside the scanner (phase I-A), (b) to examine the arousal of the neural emotion circuitry in controls when performing the task in the scanner (phase I-B), and (c) to investigate whether the arousal of the neural emotion circuitry differs between patient and control groups (phase I-C). After this pilot Phase I, we will inform the medical ethical committee of the LUMC (CME) about the MRI results of phases I-B and I-C, and possible changes that are made in the task and in the MRI procedures before starting with collecting all data for the cross-sectional and longitudinal Phases II to IV.</p>		

Title project	Does stress inhibit distracter interference of emotional stimuli during working memory?			
Type of project	x	PhD		
		Post-doc		
		Other, namely		
Name researcher	Nicole Oei			
Faculty /department	Psychology – FSW			
Funding	FSW-beta/VENI Elzinga			
Duration	from	1-6-2007	until	30-12-2008
Supervision*	Dr. Bernet Elzinga (Psychology – FSW), Dr. Serge Rombouts (Radiology – LUMC and Psychology – FSW), Professor dr. Philip Spinhoven. (Psychology – FSW)			
Short description project	This project is based on an NWO VENI grant from Bernet Elzinga and a PhD project of Nicole Oei. In this project that will start in spring/summer 2007 differences in brain activation during WM at low and high load with emotional versus neutral distracters will be investigated in participants with posttraumatic stress disorder (PTSD) and in healthy participants with and without stress. The aim is to investigate the effects of chronic (as in PTSD patients) and acute stress whether on working memory performance, and whether this impairment is larger when emotional distracters are presented, as compared with neutral distracters. Analyses will be performed on functional and structural connectivity.			

Title project	Dual-task performance, functional capacity limitations and episodic storage			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Merel Pannebakker			
Faculty /department	Psychology-FSW			
Funding	Universiteit Leiden			
Duration	from	15/10/04	until	15/10/08
Supervision*	Professor Bernhard Hommel (Psychology – FSW) Dr. Guido Band (Psychology – FSW), Professor dr. Richard Ridderinkhof (UvA)			
Short description project	This project deals with the interference apparent when two tasks are processed concurrently. We investigate which subprocesses can occur in parallel and which cause a delay, and why some combinations cause less interference than others. We predominantly vary several varieties of working memory (WM) to investigate this, using behavioural experiments and additionally measure ERP components to get a better indication of the time at which these processes take place. In 2004/5 we looked at dual- task interference in a PRP paradigm investigating conditions that facilitate dual-task processing. In 2006 we used an AB paradigm to investigate the beneficial effect of irrelevant music on the awareness of briefly presented stimuli measuring ERP components. In 2007 we started another EEG study using again the PRP paradigm to investigate to what extent WM (mental rotation) and attentional processes can be processed concurrently. In 2007/ 2008 we will continue this line of research using memory retrieval.			

Title project	The role of the locus coeruleus in the regulation of goal-directed behaviour			
Type of project		PhD		
	x	Postdoc		
		Different, namely		
Name researcher	Mischa de Rover			
Faculty /department	Psychology - FSW			
Funding	NWO (VIDI)			
Duration	from	1-6-2008	until	1-8-2011
Supervision*	Nieuwenhuis (Psychology – FSW)			
Short description project	Animal research has indicated an important role for the noradrenergic system in the regulation of behavioral state and attention. This work has led to the theory that the noradrenergic system is critical for the facilitation of responses to motivationally significant stimuli. Despite this knowledge, there have been very few empirical studies of noradrenergic function in humans, probably in part because of the methodological challenges involved. The goal of this project is to develop measures and procedures to study the activation dynamics of the human noradrenergic system, and to characterize the functional consequences of these activation dynamics for human attention and performance. We will pursue this goal using a combination of various methods, including brain imaging techniques (EEG/fMRI), psychopharmacological interventions, and pupillometry.			

Title project	The development of resting state FMRI of the brain in drug research		
Type of project	2	PhD	
		Post-doc	
	1	Other, namely	Associate Prof
Name researcher	Serge Rombouts, Evelinda Baerends, Remco Zoethout		
Faculty /department	Radiology – LUMC and Psychology – FSW and CHDR		
Funding	NWO – VIDI (Rombouts); additional funding: Radiology LUMC, CHDR		
Duration	from	1-11-2007	until 1-11-2012
Supervision*	Professor dr. Joop van Gerven (Neurology - LUMC, CHDR) Professor dr. Mark van Buchem (Radiology – LUMC)		
Short description project	<p>For the development of drugs targeting the central nervous system (CNS) it is important to understand how a CNS drug influences neurophysiological processes and neuropsychological functions. Commonly used tests have important shortcomings: they are indirect read-outs of predefined and supposedly localized specific functions of the brain, and developed to assess only a small subset of (cognitive) functions.</p> <p>FMRI can provide detailed, whole brain information about CNS drug effects. However, FMRI requires a brain activation paradigm, limiting examination of CNS drug effects to activated brain regions, and showing changes in task-affected CNS functions secondarily affected by the drug, rather than primary effects of the drug on the brain. So-called resting state FMRI (RS-FMRI) is a whole brain functional imaging technique, which is not limited by the need of an activation paradigm. RS-FMRI has not been explored yet to apply in CNS drug development studies.</p> <p>In the current proposal, we will develop and apply RS-FMRI techniques to study CNS drug effects on brain activation. First, we will develop new data analysis techniques to assess resting state brain activity over a period of eight hours (before and after drug administration). Next, the effects of six different CNS drugs on brain activity will be assessed in healthy volunteers. Effects of a selective serotonin reuptake inhibitor will also be studied in patients with a major depression and patients with obsessive compulsive disorder.</p> <p>Analyses will include (1) studying differences in brain activity between drug and placebo; (2) relating brain activity to measures of pharmacokinetics and pharmacodynamics; (3) relating brain activity to changes in CNS functions; (4) studying differences in brain activation between controls and patients.</p> <p>These studies will help understanding direct mechanisms of action of CNS drugs. Development of the RS-FMRI technique will be important for assessment of CNS effects in future drug development studies.</p>		

Title project	Cognitive dysfunctions and developmental risks for psychopathology: insight from sex chromosomal disorders		
Type of project		PhD	
		Postdoc	X
		Different, namely	
Name researcher	Sophie van Rijn		
Faculty /department	Social and Behavioural Sciences, Clinical Child and Adolescent Studies		
Funding	NWO-VENI		
Duration	from	01.01.2009	until 01.01.2012
Supervision*	Professor dr. Hanna Swaab (Social and Behavioural Sciences, Clinical Child and Adolescent Studies)		
Short description project	<p>Our knowledge of the mechanisms underlying atypical social development is almost exclusively derived from studies with psychiatric populations, mainly autism spectrum disorders. In this research project we will study the neural and cognitive mechanisms contributing to impaired social functioning in children with sex chromosomal abnormalities (SCA). Comparing brain functioning in children with SCA's versus children with autism spectrum disorders will increase our knowledge of specific, different pathways to early social dysfunctioning. Expanding our scope to children with social difficulties because of a genetic disorder will provide unique insights into the neurodevelopmental mechanisms underlying social impairments, beyond those described for children in the autism spectrum.</p>		

Title project	Hot cognition: How emotions shape information processing		
Type of project	x	PhD	
		Postdoc	
		Different, namely	
Name researcher	Henk van Steenberghe		
Faculty /department	Psychology - FSW		
Funding	NWO open competition		
Duration	from	July 2007	until June 2011
Supervision*	Dr. Guido P.H. Band (Psychology – FSW), Professor dr. Bernhard Hommel (Psychology – FSW)		
Short description project	<p>Recent studies have shown striking benefits of positive emotion on cognitive flexibility, attentional capacity, and resistance to interference. However, the underlying mechanisms (what is the neurocognitive origin of the benefits; which cognitive/affective processes are being manipulated in these studies) are still poorly understood. This project systematically charts the role of emotions on cognition with the use of Posner's subdivision of the attention system into independent modules for orienting, alerting, and executive control. Conclusions of the behavioral study will be corroborated with neuroimaging techniques. Subsequent studies will work on a neurocomputational model for explaining the role of affect in attention.</p>		

Title project	Phonological effects in letter processing			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Kalinka Timmer			
Faculty /department	Linguistics – FdGW & Psychology – FSW			
Funding	FdGW			
Duration	from	October 2008	until	September 2012
Supervision*	Professor dr. Niels Schiller (FdGW & FSW),			
Short description project	My research project focuses on the process of reading aloud. Reading aloud is a common process executed without much conscious thought, though requires complex underlying processing for correct execution. I am specifically interested in untangling these underlying processes. Thus, revealing the time course of grapheme to phoneme conversion (GPC) and the locus of the GPC within the process of reading aloud. I make use of behavioral and electrophysiological techniques (EEG) to develop a better understanding of how the brain gives us the intriguing ability to read aloud. The great temporal resolution of EEG can specifically give more insight into the time course of GPC. Further, the use of different types of words and/or languages might also help in understanding the underlying processes of reading aloud.			

Title project	NESDA (the Netherlands study of Depression and Anxiety) neuroimaging study: functional and structural MRI of depression and comorbid panic disorder and social anxiety disorder.			
Type of project	X	PhD		
		Postdoc		
		Different, namely		
Name researcher	Marie-José van Tol			
Faculty /department	Psychiatry-LUMC			
Funding	NWO, matching LUMC			
Duration	from	2005	until	2010
Supervision*	Dr. Nick van der Wee (Psychiatry – LUMC), Professor dr. Mark van Buchem (Radiology – LUMC), Professor dr. Frans Zitman (Psychiatry – LUMC), Nielen (VUMC), Veltman (VUMC)			
Short description project	The Netherlands Study on Depression and Anxiety is a large longitudinal multi-center study investigating factors that influence the development and the long-term prognosis of anxiety and depression in 2981 participants. In 301 of the participants (controls and patients) structural MRI, MTR, task-related FMRI and resting state FMRI is performed at baseline and at follow-up (2,4,8 year). Baseline inclusion will end in may 2007. MRI data can be combined with comprehensive epidemiological and biological (including genetics) data.			

Title project	Integrating biofeedback games into speech therapy for children who stutter			
Type of project	1	PhD		
		Postdoc		
		Different, namely		
Name researcher	Daniil Umanski			
Faculty /department	Faculty of Arts			
Funding	NWO Mosaic Grant			
Duration	from	01.01.2008	until	01.01.2011
Supervision	Professor dr. Niels Schiller (FdGW & FSW) Professor dr. Pieter Reitsma (Psychology, VU, Amsterdam)			
Short description project	We are building and testing a new bio-feedback based system which will extend speech motor exercises for children who stutter. The system will offer children a simple platform to keep exercising the acquired skills at home.			

Title project	Cognition and brain connectivity: health and stress-related psychiatric disease			
Type of project	X	PhD		
		Postdoc		
		Different, namely		
Name researcher	Ilya Veer			
Faculty /department	Radiology/LUMC and Leiden University – Institute for Psychological Research/FSW			
Funding	LIBC			
Duration	from	16-10-2006	until	15-10-2010
Supervision*	Dr. Serge Rombouts (Radiology – LUMC and Leiden University – Psychology – FSW), Prof. dr. Mark van Buchem (Radiology – LUMC)			
Short description project	This project focuses on the impact of stress and stress-related psychiatric disorders on top-down control circuitry in the brain, as measured with (F)MRI. Patients suffering from depression and post-traumatic stress disorder (PTSD) typically experience negative thought and trauma related intrusions. As a result, patients may encounter difficulties in suppressing such thoughts in order to maintain focus on their work and other activities. Both task and task-free (“resting state”) fMRI and MRI measures of anatomical connectivity are employed to address the neural mechanisms underlying top-down suppression. Besides patient groups, healthy controls will be studied under temporary stress conditions. This may reveal how stress is involved in the pathogenesis of depression and PTSD.			

Title project	FMRI in pre- and postlingual deaf patients			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Berit Verbist			
Faculty /department	Radiologie-LUMC			
Funding	LUMC			
Duration	from	2007	until	
Supervision*	Professor dr. Mark van Buchem (Radiology – LUMC), Dr. Serge Rombouts (Radiology – LUMC and Psychology – FSW), Professor dr. Niels Schiller (Linguistics – FdGW and Psychology – FSW), Professor dr. Johan Frijns (KNO – LUMC).			
Short description project	Goal of the study: to investigate whether there are any differences between brain activity and connectivity between normal hearing persons, pre-lingual and post-lingual deaf individuals.			

Title project	The role of a second language on language production in the first language			
Type of project	X	PhD		
		Postdoc		
		Different, namely		
Name researcher	Rinus Verdonchot			
Faculty /department	Linguistics – FdGW and Psychology – FSW			
Funding	LUCL – FdGW			
Duration	from	01-11-2006	until	30-09-2010
Supervision*	Professor dr. Niels Schiller (Linguistics – FdGW and Psychology – FSW), Dr. Wido La Heij (Psychology – FSW)			
Short description project	This project investigates the influence of a second language on language production in the first language. The project will make use of behavioural (e.g. reaction times) and neuroimaging (e.g. ERP and fMRI) experiments.			

Title project	The cerebral representation of prosody			
Type of project	X	PhD		
		Postdoc		
		Different, namely		
Name researcher	Jurriaan Witteman			
Faculty /department	FdGW, Linguistics			
Funding	LIBC			
Duration	from	01-10-2007	until	01-10-2011
Supervision*	Professor dr. Vincent van Heuven (Linguistics – FdGW), Professor dr. Niels Schiller (FdGW & FSW) Professor dr. Roos (Neurology – LUMC)			
Short description project	This project investigates prosodic processing and representation in the brain.			

Title project	NESDA (the Netherlands study of Depression and Anxiety) neuroimaging study: functional and structural MRI of depression and comorbid panic disorder and social anxiety disorder.			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Saskia Woudstra			
Faculty /department	Psychiatry-LUMC, VuMC			
Funding	NWO, matching LUMC			
Duration	from	2008	Until	2012
Supervision*	Van der Wee (Psychiatry – LUMC), Van Buchem (Radiology – LUMC), Zitman (Psychiatry – LUMC), Nielen (VUMC), Veltman (VUMC)			
Short description project	The Netherlands Study on Depression and Anxiety is a large longitudinal multi-center study investigating factors that influence the development and the long-term prognosis of anxiety and depression in 2981 participants. In 301 of the participants (controls and patients) structural MRI, MTR, task-related FMRI and resting state FMRI is performed at baseline and at follow-up (2,4,8 year). Baseline inclusion will end in may 2007. MRI data can be combined with comprehensive epidemiological and biological (including genetics) data. This project focuses on genetic neuroimaging			

Title project	Cognitive control in context processing: normal and dopamine deviant populations			
Type of project	x	PhD		
		Postdoc		
		Different, namely		
Name researcher	Nelleke van Wouwe			
Faculty /department	Psychology-FSW			
Funding	NWO			
Duration	from	01-12-2004	until	01-12-2008
Supervision*	Professor dr. Bernhard Hommel (Psychology – FSW), Dr. Guido Band (Psychology – FSW), Professor dr. Richard Ridderinkhof (UvA)			
Short description project	This project investigates cognitive control and context processing in normal and dopamine deviant populations by means of behavioural measures and imaging techniques (ERP, FMRI). A recent FMRI study looked into cognitive control in healthy adults, while a current study with Parkinson's patients will provide insight into the effect of dopamine on decision making.			

MEETINGS AND LECTURES

The LIBC organizes a series of monthly colloquia. An additional series of LIBC colloquia is organized in collaboration with the Cognitive Psychology unit. In 2007, every month an LIBC lab meeting was scheduled. Starting in 2008, the frequency of the lab meetings was increased to every two weeks. During a lab meeting, LIBC members present new research projects and report on ongoing projects.

Starting in May 2008, every year a so-called LIBC day will be organized. On this day, LIBC researchers will present their work, they interact and new people with an interest in brain and cognition are informed about the possibilities the LIBC can offer.

LIBC past Colloquia ‘main series’ 2008

15 January 2008

Harold Bekkering, Donders Institute for Brain, Cognition and Behaviour, Nijmegen
Complementary systems for understanding action intentions

14 February 2008

Steven Laureys, University of Liege
The boundaries of consciousness: lessons from comatose states

13 March 2008

Sarah Durston, Utrecht University Medical Center
Combining genetics and neuroimaging to investigate cognitive control

10 April 2008

Danielle Posthuma, VU University of Amsterdam
Intelligence & genes: current status and future directions

12 June 2008

Sander Daselaar, University of Amsterdam
The role of the Default Mode Network in learning and remembering

9 October 2008

Rogier Mars, Oxford University
Studying the brain in an uncertain world

13 November 2008

Dennis Schutter, University of Utrecht
Magnetic brain stimulation in depression: from basic research to clinical applications

11 December 2008

Peter de Weerd, Maastricht University
Transcranial Stimulation: from basic research to clinical applications

Meetings LIBC management team (MT)

The MT has every two weeks a meeting relating to the daily operations. Every month, the MT meets with the Program Board.

FUNDING

Granted in 2008:

- **NWO Rubicon:** including the opportunity to spend two years at the Behavioural Brain Sciences Centre at Birmingham University to study the processing of texting and internet language in the brain (Dr. Lesya Ganushchak)
- **NWO VENI:** Dopamine and cognitive control (Dr. Lorenza Colzato)
- **NWO VENI:** Cognitive dysfunction and developmental risks for severe psychopathology: insights from sex chromosomal disorders (Dr. Sophie van Rijn)
- **ERC** (European Research Council) Starting Independent Researcher Grant: Representation and processing of pitch variation in tonal languages (Dr. Yiya Chen)

MEDIA AND MISCELLANEOUS

The LIBC participates increasingly in public events, such as the national *Brain Awareness Week* (organized by the Dutch Neurofederation) and media events (newspaper, radio, television) about brain and cognition. Recent LIBC in the news facts can be found on our website (www.libc-leiden.nl/media.htm).

The Young Academy of the KNAW: Eveline Crone was inaugurated as a new member of The Young Academy of the KNAW. Three LIBC researchers are now member of the young Academy (Niels O. Schiller, Bernet Elzinga and Eveline Crone).

COLLABORATION

The collaboration with the F.C. Donders Centre was formalized in June 2006.

TRAINING AND EDUCATION

A full training program has been set up to train LIBC researchers on how to operate the scanner and FMRI equipment. This training series is obligatory for LIBC researchers who plan to use FMRI. Coordinator: Wouter Teeuwisse. Location: LUMC.

The Attention and Action Group meets every week and includes researchers from all levels and all interested research groups. Coordinator: Merel Pannebakker. Location: FSW.

The Cognitive Development Group meets every other week to discuss ongoing and planned research and includes researchers from all levels and all interested research groups. Coordinator: Szilvia Biro. Location: FSW.

The Brain & Development Lab meets every other week, discussing research. Coordinator: Serge Rombouts, Niels Schiller and Mattanja Latuhihin-van der Wielen. Location: LUMC

The Language and Cognition Group (LACG) meets every two weeks and includes researchers from all levels, i.e. (PhD) students to senior faculty, from the Faculties of Humanities and Social Sciences who are interested in aspects of psycho- and/or neurolinguistics. Coordinators: Niels O. Schiller and Rinus Verdonschot. Location: FSW.

Neuromeeting Radiology: the neuroimaging research group meets every week, with one researcher presenting his/her work. Coordinators: Mark van Buchem and Jeroen van der Grond. Location: LUMC.

FMRI Analysis training: PhD students, master students, and post docs are trained to perform FMRI data analysis when necessary. Coordinator: Serge Rombouts. Location: LUMC.

This week's discoveries: every week, two scientists present their most recent discoveries. Location: W&N.

Neuroscientific research methods with an emphasis on EEG recording and analysis and neuroimaging techniques. In the Psychology master program, a course on neuroscientific research methods is taught, with an emphasis on EEG recording and analysis and neuroimaging techniques. A derived EEG course has been taught to PhD students and staff members of Psychology, Educational Sciences, Linguistics, and LUMC (Band).

FMRI Analysis Course in the Psychology Master program: this course for master and PhD students was set up in 2007, and was given for the first time early 2008. Coordinators: Serge Rombouts. Location: FSW.

New initiatives: We are developing a minor program on Brain and Cognition to start in the academic year 2009/2010 (coordinator: Maarten Bergwerff). We plan to further expand these teaching activities in the coming years.

PUBLICATIONS

- Altena, E., Van Der Werf, Y. D., Sanz-Arigita, E. J., Voorn, T. A., Rombouts, S. A., Kuijer, J. P., & Van Someren, E. J. (2008). Prefrontal hypoactivation and recovery in insomnia. *Sleep*, 9, 1271-1276.
- Akyürek, E. G., Toffanin, P., & Hommel, B. (2008). Adaptive control of event integration. *Journal of Experimental Psychology: Human Perception and Performance*, 34, 569-577.
- Bastos-Leite, A. J., Kuijer, J. P., Rombouts, S. A., Sanz-Arigita, E., Van Straaten, E. C., Gouw, A. A., Van der Flier, W. M., Scheltens, P., Barkhof, F. (2008). Cerebral blood flow by using pulsed arterial spin-labeling in elderly subjects with white matter hyperintensities. *AJNR Am J Neuroradiol*, 29(7), 1296-1301.
- Colzato, L. S., Bajo, M. T., Van den Wildenberg, W., Paolieri, D., Nieuwenhuis, S. T., La Heij, W. & Hommel, B. (2008). How does bilingualism improve executive control? A comparison of active and reactive inhibition mechanisms. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 34, 302-312.
- Colzato, L. S., & Hommel, B. (2008). Cannabis, cocaine, and visuomotor integration: Evidence for a role of dopamine D1 receptors in binding perception and action. *Neuropsychologia*, 46, 1570-1575.
- Colzato, L. S., Kool, W., & Hommel, B. (2008). Stress modulation of visuomotor binding. *Neuropsychologia*, 46, 1542-1548.
- Colzato, L. S., Slagter, H. A., Spapé, M. A., & Hommel, B. (2008). Blinks of the eye predict blinks of the mind. *Neuropsychologia*, 46, 3179-3183.
- Colzato, L. S., Van den Wildenberg, W., & Hommel, B. (2008). Reduced spontaneous eye blink rates in recreational cocaine users: Evidence for dopaminergic hypoactivity. *PLoS ONE*.
- Colzato, L. S., Van den Wildenberg, W., & Hommel, B. (2008). Losing the big picture: How religion may control visual attention. *PLoS ONE*.
- Crone, E. A., Zanolie, K., Van Leijenhorst, L., Westenberg, P. M., & Rombouts, S. A. (2008). Neural mechanisms supporting flexible performance adjustment during development. *Cognitive, Affective and Behavioral Neuroscience*, 8(2), 165-177.
- Damoiseaux, J. S., Beckmann, C. F., Arigita, E. J., Barkhof, F., Scheltens, P., Stam, C. J., Smith, S. M., Rombouts, S. A. (2008). Reduced resting-state brain activity in the "default network" in normal aging. *Cereb Cortex*, 18(8), 1856-1864.
- De Jonge, R. C., Swart, J. F., Koomen, I., Rombouts, S. A., Gemke, R. J., Barkhof, F., Van Furth, A. M. (2008). No structural cerebral differences between children with a history of bacterial meningitis and healthy siblings. *Acta Paediatrica*, 97(10):1390-1396.
- Fikkert, P. & Levelt, C. (2008). How does Place fall into place? The lexicon and emergent constraints in children's developing phonological grammar. In P. Avery, B. E. Dresher & K. Rice (eds.), *Contrast in Phonology; Theory, perception, acquisition* (pp. 231-268). Berlin: Mouton de Gruyter.
- Ganushchak, L. Y., & Schiller, N. O. (2008). Brain error-monitoring activity is affected by semantic relatedness: An event-related brain potentials study. *Journal of Cognitive Neuroscience*, 20, 927-940.
- Ganushchak, L. Y., & Schiller, N. O. (2008). Motivation and semantic context affect brain error-monitoring activity: An event-related brain potentials study. *NeuroImage*, 39, 395-405.
- Goldrick, M., Costa, A., & Schiller, N. O. (2008). Situating language production within the matrix of human cognition: The state of the art in language production research. *Language and Cognitive Processes*, 23, 489-494.
- Karas, G., Sluimer, J., Goekoop, R., Van der Flier, W., Rombouts, S. A., Vrenken, H., Scheltens, P., Fox, N., & Barkhof, F. (2008). Amnesic mild cognitive impairment: structural MR imaging findings predictive of conversion to Alzheimer disease. *American Journal of Neuroradiology*, 29(5), 944-949.

- Keizer, A. W., Colzato, L. S., & Hommel, B. (2008). Integrating faces, houses, motion, and action: Spontaneous binding across ventral and dorsal processing streams. *Acta Psychologica*, 127, 177-185.
- Keizer, A. W., Nieuwenhuis, S., Colzato, L. S., Theeuwisse, W., Rombouts, S. A. R. B. & Hommel, B. (2008). When moving faces activate the house area: an fMRI study of object file retrieval. *Behavioral and Brain Functions*, 4:50.
- Kraft, D., Başeski, E., Popović, M., Batog, A. M., Kjær-Nielsen, A., Krüger, N., Petrick, R., Geib, C., Pugeault, N., Steedman, M., Asfour, T., Dillmann, R., Kalkan, S., Wörgötter, F., Hommel, B., Detry, R., & Piater, J. (2008). Exploration and planning in a three level cognitive architecture. Proceedings of the International Conference on Cognitive Systems (*CogSys 2008*), Karlsruhe.
- Koester, D., & Schiller, N. O. (2008). Morphological priming in overt language production: Electrophysiological evidence from Dutch. *NeuroImage*, 42, 1622-1630.
- Nieuwenhuis, S., Jepma, M., La Fors, S., & Olivers, C. N. L. (2008). The role of the magnocellular and parvocellular pathways in the attentional blink. *Brain and Cognition*, 68, 42-48.
- Melcher, T., Weidema, M., Eenshuistra, R. M., Hommel, B. & Gruber, O. (2008). The neural substrate of the ideomotor principle: An event-related fMRI analysis. *NeuroImage*, 39, 1274-1288.
- Schiller, N. O. (2008). The masked onset priming effect in picture naming. *Cognition*, 106, 952-962.
- Schiller, N. O. (2008). Syllables in psycholinguistic theory: *Now you see them, now you don't*. In B. L. Davis & K. Zajdó (Eds.), *The syllable in speech production: Perspectives on the frame/content theory* (pp. 155-176). New York, NY and Hove: Taylor & Francis.
- Schiller, N. O. (2008). The gift of tongues: A neurocognitive approach to articulatory-motor learning. In I. van Keulen (Ed.), *Brain visions. How the brain sciences could change the way we eat, communicate, learn and judge* (pp. 248-255). The Hague: STT (STT 73).
- Schiller, N. O. (2008). *Van brein naar b(r)abel. De psycho- en neurolinguïstiek van taalverwerking* [‘From brain to b(r)abel. The psycho- and neurolinguistics of language processing’]. Universiteit Leiden.
- Schirmer, A., Escoffier, N., Zysset, S., Koester, D., Striano, T., & Friederici, A. D. (2008). When vocal processing gets emotional: On the role of social orientation in relevance detection by the human amygdala. *NeuroImage*, 40, 1402-1410.
- Spapé, M., & Hommel, B. (2008). He said, she said: Episodic retrieval induces conflict adaptation in an auditory Stroop task. *Psychonomic Bulletin & Review*, 15, 1117-1121.
- Van Duijvenvoorde, A. C., Zanolie, K., Rombouts, S. A., Raijmakers, M. E., & Crone, E. A. (2008). Evaluating the negative or valuing the positive? Neural mechanisms supporting feedback-based learning across development. *Journal of Neuroscience*, 28, 9495-9503.
- Van Stegeren, A. H., Wolf, O. T., Everaerd, W., & Rombouts, S. A. (2008). Interaction of endogenous cortisol and noradrenaline in the human amygdala. *Progress in Brain Research*, 167, 263-268.
- Verhagen, L., Dijkerman, H. C., Grol, M. J., & Toni, I. (2008). Perceptuo-motor interactions during prehension movements. *Journal of Neuroscience*, 28, 4726-4735.
- Wright, N. D., Mechelli, A., Noppeney, U., Veltman, D. J., Rombouts, S. A., Glensman, J., Haynes, J. D., & Price, C. J. (2008). Selective activation around the left occipito-temporal sulcus for words relative to pictures: individual variability or false positives? *Human Brain Mapping*, 29, 986-1000.
- Zanolie, K., Van Leijenhorst, L., Rombouts, S. A., & Crone, E. A. (2008). Separable neural mechanisms contribute to feedback processing in a rule-learning task. *Neuropsychologia*, 46, 117-126.
- Zanolie, K., Teng, S., Donohue, S. E., Van Duivenvoorde, A. C. K., Band, G. P. H., Rombouts, S. A. R. B., & Crone, E. A. (2008). Switching between colors and shapes on the basis of positive and negative feedback: an fMRI and EEG study on feedback-based learning. *Cortex*, 44, 537-547.