



Belgian
Association for
Psychological
Sciences

2011 BAPS Annual Meeting

May 27, 2011

Faculty of Psychology
and Educational Sciences

Ghent University

Organizing Committee

Alain Van Hiel
Barbara De Clercq
Tammy Schellens
Bert Reynvoet

Scientific Committee

Axel Cleeremans
Marc Brysbaert
Cecile Colin
Steve Majerus
Etienne Quertemont
Bert Reynvoet
Gina Rossi
Alain Van Hiel
Emmanuelle Zech

With the support of :

Fonds de la Recherche Scientifique (FNRS)
Fonds Wetenschappelijk Onderzoek Vlaanderen (FWO)
Faculty of Psychology and Educational Sciences (UGent)

We are very pleased to welcome you at this annual meeting of the Belgian Association of Psychological Science. The annual meeting aims to bring together Belgian researchers from all domains of psychology. Scholars working in applied psychology, developmental psychology, educational psychology, cognitive psychology, neurosciences and personality and social psychology are here today.

The present meeting hosts 11 invited symposia, 9 symposia, 7 paper sessions and not less than 70 posters. Some of the invited symposia also feature international contributions, with presentations by David Rettew, Oliver Christ, Silke Göbel, and Frank Asbrock.

Steve Reicher presents a keynote lecture about a 'new psychology of leadership' which rests on the principle that effective leaders need to create a relationship to followers as members of a shared social group.

The organization of a meeting is a collective effort, and we would like to thank some people who made 'things possible'. Arne Roets took care of the layout of the proceedings. Emma Onraet has been a secretary and touring operator for a while. Steven Vandenhole has done all ICT related tasks. Many others of the Department of Developmental, Personality and Social Psychology and the Department of Educational Studies have devoted some of their time to this meeting.

Also many thanks to Eric Soetens who has been the chair of the jury of the best thesis award. Raymond Bruyer, Phillippe Peigneux and Jan De Houwer were the other members of this jury.

We also thank Arnaud Destrebecqz for making available the conference website of the previous year, which saved us a lot of work. Arnaud also agreed to be a judge for the best poster prize.

Last but not least we would like to thank for the generous support of Fonds de la Recherche Scientifique (FNRS), Fonds Wetenschappelijk Onderzoek Vlaanderen (FWO), and Faculty of Psychology and Educational Sciences (UGent).

We wish you a stimulating and pleasant meeting,

Alain Van Hiel,
On behalf of the organizing committee

Table of Contents

Program	5
Overview	6
Keynote Address	7
Invited symposia and oral sessions	
S1: Models for explaining learning difficulties in mathematics	10
S2: Numerical and mathematical cognition	13
S3: Oral session on Social Psychology	16
S4: The neural basis of inhibitory control	18
S5: Depressive cognition: from impaired attentional control to rumination	21
S6: Deliberate Self-Harm and Suicidal Behaviors	24
S7: Deception: A cognitive perspective	27
S8: Externalizing problems in youth: the relevance of personality traits	30
S9: Oral session on Cognition	33
S10: Motivation as a mediating variable in instructional sciences	35
S11: Numerical cognition: A developmental perspective	38
S12: Intergroup contact: Recent trends	41
S13: New perspectives on the specialization of face processing	44
S14: Oral session on Neuroscience	47
S15: Bereavement	49
S16: Dynamic perspectives in forensic psychology	52
S17: Obsessive compulsive symptoms across the life span	55
S18: Oral session on Social Cognition	58
S19: Oral session on Cognitive and emotional development	61
S20: The development of working memory and its relation to language processing	64
S21: What does psychology have to say about the Belgian Linguistic Conflict?	67
S22: Cognitive Processing of Affective Information in Anxiety	70
S23: Social, affective and political neurosciences	73
S24: Oral session on Clinical psychology	76
S25: Attitude Formation and Change	78
S26: What can we learn from qualitative methods in research on learning and developmental disabilities?	81
S27: Oral session on Applied and cognitive psychology	84
Best Thesis Award	87
Posters	
Cognition and Cognitive processes	89
Neuropsychology	102
Developmental and Educational Psychology	109
Clinical Psychology	112
Applied Psychology	119
Social Psychology	123
Author index	131
Note Pages	136

Program

08.45 Registration – Posters to be attached

09.15 Welcome by Marc Brysbaert, President of the BAPS

09.25 Symposia and Oral Sessions

- S1: Models for explaining learning difficulties in mathematics
- S2: Numerical and mathematical cognition
- S3: Oral session 1: Social Psychology
- S4: The neural basis of inhibitory control
- S5: Depressive cognition: from impaired attentional control to rumination
- S6: Deliberate Self-Harm and Suicidal Behaviors
- S7: Deception: A cognitive perspective
- S8: Externalizing problems in youth: the relevance of personality traits
- S9: Oral session 2: Cognition

10.45 Coffee break

11.15 Symposia and Oral Sessions

- S10: Motivation as a mediating variable in instructional sciences
- S11: Numerical cognition: A developmental perspective
- S12: Intergroup contact: Recent trends
- S13: New perspectives on the specialization of face processing
- S14: Oral session 3: Neuroscience
- S15: Bereavement
- S16: Dynamic perspectives in forensic psychology
- S17: Obsessive compulsive symptoms across the life span
- S18: Oral session 4: Social Cognition

12.35 Poster session and Lunch

13.35 General assembly of the BAPS

14.00 Symposia and Oral Sessions

- S19: Oral session 5: Cognitive and emotional development
- S20: The development of working memory and its relation to language processing
- S21: What does psychology have to say about the Belgian Linguistic Conflict?
- S22: Cognitive Processing of Affective Information in Anxiety
- S23: Social, affective and political neurosciences
- S24: Oral session 6: Clinical psychology
- S25: Attitude Formation and Change
- S26: What can we learn from qualitative methods in research on learning and developmental disabilities?
- S27: Oral session 7: Applied and cognitive psychology

15.20 Coffee break

15.50 Best thesis award

16.15 Keynote address by Stephen Reicher – *The new psychology of leadership*

17.05 Announcement of the best poster award and reception

	Room 1A	Room 2B	Room 1B	Room 2C	Room 3B	Room 1C	Room 3C	Room 4B	Room 4C
08.45	Registration (Lobby)								
09.15	Welcome by Marc Brysbaert, President of the BAPS (Auditorium 1)								
09.25	Models for explaining learning difficulties in mathematics	Numerical and mathematical cognition	Oral session on Social Psychology	The neural basis of inhibitory control	Depressive cognition: from impaired attentional control to rumination	Deliberate Self-Harm and Suicidal Behaviors	Deception: A cognitive perspective	Externalizing problems in youth: the relevance of personality traits	Oral session on Cognition
10.45	Coffee Break								
11.15	Motivation as a mediating variable in instructional sciences	Numerical cognition: A developmental perspective	Intergroup contact: Recent trends	New perspectives on the specialization of face processing	Oral session on Neuroscience	Bereavement	Dynamic perspectives in forensic psychology	Obsessive compulsive symptoms across the life span	Oral session on Social Cognition
12.35	Poster session and Lunch (GUSB-Bar)								
14.00	Oral session on Cognitive and emotional development	The development of working memory and its relation to language processing	What does psychology have to say about the Belgian Linguistic Conflict?	Cognitive Processing of Affective Information in Anxiety	Social, affective and political neurosciences	Oral session on Clinical psychology	Attitude Formation and Change	What can we learn from qualitative methods in research on learning and developmental disabilities?	Oral session on Applied and cognitive psychology
15.20	Coffee Break								
15.50	Best thesis award (Auditorium 1)								
16.15	Keynote Address: Stephen Reicher – <i>The new psychology of leadership</i> (Auditorium 1)								
17.05	Announcement of the best poster award and Reception (GUSB-Bar)								

Keynote address

The new psychology of leadership

Stephen Reicher

University of St Andrews, UK

In this talk I shall first argue that leadership needs to be a core topic for psychologists. People do not come to their understandings of the social world - and of how to act on it - in isolation. Rather they are subject to multiple voices telling them what to think and what to do, and they have to select between these voices. In other words mobilisation not perception should be the prism through which we investigate human cognition and action. Hence leadership is a dimension of all that we study rather than a separate and largely marginal issue.

I will next lay out a 'new psychology of leadership' which rests on the principle that effective leaders need to create a relationship to followers as members of a shared social group. I shall outline and illustrate four dimensions of this new psychology: (1) leaders need to be seen as 'one of us' (prototypicality principle); (2) leaders need to act 'for us' (interest principle); (3) leaders need to construct a 'sense of us' (entrepreneurship principle); (4) leaders need to transform reality on the basis of our shared beliefs (realisation principle).

I will finish with some practical implications for the practice of leadership.

Keywords: Leadership

**SYMPOSIA
& ORAL SESSIONS**

Models for explaining learning difficulties in mathematics

Organizer: Tammy Schellens, UGent

Chair: Martin Valcke, UGent

Mathematics is needed in everyday life as well as at school. A lot of children make insufficient learning progress to develop adequate procedural calculation skills and to retrieve fast enough the arithmetical facts they need to function in society. A lot of them also suffer from a lack of adequate time reading skills.

In this symposium we look for models for explaining learning difficulties in mathematics. We aim to explore the key predictors, the cognitive and environmental constraints and the origins of variation in typical and atypical mathematical development in order to frame and comprehend early and school evolution in the understanding and use of mathematics.

In the first presentation Peters et al. will present their study on procedural calculation strategy use. They will compare subtraction by addition and direct subtraction as approaches. In the second paper Dewolf et al. will demonstrate the contextual constraints when solving quantitative problems, leading to different preferential situational and mathematical models. Next Burny et al. will explore the importance of language and visuospatial components as predictors in their time related competence-model. Finally Ceulemans et al. will investigate subitizing and magnitude comparison abilities and their value added as origins of mathematical development and potential core deficits in models for explaining dyscalculia.

Keywords: Mathematics; Children

Do children flexibly use the subtraction by addition strategy?

Greet Peters¹, Bert De Smedt², Joke Torbeyns^{1,3},
Pol Ghesquière², and Lieven Verschaffel¹

¹ Centre for Instructional Psychology and Technology, Katholieke Universiteit Leuven, Belgium

² Parenting and Special Education Research Group, Katholieke Universiteit Leuven, Belgium

³ GROEP T – Leuven Education College, Belgium

In previous studies on the use of subtraction by addition, we observed that adults use this strategy frequently, efficiently and flexibly, but that children hardly report using it. However, post-hoc analyses revealed that children might have used subtraction by addition more frequently than what their verbal reports suggested. For this reason, we decided to apply a non-verbal method to infer children's strategy use in the present study.

We investigated 86 third- to sixth-grade children's use of subtraction by addition on two-digit subtractions of the type $M - S = .$ We first examined regression models in which different problem characteristics predicted children's reaction times. Second, we compared performance on two-digit subtractions presented in 2 presentation formats, i.e., the standard subtraction format ($81 - 37 = .$) and an addition format ($37 + . = 81$). Both methods lead to the conclusion that children switched between direct subtraction and subtraction by addition depending on the relative size of the subtrahend. However, this performance pattern was only observed when the distance between the subtrahend and the difference was large (e.g., $71 - 2$ and $71 - 69$). When the subtrahend and the difference were close to each other (e.g., $75 - 36$ and $75 - 39$), there was no subtrahend-dependent selection of direct subtraction vs. subtraction by addition. This performance pattern was the same in each grade.

These findings are of great relevance for mathematics education as they might challenge classroom practices that only focus on the routine mastery of direct subtraction.

Contextual influences on upper elementary school children's understandings and solutions of a quantitative problem.

Tinne Dewolf, Wim van Dooren, and Lieven Verschaffel

Centre for Instructional Psychology and Technology, KUL

We confronted 151 5th and 6th elementary grade pupils with a quantitative problem in the context of a mathematics or religion class, to examine the influence of the context on pupils' understanding and solution of such problems inside and outside the mathematics class. Pupils were first asked to solve an assignment during regular teaching hours (mathematics or religion). The quantitative problem, which was about dividing an amount of money fairly, was the same in both groups. Afterwards, pupils had to evaluate several (fictional) answers for this problem. We compared the responses and evaluations from both groups and found that (1) in the mathematics class pupils preferred precise numerical answers, while in the religion class pupils had a preference for a verbal description of the solution; (2) pupils in the mathematics class preferred answers motivated by calculations, whereas in the religion class, pupils favoured non-numerical arguments; (3) the concept "fairness" was interpreted and used differently in both conditions, leading to different preferential situational and mathematical models and solutions.

Towards an understanding of children's difficulties with conventional time systems

Elise Burny¹, Martin Valcke¹, & Annemie Desoete²

¹ Department of Educational Science, UGent

² Department of Experimental Clinical and Health Psychology, UGent

Although educational research has shown time to be an extremely challenging concept for children to grasp, and learning to handle time through conventional time systems such as clocks and calendars is an important part of primary school mathematics, very little research has focused on the pedagogy of time. Consequently, teachers are confronted with the complexity of the time concept on a daily basis, not fully understanding why their pupils are having difficulties with this concept. By introducing the concept "time-related competences (TRCs)" and describing its relation to children's broader cognitive development, the present study aims to provide a more profound understanding of why time is such a difficult subject in primary education. By developing and evaluating a path model using structural equation modeling (SEM), the relative impact of mathematics, language and visuospatial competence on the development of time-related competences (TRCs) in primary school children is determined. The results of this study show that TRCs are basically mathematical activities that build upon children's mathematical knowledge. Yet, TRCs also demand a certain level of language and visuospatial competence.

Subitizing and magnitude comparison: a comprehensive model for dyscalculia?

Anneliesje Ceulemans¹, Annemie Desoete¹, Karel. Hoppenbrouwers², and Karla Van Leeuwen²

¹ UGent

² KUL

Problem Statement: Research on core deficits of Mathematic Learning Disabilities (MLD) is important to understand the nature of the disability and to organise good interventions to prevent and lessen the consequences. Though, it seems that no straight consensus has been reached yet about basic non-symbolic deficits which might underlie the (dis)abilities of children with MLD. In fact three groups of researchers can be distinguished: those in favour of the subitizing deficit hypothesis, those who defend a magnitude comparison deficit and authors who did not found evidence for non-symbolic deficiencies in MLD. This study sought to contribute to this issue by investigating both subitizing and magnitude comparison abilities in children with and without MLD. Performances of such children born in 1996 on a subitizing and magnitude comparison paradigm were explored.

Research Methods: Children with and without MLD performed a computerised subitizing and magnitude comparison task. In the first task, children saw a number of squares (up to 9) and had to name quickly the number of squares. Reaction times were registered with a voicekey and stimuli were shown for only 120 ms (disabling the possibility to count). In the second task, children saw two patterns of dots simultaneously on both sides of the computer screen. Now, they had to indicate as fast as possible at which side the largest quantity appeared by clicking on the corresponding mouse button.

Findings: This research is on-going and data are being analysed meanwhile. (Preliminary) results will be available at the meeting.

Numerical and mathematical cognition

Organizers: Ineke Imbo (UGent) & Wim Gevers (ULB)

Chair: Ineke Imbo

Understanding humans' number processing represents an important goal in cognitive psychology. This symposium presents four empirical studies that aim at deepening our understanding of numerical and mathematical cognition. In these four studies, several stages in number processing are covered, going from encoding numbers to performing arithmetical operations. The authors tested different age groups (children and adults) and used diverse tasks – including SNARC tasks, simple arithmetic tasks, and the number line estimation task. The results provide various new insights in the domain of numerical and mathematical cognition, such as (a) the relative contributions of short- and long-term associations between magnitude information and space, (b) the different brain activations in children with low and high levels of arithmetical fluency, (c) the different pathways from number processing in the human brain to actual behavior, and (d) the differential effects of language and motion on number line estimations. Further, all papers discuss the theoretical and practical implications of their findings, and this from psychological, developmental, and neuroscientific perspectives.

Keywords: SNARC, Number processing

Working memory and numbers

Véronique Ginsburg¹, Paola Previtalli², Jean-Philippe Van Dijck³, Wim Fias³, and Wim Gevers⁴

¹ Aspirant FNRS, Unité de recherche en Neurosciences Cognitives, ULB

² Department of Psychology, University of Milan-Bicocca

³ Department of Experimental Psychology, UGent

⁴ Unité de recherche en Neurosciences Cognitives, ULB

A close link exists between the processing of numbers and space. This is illustrated by the so called “SNARC effect” (Spatial Numerical Association of Response Codes [Dehaene and al., 1993]: the observation of an association between small numbers and the left hand side and between large numbers and the right hand side, even when magnitude is irrelevant for the task. The dominant interpretation of this effect is the Mental Number Line hypothesis [Restle, 1970; Dehaene and al. 1993], in which long term associations exist between magnitude and the side of the response. Alternatively, van Dijck and Fias (2011) demonstrated short term associations between the ordinal position in a working memory sequence and the side of the response. Here, we present results that further describe the nature of these short (ordinal position effect) and long term (SNARC effect) associations. In different studies we varied the relevance of the magnitude information and the relevance of the ordinal position in working memory. We demonstrate that the ordinal position effect is obtained both when magnitude information is relevant or irrelevant for the task. However, the SNARC effect was only observed when the ordinal position in working memory was irrelevant for the task. These results further illustrate the relative contributions of short and long term associations between magnitude information and space.

Brain activation during single-digit addition and subtraction in 10-12-year-old children with different levels of arithmetical fluency

Bert De Smedt

KULeuven

Most developmental imaging studies on mathematics learning have investigated the neural correlates of very elementary numerical processing skills in children. Little is known about more complex mathematical skills that are formally taught in school, such as arithmetic. Using functional magnetic resonance imaging (fMRI), we investigated brain activity during arithmetic problem solving in children with different levels of arithmetical fluency. Participants were 28 children aged 10-12 years. During scanning they completed a single-digit arithmetic task, in which they had to select the correct answer to an arithmetic problem. These problems systematically differed in terms of problem size (small vs. large) and operation (addition vs. subtraction). Commensurate with adult data, large problems and subtractions activated a fronto-parietal network, including the intraparietal sulci, the latter of which indicates the influence of quantity-based processes during procedural strategy execution. Different from adults, we observed that the left hippocampus was active during the solution of those problems that are expected to be solved by means of fact retrieval (i.e. small problems and addition). Children with low levels of arithmetical fluency showed higher activation in the right intraparietal sulcus during the solution of problems with a relatively small problem size, indicating that they continued to rely to a greater extent on quantity-based strategies on those problems that the children with relatively higher arithmetical fluency already retrieved from memory. This might represent a neural correlate of fact retrieval impairments in children with mathematical difficulties.

Number representations in the brain

Seppe Santens and Tom Verguts

Department of Experimental Psychology, UGent

Recent studies are gradually uncovering how number is represented in the brain. Computational models have suggested different stages for number processing in the visual stream. We have used fMRI to identify these stages as different areas in the human brain. Our findings correspond well to existing behavioral and neuroscientific research, although some important questions still remain. Furthermore, knowledge about number representations does not always convey how these representations are used to guide our behavior. Recent behavioral studies in our lab are discussed to illustrate this.

The effects of language, presentation mode, and motion on adults' number line estimation

Ineke Imbo and Wim Fias

Department of Experimental Psychology, UGent

A recent study showed that children's number line performance is not language-independent (Helmreich et al., in press). In the present study, we examined whether these findings can be generalized to adults: is number processing more difficult in inversed number languages such as Dutch ('vierenzestig') than in non-inversed number languages such as English ('sixty-four')? To test this, Dutch-English bilingual adults performed a computerized number line task in which we manipulated the language (Dutch vs. English) and the presentation mode (visual vs. auditory) of the numbers. Motion effects were tested by manipulating the start position of the mouse (right, middle, left) and the direction of the number line (left-to-right or right-to-left).

Oral session on Social Psychology**File a discrimination complaint? Ethnic minorities' struggle against inequality by means of the law**

Alejandra Alarcon-Henriquez, Assaad Azzi, and Laurent Licata

Social Psychology Unit, ULB

Most ethnic minority members do not use existing legal options to denounce the discrimination they experience. To date, the use of institutionalized legal means by minorities in the fight against inequality and social exclusion remains under-researched in social psychology. Using a large sample of ethnic minority group members who actually perceive that their group is victim of discrimination ($N = 250$), we investigate with an experimental study their propensity to endorse legal anti-discrimination action as a function of an ideology prime and type of institutional support. Our results show that priming egalitarian ideology does not in itself increase the endorsement of legal action. Such endorsement is greater when an egalitarian prime is accompanied by institutional support that is justified on the basis of collective interests. The results are discussed with reference to previous research in the field of normative collective action.

Keywords: ethnic minorities, discrimination, normative action

**Differential effects of intergroup contact for authoritarians and social dominators:
A Dual Process Model perspective**Frank Asbrock¹, Oliver Christ¹, John Duckitt², & Chris G. Sibley²¹ Philipps University Marburg² University of Auckland

Intergroup contact is among the most effective ways to improve intergroup attitudes. Research examining whether the effects of contact are contingent upon individual differences is limited, however. We test a Dual Process Model perspective of individual differences in contact and prejudice. Our model predicts that intergroup contact should be particularly effective for people high in Right-Wing Authoritarianism, but not those high in Social Dominance Orientation, because these ideological attitudes are driven by different underlying motivational goals. We confirm these hypotheses in longitudinal ($N = 805$) and cross-sectional ($N = 1,343$) representative population samples. We also isolate perceived symbolic threat, but not competitive threat, as a mediator for the prejudice-reducing effect for Right-Wing Authoritarianism. We elaborate upon the individual difference mechanisms that facilitate and inhibit the effects of intergroup contact on prejudice and discuss how these relations may depend upon contextual factors and the social perception of different stigmatized groups.

Keywords: Intergroup contact; Dual Process Model; Right-Wing Authoritarianism

How power affects cognition and behavior

Joris Lammers

Tilburg University, the Netherlands

In recent years, experimental social psychology has discovered that the experience of power has many basic effects of power. For example, power affects approach orientation, stereotyping, and perspective taking. In the current presentation, I draw on three lines of research to demonstrate that in explaining the effects of power, it is crucial to distinguish between social power (the ability to control others) and personal power (the ability to resist the influence of others). Although the two often go hand in hand, they can have opposite effects on cognition and behavior. Specifically, using a series of lab-experiments and field-studies, I show that the two forms of power have opposite effects on approach orientation, stereotyping, and perspective taking. These findings are important because they resolve inconsistencies in literature and allow for a better understanding of the effects of power. But they are even more important because they demonstrate how to curb the negative effects of power, in order to let the positive effects blossom. These findings therefore have important implications on how power is best distributed in society.

Keywords: Power, Automaticity, Status.

Be as Competent and Warm as I am: The Influence of Trait Relevance on Interpersonal Projection

Claudia Toma^{1,2}, Vincent Yzerbyt², and Olivier Corneille²

¹ Fonds National de la Recherche Scientifique

² Université catholique de Louvain, Louvain-la-Neuve

Two experiments investigated the impact of traits' relevance for a specific task on people's projection of their characteristics onto a cooperative partner. We either measured (Study 1) or manipulated (Study 2) traits' relevance for a specific cooperative task. In both experiments participants first rated themselves on a list of traits, then they imagined completing a cooperative task with an unknown partner, and, finally, they rated the partner on the same list of traits. In Study 1 we found partner's ratings to be positively influenced by the self ratings and the idiosyncratic measure of traits' relevance. In Study 2 participants rated the self and the partner on competence and warmth traits while completing an intellectual or a social task. We found partner's ratings to be positively influenced by the self ratings more on competence than on warmth in the intellectual task, but more on warmth than on competence in the social task. These results suggest people project into others in a way that maximizes their chances to succeed cooperation.

Keywords: Interpersonal projection; Trait relevance; Cooperation

The neural basis of inhibitory control

Organizer: Wim Fias (UGent)

Chair: Wim Fias

The ability to adapt one's behavior to the needs of the environment is a crucial cognitive function. An important aspect of such adaptive control is inhibition. It allows disrupting ongoing processing when these processes turn out to be incompatible with the requirements imposed by the environment. When the ability to inhibit prepotent behavior is impaired efficient interactions with the environment are hampered, possibly leading to severe pathology. The last decade much progress has been made in understanding the functional neuroanatomy of inhibition. The speakers of this symposium highlight a number of aspects of the cognitive neuroscience of inhibition. James Coxon focuses on anatomical connections between brain regions and relates individual differences in these connections to differences in behavior. Sven Mueller) uses functional neuroimaging methods to unravel the functional neural networks of inhibition and how they develop. He does so from the perspective of pediatric psychopathology. Jonne Oldenburg addresses the flexibility of the inhibition network and investigates how it can be prepared when the chance of having to interrupt ongoing behavior can be predicted. Finally, Fabienne Collette will report on fMRI studies that investigate a specific type of inhibition, as it occurs in the Stroop task.

Keywords: Inhibition; Cognitive control; Neuroimaging

White matter integrity predicts individual differences in inhibitory control

James Coxon

Research Centre for Movement Control and Neuroplasticity, KUL

Structural integrity of brain white matter declines in old age, with the most pronounced changes occurring in tracts connecting anterior brain regions. Despite observations that inhibitory control is diminished in the elderly, it is not known whether this is related to the deterioration of frontal white matter, and whether this is specific to task relevant pathways. In this talk I will present data from healthy young and older adults who performed a stop-signal task probing both non-selective and more selective aspects of behavioural inhibition. Diffusion weighted images were acquired from the same individuals. A network for the cognitive control over actions has been identified in the human brain using functional neuroimaging and probabilistic diffusion tractography (Aron et al. 2007, Journal of Neuroscience). We followed a similar approach, and furthermore, extracted measures of tract strength and white matter integrity to investigate brain-behaviour relationships. The results highlight the importance of bilateral projections between the pre-supplementary motor area and the subthalamic nucleus in reactive stopping and link age-related decline in inhibitory control with structural decline of this pathway. They further support the notion that individual differences in the integrity of task-relevant white matter tracts are predictive of behaviour.

Inhibitory control during development: evidence from pediatric psychopathology

Sven C. Mueller¹ & Michael G. Hardin²

¹ Department of Experimental Clinical and Health Psychology, University of Ghent, Belgium

² Department of Psychology, Stanford University, Stanford, CA, USA

Recent data suggests inhibitory control deficits in adults with anxiety disorders, particularly during emotionally evocative stimuli such as angry faces. Such findings indicate an interaction between cognitive control and emotional processing systems in anxiety disorders. However, given differences in developmental trajectories of the underlying neural circuits, similar effects in adolescents with anxiety disorders have not been demonstrated. Twenty-two clinically anxious adolescents (as determined with DSM-IV diagnostic criteria) and 22 age and gender-matched controls participated in the study. Participants performed a variant of the mixed antisaccade task in which they either had to saccade towards (prosaccade) or away (antisaccade) from a peripherally presented emotional (neutral, angry, happy, or fearful) face. While no group differences emerged in inhibitory control during antisaccades, several findings became apparent in prepotent prosaccade responses. Here, anxious adolescents were slowed relative to controls during the processing of happy and fearful stimuli but faster during the presentation of angry faces. The findings suggest altered saccadic responding, particularly during prepotent responses in the presence of emotional stimuli in adolescent anxiety.

Is brain activity during a Stroop inhibitory task modulated by the kind of cognitive control required?

Fabienne Collette^{1,2}, Kevin D'Ostilio¹, Arnaud D'Argembeau¹, Eric Salmon², Pierre Maquet², J. Grandjean¹

¹ Department of Cognitive Sciences

² Cyclotron Research Centre, University of Liège, Liège, Belgium

Performance on the Stroop task is associated to a large antero-posterior cerebral network involving notably the anterior cingulate and dorsolateral prefrontal cortex. In this study, we used a mixed-BOLD-fMRI design (N=25) to determine the neural substrates of inhibitory functioning in a Stroop task according to contextual information. Consequently, two task-contexts were created: (1) *congruent* context with a majority of facilitator items, (2) *non-congruent* context with mainly interfering items. Based on the dual cognitive control model, we postulated that the *non-congruent* blocks will involve proactive control, which is anticipatory, sustained, and involved when a large number of interfering items are successively presented. On the contrary, *congruent* blocks were assumed to involve reactive control, which occurs when few interfering items are presented, and just after the presentation of these items only. On this basis, we hypothesized that the kind of cognitive control modulates cerebral activity associated to inhibitory functioning. For behavioral data, we obtained faster response times for interfering items in the *non-congruent* vs. *congruent* condition, indicating proactive control specific to the *congruent* condition only. Functional neuro-imaging data showed an increased transient activity for interfering vs neutral items in a fronto-parietal network more important in the *congruent* than in the *neutral* condition. A similar contrast in the non-congruent condition showed no significant brain activity at the statistical threshold used. These data indicate the existence of a modulation of the cerebral areas associated to inhibitory functioning according to the kind of cognitive control necessary to perform the task.

Proactive preparations to inhibit: an fMRI study

J.F.E. Oldenburg¹, R. Seurinck², F. Verbruggen³, W. Fias¹.

¹ University of Ghent, Department of Experimental Psychology, Ghent, Belgium

² University of Ghent, Department of Data Analysis, Ghent, Belgium

³ University of Exeter, College of Life and Environmental Sciences, Psychology, Exeter, UK

Many studies have examined how people prepare for acting. However, the mechanisms underlying the preparation for *not* acting are still unclear. Using a visual stop-signal paradigm, we investigated the neural correlates of preparation for inhibition. Subjects responded to targets (houses) and occasionally had to withhold their responses when stop signals (faces) were presented. Cues at the beginning of each trial signaled the probability (0, 0.3, or 0.7) that, on the upcoming trial, a face would be presented. We examined: (1) whether subjects would prepare for withholding responses when stop-signal probability was high, (2) which brain areas they would engage, and (3) how this preparation would affect target processing. Results show that subjects slowed down in anticipation of a stop signal and that this proactive slowing effect was larger when stop-signal probability was high (0.7) compared to when it was low (0.3). During the cue period, slowing was associated with activation in a fronto-striatal network, suggesting increased proactive inhibition. In the target phase, this increased inhibitory preparation led to competition between stop and go goals when a response had to be made, resulting in an increase in reaction times and activation of a mostly right-sided cognitive control network. Importantly, higher stop signal probability was also associated with less activation in the category specific PPA on stimulus presentation, suggesting decreased visual attention towards the target. These findings provide new insights into how inhibition and visual attention interact when people prepare to stop.

Understanding depressive cognition: from impaired attentional control to rumination

Chair: Marie-Anne Vanderhasselt

An interesting base of knowledge is emerging regarding the influence of information processes on psychological distress and depressive feelings. Correlational approaches have found an association between dysfunctional attentional control and vulnerability to depression. The first speaker of this symposium will address why dysphoric individuals demonstrate impaired disengagement from negative information.

The question remains “how” these attentional dysfunctions at later stages of information processing give rise to depressive feelings. Within this context, a ruminative thinking style (rumination) has been observed to play a key role in the onset and maintenance of depressive feelings. Rumination can be described as “behaviors and thoughts that focus one’s attention, on one’s depressive symptoms and on the implications of these symptoms”(Nolen-Hoeksema, 1991, p. 569) and can be measured using the Ruminative Responses Scale (RRS). The second speaker will illustrate the results of an exploratory factor analysis using the Dutch version of the RRS (Raes & Hermans, 2007) in a dysphoric and a non-dysphoric sample, specifically showing factors loading on different types of ruminative thinking.

Taken together, impaired attentional control seems to represent a hallmark dynamic mechanism underlying rumination, which in turn is important in the etiology and maintenance of depression. The third speaker in this symposium will demonstrate that the capacity to switch the attentional focus from unpleasant information to more pleasant ones could specifically be an important process underlying vulnerability for depression and negative mood. Finally, the last speaker will explain how, using a prospective study approach, ruminative thinking styles give rise to the development of psychological distress and dysfunctional attitudes.

Keywords : information processes, rumination, dysphoria

Negative autobiographical memories consume fewer working memory resources among dysphoric than nondysphoric individuals

Betty Chang¹, Raffaella Di Schiena², & Pierre Philippot¹

¹University of Louvain

²Royal Military Academy

Negative stimuli are highly accessible to depressed individuals, and these individuals have trouble disengaging attention from such stimuli. This gives depressed persons an advantage on tasks that require the processing of negative aspects of stimuli, but can cause interference when the negative aspects are task-irrelevant (Seigel, Ingram, Matt, 2002). Negative material may cause greater interference either because it consumes more cognitive resources in depressed than in nondepressed individuals, and/or because depressed individuals have trouble disengaging attention from negative material. To test whether negative material consumes more cognitive resources in depressed than nondepressed individuals, high and low dysphoric participants recalled and reported positive and negative autobiographical memories while performing a concurrent working memory task (i.e., an n-back task). The specificity of autobiographical memories was controlled between the two groups. When recalling and reporting negative memories, high dysphoric individuals showed better performance on the concurrent working memory task than low dysphoric individuals, but there was no difference in working memory task performance between the two groups for positive memories. This result suggests that negative material causes more interference for depressed individuals not because it consumes more cognitive resources, but because depressed individuals have trouble disengaging their attention from negative material.

The factor structure of the Ruminative Responses Scale in a dysphoric and non-dysphoric sample.

Thomas Onraedt¹, Anson Whitmer², Filip Raes³, Evi De Lissnyder¹, & Ernst Koster¹

¹Department of Experimental-Clinical and Health Psychology, Ghent University

²Centre for the Psychology of Learning and Experimental Psychopathology, University of Leuven

³Department of Psychology, Stanford University

Rumination can be described as the repetitive thinking about causes, symptoms, and implications of one's sad mood, dysphoria or depression. It can be measured by the Ruminative Responses Scale (RRS), a subset of items of the Response Style Questionnaire (Nolen-Hoeksema, Morrow, & Fredrickson, 1993). Because the RRS substantially overlaps with scales measuring depression, Treynor, Gonzalez, and Nolen-Hoeksema (2003) eliminated items related to depression and retained ten items. These items showed a 2 factor structure, with each factor consisting of 5 items. One factor; reflection, represents a more adaptive variant of rumination, focused at problem solving. The other factor; brooding, can be seen as maladaptive, passive pondering. Recent research has shown that the two factor structure seems to be valid in a non-depressed population, but is less clear in a depressed sample (Whitmer & Gotlib, 2011). To further investigate the validity of the two factor structure, we performed an exploratory factor analysis in a dysphoric, and a non-dysphoric sample, using the Dutch translation of the RRS (Raes & Hermans, 2007). In the non-dysphoric sample, we found an exact replication of the two factor structure found by Treynor, et al. (2003). However, in the dysphoric sample, exploratory factor analysis suggested a three factor structure, splitting the reflection component into 2 different factors. These findings indicate that reflection and brooding are less distinct in a dysphoric sample. A three factor structure might provide a better alternative.

Impaired cognitive control as underlying cognitive risk factor in rumination and depression

Evi De Lissnyder, Ernst Koster, & Rudi De Raedt

Ghent University

Information processing impairments are investigated as underlying cognitive risk factors implicated in the aetiology and maintenance of depression. In recent years, impaired cognitive control has been proposed as an important cognitive risk factor associated with the affective symptoms of depression, such as sustained negative affect and impaired emotion regulation. Recently, it has been proposed that reduced cognitive control is closely related to rumination, a cognitive risk factor associated with negative affect, and the development and duration of depressive episodes. Research into cognitive control has historically employed tasks which measure cognitive control for externally presented stimuli or the capacity of individuals to switch the focus of their attention between various external stimuli. However, it is questionable whether examining cognitive control for externally presented stimuli is the most adequate way to target the link with depression and rumination, as the tendency to ruminate is defined as persistently focusing on internal negative thoughts. The capacity to control internal representations in working memory such as the ability to intentionally switch attentional focus from unpleasant thoughts to more pleasant ones could specifically be an important process underlying rumination and vulnerability for depression. Therefore, we sought to investigate internal cognitive control, that is switching attentional focus between internal mental representations (non-emotional as well as emotional) in working memory. For this purpose, we have developed a new paradigm, the Internal Shift Task (IST). In this talk, depression and rumination will be studied from an information processing view, using the IST. Across the presentation of different studies, it will become clear how reduced cognitive control contribute to the persistence of negative thoughts, negative affect and impaired emotion regulation.

How rumination is related to dysfunctional attitudes: evidence from a mediation model

Marie-Anne Vanderhasselt & Rudi De Raedt

Ghent University, Belgium

Mounting evidence demonstrates the active role of rumination in the activation of dysfunctional attitudes. The question however remains: how are rumination and dysfunctional attitudes related to each other? In this study, based on the Diathesis-Stress model (Beck, 1967) and the Differential Activation Hypothesis (Teasdale, 1988), we investigated whether inter-individual differences in a ruminative thinking style would be related to the development of depressive symptoms, leading to the activation of dysfunctional attitudes under stress. Seventy-four never depressed undergraduate students completed internet questionnaires measuring 1) rumination, 2) depressive symptoms and 3) dysfunctional attitudes at 4 fixed consecutive moments in time (T1, T2, T3, T4): T1 was performed six weeks before their exams (considered as a low stress period); T2, T3 and T4 were performed during three consecutive weeks in their final exams (considered as life stress event). Most important for this mediation model, variables were tested using a specific temporal order. As expected, results revealed that the relationship between rumination, measured both out of (T1) and in (T2) a stressful period, and dysfunctional attitudes (measured at T4) was mediated by increased depressive symptoms (measured at T3). The current results present evidence that dysfunctional attitudes are activated by ruminative thinking, only when depressive symptoms are increased after rumination. These findings indicate that rumination can be conceived as a stable and underlying mechanism leading to depressed mood and dysfunctional attitudes under stress. Moreover, our findings highlight that clinical interventions should not only target dysfunctional schemas and attitudes, but might also benefit from the use of procedures aimed at changing processes such as a ruminative thinking style.

Deliberate Self-Harm and Suicidal Behaviors

Organizer: Ingrid Van Camp, UGent

Chair: Paul Verhaeghe, UGent

Deliberate self-harm (DSH) or non-suicidal self-injury (NSSI) and suicidal behaviors are rapidly increasing phenomena in today's society. This symposium wants to stress the importance of empirical research in the development of adequate guidelines for prevention and treatment. The difference between NSSI and suicide attempts lies in the intent of the behavior. Contemporary research has shown that the most important function of NSSI is that of affect-regulation, whereas suicide attempts occur with the intent to die. In practise, ascribing intent is not always that easy, because of a certain ambivalence in the person who engages in the behavior. For this reason two research traditions have developed: on the one hand the Anglo-Saxon tradition which uses the term DSH for both behaviors without ascribing intent; on the other hand a mainly US based tradition that does not include suicide attempts in the DSH concept. This symposium will include speakers from both research traditions.

Dr. Rosy Ghijsens will start by giving a state of the art review of the research on DSH and its consequences for therapy. She will also devote attention to the terminology concerning DSH and the misconceptions that can arise from it. Secondly, Ingrid Van Camp will present her empirical research on subtypes of DSH in young adults. Thirdly, Prof. Dr. Laurence Claes will present an empirical study concerning the differences between NSSI and suicide attempts in patients admitted to a psychiatric crisis unit. Finally, Dr. Gwendolyn Portzky will present her research on the problem of suicidal behavior.

Keywords: Suicide; Self-harm

A psychodynamic approach to self-harm in patients with a borderline personality disorder

Rosy Ghijsens^{1,3}, Benedicte Lowyck², and Rudi Vermote³

¹ "De Wende" Clinical Psychotherapy, GGZ Eindhoven, The Netherlands

² KLIPP – University Psychiatric Center (UPC), KULeuven - Campus Kortenberg, Belgium

³ Psychoanalytic department UPC, KULeuven - Campus Kortenberg, Belgium

There are differences in terminology when it comes to non-suicidal self-injury (NSSI), self mutilation, deliberate self-harm (DSH), and self-harm (self-injury). NSSI refers to any socially unaccepted behaviour involving direct and deliberate destruction of one's own body tissue without suicidal intent. Self mutilation is used for more severe forms, where a real mutilation of the body is involved. DSH is defined as intentional, direct injuring of body tissue without suicidal intent. Self-harm is used as a general term, making the terminology even more complicated. More specifically we describe self-harm within personality disorders, and within borderline personality disorder (BPD) in particular. While previous psychodynamic theories addressed the symbolic meaning of self-harm, more recent theories focus on its role in basic psychic functioning (affect regulation). The goal is to demonstrate a more recent psychodynamic approach of self-harm and its clinical implementation. Three dimensions of the psychic change, i.e. object relation theory of Kernberg, the model of psychic processing of Bion, and the mentalization model of Fonagy, Target and Bateman as well as their implementation in a hospitalization-based treatment will be discussed. Instead of focusing on the symptoms, we hereby focus on a broader psychotherapeutic process which aims at a structural change of the personality. The relation between the basic layer of this process and therapeutic effect on self-harm in BPD are discussed.

Affect regulation and dissociation in subtypes of deliberate self-harm in Belgian adolescents

Ingrid Van Camp and Mattias Desmet

Department of Psychoanalysis and Clinical Consulting, UGent

Purpose: Although deliberate self-harm (DSH) is a very heterogeneous phenomenon, empirical studies treat all participants with a history of DSH as one sample. Clinical studies, however, show that there are dimensions on which the DSH differs across people. This suggests that there exist subtypes of DSH, that can also differ in their prognosis and susceptibility to treatment. This study uses the impulsive – premeditated dimension from clinical observations into an empirical study to distinguish subtypes of DSH. Methods: First-year psychology students completed a questionnaire packet that assessed several psychological characteristics, besides screening for a history of DSH. Thereafter self-harming students participated in an individual interview, during which the characteristics of their DSH behaviour were assessed on the impulsive – premeditated dimension. Subsequently the two phenomenologically derived subtypes were statistically compared on the previously assessed characteristics. Results: Of this sample 34.91% indicated that during their life time they had at least once engaged in DSH. The premeditated subtype showed significantly more dissociation compared to the impulsive subtype and the non-DSH control group. The impulsive subtype showed significantly more other risk-full behaviours (e.g. excessive drinking, outwardly directed aggression, ...) than the premeditated subtype and the non-DSH controls. Conclusion: This study suggests that the characteristics of different subtypes, such as dissociation in premeditated DSH and the absence of a thinking phase in impulsive DSH, should be taken into account in the development of psychotherapeutic treatments.

Comparison of non-suicidal self-injurious behavior and suicide attempts in patients admitted to a psychiatric crisis unit

Laurence Claes¹, Jennifer Muehlenkamp^{2,3}, Walter Vandereycken¹, Luc Hamelinck^{1,4}, Helga Martens⁴, and Stephan Claes⁴

¹ Department of Psychology, KULeuven

² University of North Dakota, Department of Psychology, USA

³ University of Wisconsin – Eau Claire, Department of Psychology, USA

⁴ University Hospital Gasthuisberg, Crisis Intervention Unit, Leuven

The aim of the current study was to examine differences in personality, coping skills, and select psychopathology symptoms in psychiatric patients with and without non-suicidal and/or suicide attempts. We collected data in a sample of 128 psychiatric patients by means of self-report questionnaires measuring self-harm, psychological symptoms, personality and coping skills. Results support a continuum of self-harm such that patients with both non-suicidal self-injury and suicide attempts exhibit significantly greater levels of psychopathology and lower levels of adaptive personality traits and coping skills. The findings point to the clinical importance of making a distinction between non-suicidal self-injury and suicide attempt, and offers additional variables to consider outside of intent when appraising suicide risk.

Suicidal behaviour in Flemish adolescents

Gwendolyn Portzky^{1,2,3} and Cees van Heeringen^{1,3}

¹ University Hospital Ghent, Department of Psychiatry & Medical Psychology

² University Hospital Ghent, Center for Eating Disorders

³ University Hospital Ghent, Unit for Suicide Research

Suicide is one of the leading causes of death in young people in Flanders. Recent epidemiological studies indicate that rates of fatal and non-fatal suicidal behaviour are high in Flemish young people in comparison with international figures and especially in comparison with Dutch youngsters. Research findings suggest that this increased risk for suicidality in Flemish youngsters can be associated with less adaptive coping-responses such as less communication, more use of alcohol and drugs, less problem-oriented coping and more anxiety. Socio-cultural differences in coping behaviour can therefore be associated with differences in risk of suicidal behaviour. In summary, this contribution will present the most recent Flemish data on suicidal behaviour in young people and the most recent findings regarding the causes and risk factors of suicidality in this young age group including possible cultural factors which are associated with an increased risk in Flemish youngsters.

Deception: A cognitive perspective

Organizer: Bruno Verschuere, University of Amsterdam
Chair: Bruno Verschuere

Lie detection techniques and devices (e.g., Control Question polygraph test, voice stress analysis, Screening Passengers by Observation Technique) are often developed by practitioners and lack a sound psychological theory. Most often, they are based upon the naive idea that liars, but not truth tellers, will display signs of stress or arousal. This assumption lacks empirical support. Recently, the rise of the cognitive neurosciences have brought renewed interest in an alternative, cognitive approach to deception. The cognitive view on deception regards deception as a higher order mental function that requires the interplay of several executive functions such as the decision to lie, keeping the truth and the lie in mind, and the suppression of the truth. The present symposium consists of four presentations that illustrate the cognitive approach on deception. One of the key problems of classic lie detection tools – lack of standardization – and its consequences will be explained (Bogaard). Next, a set of papers looking at the role of conflict (Suchotzki), and response inhibition (Debey, Moens) will help to build a psychological theory of deception. Moreover, all papers have immediate applied implications, by illustrating the key weaknesses of classic lie detection (Bogaard), how lie detection tests can be improved (Debey, Moens), and can be extended to criminal intent (Suchotzki).

Keywords: Deception ; Lie detection ; Concealed information

Confirmation Bias in Verbal Veracity Assessment Tools: An Analysis of Criterion Based Content Analysis (CBCA), Reality Monitoring (RM) and Scientific Content Analysis (SCAN)

Glynis Bogaard, Ewout Meijer, Aldert Vrij, & Harald Merckelbach

Maastricht University, the Netherlands

Verbal veracity assessment tools are used to evaluate the credibility of statements by looking at the content of these statements. One of the problems associated with these tools is that they are relatively unstandardized. As a consequence, they may be sensitive to expectancy effects such as confirmation bias. This bias refers to a tendency to search for evidence that confirms an a priori belief, while ignoring evidence that disconfirms it. The present experiment tested to what extent verbal veracity assessment tools are sensitive to confirmation bias. Four statements were presented in which expectations about their truthfulness were manipulated by supplying additional incriminating or exculpatory information. Participants analysed these statements using either Criteria Based Content Analysis, Reality Monitoring or Scientific Content Analysis. For each statement, they gave a credibility rating on a 7 point scale. We tested the hypothesis that a statement preceded by incriminating information would be judged as less credible than when it is preceded by exculpatory information.

Relevant stimulus-response compatibility tasks outperform irrelevant stimulus-response compatibility tasks in detecting deception and criminal intent

Kristina Suchotzki¹, Bruno Verschuere², Geert Crombez¹, & Jan De Houwer¹

¹ Experimental-Clinical and Health Psychology, Ghent University

² University of Amsterdam, the Netherlands

The use of reaction time (RT) tasks to detect deception is controversial. Research findings concerning the validity of RT measures seem inconsistent. One proposed reason for this inconsistency is that structurally very different RT paradigms have been used, leading to differing results (Verschuere & De Houwer, 2011). Amongst those, RT tasks that are based upon manipulation of relevant stimulus response compatibility (SRC) seem to accurately detect deception. The present study (n=25) aims to test this claim by directly comparing two RT tasks, one based upon irrelevant SRC and the other upon relevant SRC. Furthermore, we investigated whether not only the involvement in a previously completed crime, but also the intention to commit a crime could be detected. Results showed (1) larger lie-truth RT differences in the relevant SRC task compared to the irrelevant SRC task, (2) for both the completed and the planned crime. The present findings support the idea that a structural analysis can help to elucidate the validity of RT-based deception paradigms, and indicates that relevant SRC tasks have the highest validity. Also it demonstrates the potential these tasks show for the detection of criminal intent.

Manipulation of truth proportion and its benefits for lie detection

Thomas Moens¹ and Bruno Verschuere²

¹ Experimental-Clinical and Health Psychology, Ghent University

² University of Amsterdam, the Netherlands

Previous research found no effect from practice on deception (Johnson, Barnhardt, & Zhu, 2005; Vendemia et al., 2005). In contrast, Verschuere et al. (2011) recently reported that, relative to a control condition, frequent lying made lying easier while frequent truth telling made lying more difficult, suggesting that practice does affect deception. To investigate the effect of practice on deceptive responses we manipulated truth proportion in the RT-based Sheffield Lie Test between subjects: 25%, 50% or 75% lie trials. Results of the 50% lie condition showed no effect of practice, indicating that mere repetition is not enough to become a better liar - as was suggested by Johnson et al 2003 and by Vendemia et al. 2005. However, we did find that manipulating the truth proportion had robust effects on deception. As Verschuere et al. 2011, we found that lying was easier in 75% lie condition, and more difficult in the 25% lie condition. One way to explain these results is that the truth proportion manipulation effects are due to task-dependent factors rather than practice. Indeed, truth proportion effects did not generalize in a following 50% lie condition. We suggest three task-dependent factors which could cause these results: Task-switching, oddball-effect, and cognitive load. All of these alternative explanations make specific predictions which can be tested in future research.

Depleting inhibitory resources: Can it improve lie detection?

Evelyne Debey¹, Bruno Verschuere², & Geert Crombez¹

¹ Experimental-Clinical and Health Psychology, Ghent University

² University of Amsterdam, the Netherlands

Since lying involves withholding the truth, one of the cognitive functions that is likely to play a key role in deception is response inhibition. Consequently, we would expect lying to be impaired when prior efforts at self-control depleted inhibition resources (i.e., *ego depletion*). To investigate this hypothesis, a depletion group ($n = 17$) performed a Stroop inhibition task before executing the reaction-time based Sheffield test, whereas a control group ($n = 16$) first performed an adapted Stroop task which didn't require inhibition. In a first experiment, no group differences in performance on the deception test were found. However, conflict adaptation in the Stroop task may have hindered an effective depletion manipulation. In a second experiment, we tried to minimize possible adaptation effects. Compared to the control group ($n = 18$), the depletion group ($n = 18$) now showed less efficient suppression of the truth in the subsequent deception test, as evidenced by a larger reaction time lie effect (i.e., lie minus truth). This latter finding supports the response inhibition hypothesis on lying and suggests that lie detection may be improved through ego depletion.

Externalizing problems in youth: the relevance of personality traits

Organizer: Marleen De Bolle, UGent
Chairs: Marleen De Bolle and Mieke Decuyper

To investigate personality and personality associates (i.e., externalizing problems), a variable-centered or a person-centered approach can be adopted. In a variable-centered approach to personality, personality traits are classified into dimensions that are thought to reflect the basic structure of personality (see the Five Factor Model, FFM). This variable-centered approach is valuable because it describes the building blocks of personality in terms of basic personality dimensions. Taking into account a variable-centered approach to personality, Olivier Colins will talk about the predictive validity of self-reported psychopathic-like traits for official recidivism in detained youth. From a clinical or practical point of view, it may also be interesting to look at externalizing problems from a person-oriented approach toward personality, thereby focusing on the intra-individual configuration or profile of personality dimensions (Asendorpf, 2002). A person-centered approach toward personality will be adopted by Mieke Decuyper and Theo Klimstra. More specifically, Mieke Decuyper will talk about four different subtypes of adolescent offenders based on their general personality profiles, and how these different subtypes are associated with psychopathic traits and other externalizing criteria. Theo Klimstra will present findings concerning the link between hypermature and immature personality profiles and the development of externalizing behaviors. In the presentation of Marleen De Bolle, a person-centered approach is adopted toward both externalizing problems (i.e., bullying problems) and personality, anchoring the robust four-group classification of bullying and victimization (i.e., bullies, victims, bully/victims and uninvolved children) within the FFM based person-centered framework in primary school children.

Keywords: Personality, Externalization, Adolescence, Child

Off-Time Personality Development and Externalizing Problems in Adolescence

Theo A. Klimstra^{1,2}, William W. Hale², Quinten A. W. Raaijmakers², and Wim H. J. Meeus²

¹ Katholieke Universiteit Leuven, Belgium

² Utrecht University, The Netherlands

Adolescents tend to exhibit changes towards maturation of personality (Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2009). It is, however, unclear what the consequences are if individuals' personalities change at a faster or slower pace when compared to their same-aged peers. In other words, the consequences of off-time personality development (i.e., being ahead or lagging behind peers) are unclear. Moffitt's (1993) writings suggest that both hypermaturity and immaturity may be related to externalizing problems. That is, externalizing problems can be considered immature as most adolescents no longer engage in such activities when they grow older. On the other hand, externalizing problems are also associated with affiliating with older peers, which could be triggered by a hypermature personality. Therefore, the present study tested correlations of externalizing problems with both hypermaturity (i.e., 12-year-olds with a personality profile resembling the profile of an average 20-year-old) and immaturity (i.e., 20-year-olds with a personality profile resembling the profile of an average 12-year-old) of personality. For this purpose, longitudinal data on 923 early to middle adolescents and 390 middle to late adolescents were employed. Analyses revealed that hypermaturity was not associated with externalizing problems. However, immature girls had low levels of anxiety and high levels of minor delinquency, whereas immature boys reported low levels of anxiety and average levels of delinquency. Thus, immaturity may reflect plain boldness in boys, but seems to have a more detrimental effect for girls. These findings suggest that examining off-time personality development could be a worthwhile endeavor.

Bullying, Victimization and Personality in Children: A Person-centered Approach

Marleen De Bolle¹ and Jennifer Tackett²

¹ Department of Developmental, Personality and Social Psychology, Ghent University, Belgium

² Department of Psychology, University of Toronto, Canada

Although researchers have begun to explore bullying and victimization problems from a personality perspective, more work is needed on the particular personality constellations of children and adolescents who are vulnerable to victimization or prone to bullying. The principal research goal of the present study was to anchor the robust four-group classification of bullying and victimization (i.e., bullies, victims, bully/victims and uninvolved children) within the Five Factor Model based person-centered framework in primary school children ($N = 660$), using multivariate analysis and controlling for gender. We found four distinct personality types in middle childhood: a mixed type, an undercontrolled type, a moderate type and a resilient type. In line with expectations, we found that a resilient personality profile protected children and adolescents against bullying and victimization and that children and adolescents with an undercontrolled or mixed personality profile were at increased risk to be pure victims or bully/victims, rather than uninvolved in bully problems or victimization, compared to resilient children.

Self-reported psychopathic-like traits as predictor of recidivism in detained male adolescents

Olivier Colins¹, Robert Vermeiren^{1,2}, Marleen De Bolle³, and Eric Broekaert⁴

¹ Department of Child Psychiatry, Curium/ Leiden University Medical Center, Leiden, The Netherlands.

² Department of Forensic Youth psychiatry, VU University medical Center, Amsterdam, the Netherlands.

³ Department of Developmental, Personality and Social Psychology, UGent

⁴ Department Special Education, UGent

Few studies have examined whether psychopathic-like traits predict recidivism in detained youth. Because in forensic assessment it is difficult and time/cost-intensive to access third party information, this study will focus on investigating the predictive validity of self-report of psychopathic-like traits for official recidivism. Two hundred twenty three detained male adolescents from all three Youth Detention Centers in Flanders completed the Youth Psychopathic traits Inventory (YPI). Two to four years later, official information on recidivism was retrieved. Recidivism was defined several fold: seriousness of recidivism group membership, violent recidivism, severe non-violent recidivism (i.e., burglary) and substance-related recidivism. Results demonstrated that neither the affective dimension nor the broader construct of psychopathy (i.e. total YPI score) was predictive of recidivism above and beyond criminal history. The behavioral and interpersonal dimension, however, significantly added to the prediction of substance-related recidivism. Overall, this study shows that psychopathic-like traits in detained adolescents assessed by means the YPI did not convincingly predicted recidivism. Consequently, one should be very cautious when using self-reports obtained in forensic practice for legal decision-making.

Latent personality profiles and the relations with psychopathology and psychopathy in adolescent offenders

Mieke Decuyper¹, Olivier Colins², Barbara De Clercq¹, Filip De Fruyt¹ & Patricia Bijttebier³

¹Department of Developmental, Personality and Social Psychology, UGent

²Leiden University Medical Center, the Netherlands

³Department of Psychology, KULeuven

Much research has been dedicated to identifying adolescent offender subtypes since these subtypes played a key role in the development of theoretical frameworks of deviance. Identifying specific subgroups of adolescent offenders may contribute to the understanding of the etiology of their offending and may provide information about the risk factors and the development of treatment and prevention programs for antisocial behavior. The present study identifies different subtypes of adolescent offenders based on general personality profiles. The sample consists of 245 boys and 129 girls, who were recruited from Youth Detention Centers in Flanders. In the present study, four personality types were identified using latent cluster analysis. The four clusters demonstrate meaningful associations with psychopathic traits, assessed using the Youth Psychopathic Trait Inventory and the Youth Self Report externalizing scales. The discussion focuses on implications for theory and practice and provides suggestions for future research.

Oral session on Cognition

Overestimations of null contingencies are asymmetrically enhanced by the probability of the cue and the probability of the outcome

Fernando Blanco¹, Helena Matute², and Miguel A. Vadillo²

¹ KULeuven

² University of Deusto, Spain

Overestimations of null contingencies are pervasive effects that can arise for multiple reasons. Among other factors, a high marginal probability of the cue, $P(C)$, and a high marginal probability of the outcome, $P(O)$, are conditions that promote the overestimation. In two experiments, participants were asked to judge the contingency between a cue and an outcome. The $P(C)$ and the $P(O)$ were manipulated orthogonally while keeping the contingency between the two events to zero, with the aim of investigating the potential interaction of these two variables on the judgments of contingency. Our studies showed that a high $P(O)$ condition produced systematic overestimations of contingency, regardless of the level of $P(C)$. The probability of the cue, however, exerted a lesser impact on the judgments. Moreover, this influence was visible only in a high $P(O)$ condition (Experiment 1). The later results indicate that the effects of these two manipulations on the judgments of contingency are indeed asymmetrical, playing the $P(O)$ a much more relevant role in this kind of biases.

Keywords: Contingency learning, Density biases, Illusions of contingency.

Evaluative Conditioning and Contingency Forgetting

Anne Gast and Jan De Houwer

UGent

Evaluative conditioning (EC) is the valence change of an originally neutral stimulus (CS) that is due to the previous pairing with a positive or negative stimulus (US). It has been repeatedly shown that EC effects depend on the participant's memory for the pairs. The memory is typically measured with a forced-choice task at the end of the experiment. A drawback of this method is that it is not clear whether it is necessary that people are consciously aware of the pairings at some point in time or whether it is also necessary that the people still remember the pairings during the valence measurement. In other words: Is there an EC effect for the CSs which the participants first remembered and later forgot? In two studies, participants saw conditioning trials in a first session. The valence of the CSs was measured in a second session several days later. Contingency awareness was measured both during the first and the second session. We found that forgetting led to a decrease in the evaluative conditioning effect. For those pairs that the participants remembered during the first session, but not during the second session, no EC effect was found. These results suggest that EC effects depend on contingency awareness at the point in time when the EC effect is measured.

Keywords: Evaluative conditioning; Contingency awareness; Affective learning

Retrieval-induced forgetting and interference between cues

Miguel A. Vadillo and Nerea Ortega-Castro

Dpto. de Fundamentos y Métodos de la Psicología, Universidad de Deusto, Bilbao, Spain

From the very beginnings of experimental psychology, researchers have been particularly interested in finding out how people learn to deal with contradictory information. For instance, many experiments on associative learning and memory retrieval have focused on situations in which one cue is paired with different outcomes in different situations. The theoretical models designed to account for these effects have become highly influential during the last two decades. However, these models fail to account for interference effects that arise when several cues are paired with a single outcome, instead of the opposite. Recent theoretical proposals advanced to explain retrieval-induced forgetting can potentially provide an integrative account of both types of interference effects. In the present experiment, we show that the retrieval-induced forgetting effect that is usually found when one cue is paired with different outcomes can also be observed in situations in which different cues are paired with a common outcome. This result confirms that both types of interference might share common mechanisms and that the inhibitory processes invoked to account for retrieval-induced forgetting are likely to be involved in both cases.

Keywords: Retrieval-induced forgetting; Interference; Inhibition

Visual masking revisited: number of repetitions and voluntary attention modulate priming and conscious access of a masked stimulus

Anne Atas , Astrid Vermeiren, and Axel Cleeremans

Consciousness, Cognition, and Computation Group, ULB

Marcel (1983) showed that repeated presentations of a masked stimulus improved priming while remaining unconscious. However, both empirical evidence (Ferrand, 1996; Dupoux et al., 2008) as well as theoretical proposals (Dehaene & Naccache, 2001; Cleeremans et al., 2002) predict the opposite: Increasing bottom-up strength as resulting from repeated presentation associated with a short inter-stimulus interval (500 ms or less) should also result in increasing availability to awareness. Here, we tested this prediction by manipulating the number of repetitions of a masked stimulus in a numerical priming task (Dehaene et al., 1998) and in two visibility tests (an objective measure and the subjective PAS scale from Ramsøy & Overgaard, 2004). Furthermore, we compared three different task contexts to explore the influence of attention. In the priming-first condition, the priming task was performed before the visibility tests. In the visibility-first condition, the visibility tests were performed before the priming task. Finally, in the mixed condition, both tasks were performed randomly within the same block. Results showed a systematic increase of awareness with the number of repetitions, in both objective and subjective tests. Contra Marcel, we only obtained a repetition-dependent priming effect in the mixed condition, suggesting the crucial role of attention. The influence of top-down factors was also illustrated by significantly smaller priming in the priming-first condition vs. the visibility-first condition. Altogether, our results do not replicate the dissociation observed by Marcel and are rather suggestive that increases in bottom-up strength are associated with increases in visibility, and hence, awareness.

Keywords: visual masking, priming, awareness

Motivation as a mediating variable in instructional sciences

Organizers: Tammy Schellens, Hilde Van Keer, UGent,
Chair : Hilde Van keer, UGent

The present symposium brings together research on motivation in varied educational contexts. The symposium reflects the broad and growing attention in the literature for the quality of students' motivation on the one hand and the relationship with their learning and information processing approaches, and outcome variables such as learning results and performance on the other hand. In this respect, the framework of Self-Determination Theory (SDT), based on an ample research tradition and empirical studies, demonstrated its value in the field of education and was opted for as theoretical basis for the studies.

The present symposium more particularly focuses on learning environments differing regarding both the age group of the students (primary, secondary, higher education) and the specific area of learning (reading, physical education, learning strategies). Consequently, the studies optimise our understanding and insight in students' quality of motivation in diverse educational settings and in the role of motivation for students' engagement, learning, and competency development. Further, these studies from the SDT perspective provide effective and practically-oriented implications for teaching practice and teacher behaviour, specifically focussing on the significance of providing structure, a warm class-climate, and supporting autonomy in class.

Keywords: Motivation, Education, Learning

The relationship between recreational and academic reading motivation, reading frequency and comprehension in late primary school

Jessie De Naeghel¹, Hilde Van Keer¹, and Maarten Vansteenkiste²

¹ Department of Educational Science, UGent

² Department of Developmental, Personality and Social psychology, UGent

Given the importance of reading motivation for reading frequency and academic reading performance, an in-depth understanding of reading motivation is essential to keep children motivated and encourage them to read. The first aim of this study was to develop and validate a questionnaire measuring recreational and academic reading motivation (SRQ-Reading Motivation), based on self-determination theory, and to explore fifth graders' reasons for reading. Second, the relationship between reading motivation, reading engagement, reading frequency, and reading comprehension was studied to deepen our understanding of reading motivation. 1260 fifth graders completed the SRQ-Reading Motivation, 8 subscales of the Motivation for Reading Questionnaire (MRQ), a standardized reading comprehension test, a scale concerning reading frequency, and reading self-concept. Teachers also rated their students' reading engagement. Exploratory and confirmatory factor analyses indicate that both recreational and academic reading motivation comprise two factors: autonomous and controlled reading motivation. Comparisons of the SRQ-Reading Motivation with the MRQ, reading behavior, and performance confirm the construct validity of the instrument. Participants mainly report autonomous reading motivation in both contexts (recreational and academic). Structural equation models (SEM) highlight the importance of the quality of reading motivation (i.e., autonomous versus controlled motivation) in both the recreational and academic context, since autonomous reading motivation is associated with more positive reading behavior and better performance, and matters on top of students' quantity of motivation, as indexed by a positive reading self-concept. Finally, SEM indicates that reading engagement, rather than reading frequency, functions as a behavioral pathway between autonomous reading motivation and reading comprehension.

Enhancing deep level learning: the impact of motivation and teaching approach

Vincent Donche and Sven De Maeyer

Instituut voor Onderwijs- en Informatiewetenschappen, UA

In this study we examined to what extent students' learning strategies are influenced by teachers' teaching strategies when different student characteristics are controlled for. Student variables selected in this study are drawn from previous research, often investigating separately the relationship between learning characteristics and gender, age, personality traits (Busato *et al.*, 1999; Vermunt, 2005) and academic motivation (Vansteenkiste *et al.*, 2005). Data on student and teacher level were collected by means of self report questionnaires. By means of multilevel analyses on a sample of 1.147 first-year students (42 classes) and data collected of the teaching staff (N=90) from one higher education institute we estimated in a stepwise manner, different multivariate multilevel models. Results show that after control for gender and age, both personality traits and the quality of motivation (autonomous and controlled motivation) are related to learning strategies. Deep learning was positively predicted by autonomous motivation, and the personality traits openness and conscientiousness. Surface learning was positively predicted by controlled motivation, neuroticism and conscientiousness. After control of student characteristics, student-centred teaching strategies were found to enhance both deep and surface learning. The findings suggest that to further understand why students learn the way they do, the impact of teaching strategies, the quality of academic motivation and personality traits can not be neglected. Future studies are needed to further examine the interplay between these variables.

Motivation in Computer supported learning

Annelies Raes and Tammy Schellens

Department of Educational Science, UGent

The latest Eurobarometer on “Young People and Science” (2008) revealed that young Europeans (aged between 15 and 25) have a positive view about science and technology. However, when presented with several choices of scientific study, only a minority of these young people said they were considering them. These findings are in line with results of PISA 2006 which reveal that Flemish students, however they belong to the top performers in scientific literacy, are less motivated to learn science and this is especially true for female students. Educational research, as well as national standards, support collaborative learning and the integration of ICT as an answer to the decreased interest and motivation in science learning. This research deals with the use of Computer Supported Collaborative Learning (CSCL) as a promising approach for secondary science education. In particular, this study investigated the impact of the implementation of a CSCL-project on students’ motivation to learn science and their knowledge construction. An empirical study in 19 secondary science classes was conducted and 375 students were involved. Additionally, this study focused on gender differences. The results demonstrate the effectiveness of this innovative instructional approach in the attempt of making science accessible and interesting to all and to rectify the gender imbalance in science education

The mediating role of motivation in the relation between teaching behavior and physical activity in physical education

Nathalie Aelterman¹, Maarten Vansteenkiste¹, Lynn Van den Berghe², Jotie De Meyer²,
& Leen Haerens²

¹Department of Developmental, Personality and Social psychology, UGent

²Department of Movement and Sport Sciences

Self-Determination Theory proposes that teachers will optimally motivate their students if they support students’ basic psychological needs for autonomy, competence, and relatedness through the creation of an autonomy supportive, well structured and warm class climate. Previous studies measuring a need-supportive climate in physical education (PE) solely relied on questionnaires. For the present study need supportive behaviors were coded relying on video-images of 74 PE teachers during PE class (62.2% male, $M_{age} = 37.51 \pm 10.78$). Perceived need support was subjectively measured in 910 pupils by the Teacher as Social Context Questionnaire. The Behavioral Regulations in Exercise Questionnaire was used to determine autonomous motivation for PE. Physical activity levels of moderate of vigorous activity (MVPA) were measured by means of accelerometers. Mediation was assessed with a product-of-coefficient test (MacKinnon 2007). Perceived autonomy support, structure and relatedness support were significantly positively related to autonomous motivation (all $\chi^2(1) > 90.92$, $p < 0.001$). A borderline significant relationship was found between observed relatedness support and autonomous motivation ($\beta = 0.08$, $SE = 0.04$, $\chi^2(1) = 3.34$, $p < 0.07$). Autonomous motivation was, in turn, significantly positively related to MVPA ($\beta = 2.95$, $SE = 0.65$, $\chi^2(1) = 20.86$, $p < 0.001$). Neither perceived autonomy support, nor perceived structure or observed need support were directly related to MVPA. Only for perceived relatedness support a borderline significant relationship with MVPA was found ($\beta = 1.47$, $SE = 0.79$, $\chi^2(1) = 3.42$, $p = 0.06$). Relationships between perceived need support and MVPA were fully mediated by autonomous motivation for PE. The results of the present study, hence, confirm the mediating role of autonomous motivation in the relationship between teacher behaviour and physical activity levels during PE.

Numerical cognition: A developmental perspective

Organizer: Bert Reynvoet (KUL)

Chair: Bert Reynvoet

The question how non-symbolic and symbolic magnitude representations develop is very alive today. At the same time, many recent studies have tried to address the problems involved in atypical development of numerical understanding. In this symposium, four studies will be presented that aim at understanding these issues. In the first two presentations, the emphasis is on basic numerical skills: in the first presentation, the relation between the performance in a number matching task and mathematical achievement is examined. In the second presentation, several basic numerical skills are compared in a group of dyscalculic children with and without literacy problems. The last two presentations deal with calculation procedures. In the third presentation, the relation between basic number skills and calculation procedures is investigated. Finally, the fourth presentation aims at unraveling the origin of an arithmetic fact impairment in a dyscalculic patient.

Key words: Development, Numerical skills; Calculation procedures

What can the same-different task tell us about the development of magnitude representations?

Emmy Defever, Delphine Sasanguie, Mieke Vandewaetere, Bert Reynvoet

KUL

We wanted to clarify the moderators (i.e. numerical distance, size, physical similarity) that influence adults' and children's responses when conducting a symbolic (i.e. digits) and non-symbolic (i.e. dot collections) same-different task and to investigate whether these influences change over development. In addition, we examined the relationship between these moderators and mathematical ability. Our findings demonstrate that the responses of the youngest children in the symbolic same-different task were equally influenced by the magnitude information and the physical similarity of the digits, while the older age groups mainly used the physical similarity. In our non-symbolic task, the size of the distance effect was similar in all age groups, which suggests that the representations of non-symbolic numerosities are stable over development. The size of the distance effects was not influenced by subjects' mathematical ability, however, overall performance was especially when symbolic stimuli had to be matched.

Numeracy skills in dyscalculic children with and without literacy difficulties

Silke M. Göbel, Kristina Moll, & Magaret J. Snowling

University of York, UK

Deficits in math often co-occur with literacy problems. However, the impact of literacy difficulties in addition to math difficulties on different aspects of numeracy skills is not clear yet. In this paper numeracy skill profiles of dyscalculic children with and without additional literacy difficulties will be compared to control children. In total we tested 78 children aged 6 to 11 in three cognitive aspects proposed to be related to numeracy skills: basic number representations, spatial skills, and magnitude processing. The main questions addressed by this paper will be: Which cognitive aspects are affected in children with dyscalculia? Do dyscalculic children with additional literacy problems show (1) different, (2) additional or (3) similar but more severe deficits than children with dyscalculia only?

Numerical magnitude representation and children's individual differences in arithmetic strategy use

Kiran Vanbinst, Pol Ghesquière & Bert De Smedt

KUL

Although it has been suggested that the ability to represent numerical magnitudes is a key precursor for children's general mathematical achievement, little is known about its association with individual differences in specific mathematical skills, such as single-digit arithmetic and strategy use. This was precisely the aim of the current study. Participants were 61 typically developing children of third grade who completed a number comparison task, as well as an arithmetic task. In the arithmetic task, children were asked to indicate the strategy they used to solve the problem (retrieval or procedure) by means of verbal reports on a trial-by-trial basis. Findings revealed that numerical magnitude representation was an important correlate of individual differences in strategy use during single-digit arithmetic. More specifically, significant associations between number comparison and the speed of executing retrieval and procedural strategies were observed. Surprisingly, no associations between number comparison and strategy frequency were found. Number comparison also correlated with the speed of single-digit arithmetic, but not with accuracy. These findings indicate, in third grade, that the ability to represent numerical magnitudes is particularly related to the speed with which arithmetic strategies are executed.

A specific impairment of arithmetic facts in a case of developmental dyscalculia: A problem of verbal routine or of interference?

Alice De Visscher and Marie-Pascale Noël

Centre de Neurosciences Système et Cognition, UCL

While the heterogeneity of developmental dyscalculia is increasingly recognized (Wilson & Dehaene, 2007; Rubinsten & Henik, 2008), the different profiles have not yet been clearly established. Among the features underpinning types of developmental dyscalculia suggested in the literature, the arithmetic fact retrieval impairment is particularly prominent. In this paper we present a case study of a patient (DB) suffering from a specific and developmental arithmetic fact retrieval deficit with perfect cognitive capacities, and we test the main hypotheses derived from previous studies. More specifically, we evaluate whether DB's mathematical deficiencies are caused by a verbal routine deficit (Dehaene & Cohen, 1997; Wilson & Dehaene, 2007), using a task of completion of expressions, and a task requiring to pronounce the letter succeeding alphabetically the one displayed. Alternatively, these deficiencies could be caused by an executive dysfunction, which has been labelled as interference, lack of inhibition or memory updating deficit (Geary, 2004; Kaufmann, 2004; Deschuyteneer, Vandierendonck, & Muyliaert, 2006). We therefore use memory tasks with different contrasts (long versus short term memory, low versus high interference level, and verbal versus visual modality) to disentangle these different hypotheses. Results indicate that DB has a great sensitivity to interference - defined as a conflict between recollection and familiarity - hampering learning of very similar associations. This could explain her deficit in learning arithmetic facts.

Intergroup contact: Recent trends

Organizer : Alain Van Hiel, UGent
Chair: Oliver Christ, Marburg, Philipps University

The study of discrimination on the basis of race and ethnicity has been on the forefront of the research agendas of psychology, sociology, and law. The prime target here is to focus on remedies that counter discrimination. One of these remedies - intergroup contact (see, Allport, 1954) - has been considered one of the most powerful strategies to promote positive intergroup relations (e.g., Brown & Hewstone, 2005). Despite the explicit causal character of the intergroup contact theory, only a few studies have investigated the relationship between intergroup contact and prejudice within a longitudinal design. The contribution of Dhont et al. directly pertains to such methodological issues. Christ and Wagner focus on extended group contact, a variable that has generated promising results in recent research. Contact is often an abstract variable that consists of a frequency count or an assessment of overall quality, but what exactly happens in contact episodes remains largely unclear. The results of Van Acker et al. show that trying to avoid negative interethnic outcomes backfires in actual interactions, resulting in more negative self-beliefs and in more anxiety. Finally, in a large sample of minority students, Baysu and colleagues present a model in which positive and negative experiences of intergroup contact (i.e. intergroup friendship and perceived discrimination, respectively) jointly mediate the impact of ethnic school composition on minority school adjustment. All these studies thus show the dynamics and sometimes problematic features of intergroup contact, while attesting to its genuine positive effects on ethnic prejudice.

Keywords: Intergroup contact, Longitudinal effects; Social interactions

Contextual effect of intergroup contact: The role of ingroup norms

Oliver Christ and Ulrich Wagner

University of Marburg, Germany

The extended contact hypothesis suggests that social contexts, in which people have in general frequent intergroup contact, lead to positive intergroup attitudes over and above the effects of individual contact experiences with outgroup members. We provide evidence for this contextual effect of intergroup contact comparing persons living in social contexts with in general high versus low intergroup contact using two representative samples from Germany (N = 2,700) and Europe (N = 34,500) and applying latent-variable contextual models that integrate structural equation models and multilevel models. Our results show that this contextual effect is due to differences in ingroup norms about intergroup relations. Overall, results support the assertions of the extended contact hypothesis and underline the importance of ingroup norms in explaining intergroup contact effects.

Longitudinal Intergroup Contact Effects on Prejudice Using Self- and Observer-Reports

Kristof Dhont, Alain Van Hiel, Marleen De Bolle, & Arne Roets

Department of Developmental, Personality and Social Psychology, UGent

Longitudinal effects of intergroup contact on prejudice were investigated in a sample of 65 young adults (Sample 1) and a sample of their close friends (Sample 2, N = 172), adopting a full cross-lagged panel design. We first validated the self-report measure of intergroup contact from sample 1 with observer ratings from sample 2 by demonstrating that self-reports and observer ratings of contact were highly correlated. Moreover, we obtained significant cross-lagged effects of intergroup contact on prejudice with both contact measures, thereby providing a second validation for the use of self-reports of intergroup contact. Finally, by the use of latent change modeling we demonstrated that, although no overall significant change in contact and prejudice over time was found, there was meaningful variation in absolute change in the individual levels of intergroup contact and prejudice. In particular, some individuals showed increases while others showed decreases in contact or prejudice across time. Moreover, higher levels of intergroup contact at Time 1 were followed by larger subsequent decreases in prejudice between Time 1 and Time 2, and changes in contact were significantly and negatively related to changes in prejudice. Methodological implications of the findings are discussed.

Anxiety during interethnic interactions: behavioral implications and the role of participants' outlooks on the interaction

Kaat Van Acker, Batja Mesquita, Norbert Vanbeselaere, and Karen Phalet

Center for Social and Cultural Psychology, KULeuven

Interethnic interactions are often anxiety-inducing for both interaction partners. In order to understand the underlying processes, we investigated in a standardized study the power of participants' outlooks on the interaction to predict this anxiety. In this study, 83 Flemish-Belgian participants interacted with either a Flemish-Belgian or a Turkish-Belgian confederate who were blind to the hypotheses of the study. The interactions consisted of a conversation about either a culture-sensitive or a neutral topic. All interactions were videotaped and coded. Moreover, immediately after the interaction, participants answered questionnaires on their focus during the interactions, as well as on their emotional experience. We hypothesized that prevention focus, the focus on avoiding harmful outcomes, would increase participants' perception that they come across as prejudiced and judgmental, in the different-ethnicity but not in the same-ethnicity interactions, and this would trigger more anxiety in these interactions. Promotion focus, the focus on achieving an interesting, pleasurable interaction, was expected to decrease participants' perception that they come across as prejudiced and judgmental, in the different-ethnicity but not in the same-ethnicity interactions, and thus would predict less anxiety in these interactions. Indeed, participants trying to avoid harmful outcomes in interethnic interaction (especially about culture-sensitive topics) were more convinced that they came across as prejudiced and experienced more anxiety, both as self-reported and as observed. Participants trying to achieve an interesting interethnic interaction, thought that they gave a less prejudiced impressions and were less anxious. The results illustrate that trying to avoid negative outcomes backfires in interethnic interactions, resulting in more negative self-beliefs and in more anxiety.

Ethnic school composition and minority school adjustment: The role of positive and negative majority group contact

Gülseli Baysu¹, Karen Phalet¹, and Rupert Brown²

¹ Center for Social and Cultural Psychology, KULeuven

² Sussex University, UK

Cultural diversity is a controversial issue in current multicultural societies and schools. Yet, few studies look at the processes through which ethnic school composition, i.e. proportion of minority students, affects school adjustment outcomes, i.e. school performance, satisfaction and self-efficacy. We propose a model in which positive and negative experiences of intergroup contact (i.e. intergroup friendship and perceived discrimination respectively) jointly mediate the impact of ethnic school composition on minority school adjustment. We examine how these processes play out in different intergroup contexts by comparing Turkish minorities ($N = 1060$) across four cities in Austria and in Belgium. Results reveal that the effects of self-reported ethnic school composition on school adjustment are fully mediated by intergroup friendship and perceived discrimination. Across contexts, higher proportions of minority students in school relate to impaired school adjustment through restricting intergroup friendship and increasing perceived discrimination. Additionally, an inverted U-shaped relationship was observed between ethnic school composition and perceived discrimination so that the proportion of minority students in school increases perceived discrimination up to a certain level, beyond which it levels off. This research articulates the processes through which ethnic school composition affects minority school adjustment and highlights the key role of intergroup relations in minority school adjustment.

New perspectives on the specialization of face processing

Organizer: Valerie Goffaux, Maastricht University and Luxemburg University
Chair: Valerie Goffaux

Faces are complex visual stimuli that are of paramount importance for social interaction. Behavioral, neuroimaging and electrophysiological research suggests that the perception of faces relies on specialized visual mechanisms. It was indeed shown that (1) faces capture attention automatically, (2) a network of brain areas in the ventral temporal lobe responds selectively to faces, and (3) face perception is impaired by inversion in the picture plane more than other object perception. Electrophysiological studies further indicated that face specialization arises early, approximately 170 ms after face stimulus onset.

However, what determines the specialization of face processing and whether it can be modulated by cognitive factors is a matter of debate. The researchers invited to speak at the symposium address these questions.

The work of Christel Devue explores the face information underlying the automatic attentional capture effects in humans. She will present behavioral evidence that visual attentional system is tuned to second-order face information. Recent work by Valerie Goffaux indicates that face-specialized processing is tuned to horizontally-oriented information. She will present electrophysiological evidence that this tuning arises early in high-level visual cortex.

The recent neuroimaging work of Marijke Brants shows that face-selective cortical regions are specialized for stimuli that are similar to faces, and not for objects of expertise, as proposed by influential expertise models of face processing. Susanne Quadflieg recently elucidated how cultural stereotypes modulate face processing in the brain. She will provide evidence that cortical regions specialized for face perception are sensitive to the stereotype-related status of individuals.

Keywords: Face perception; specialization; cognitive factors

Is oculomotor capture by faces due to saliency?

Christel Devue^{1,2}, Artem V. Belopolsky¹, and Jan Theeuwes¹

¹ Cognitive Psychology, Vrije Universiteit Amsterdam, the Netherlands

² Cognitive Science Department, ULG

Long-lasting debates question whether faces are special stimuli treated preferentially by our visual system or whether prioritized processing of faces is simply due to increased saliency of their constituting features. To examine this issue, we used a visual search task in which participants had to make a saccade to the circle with a unique color among a set of six circles. Critically, there was a task-irrelevant object located next to each circle. We examined how an upright face, an inverted face or a butterfly, presented near the target or non-target circles affected eye movements to the target. Upright (13.12%) and inverted faces (10.8%) located away from the target circle captured the eyes more than butterflies (8.5%), but upright faces captured the eyes more than inverted faces. Moreover, when faces were next to the target, upright faces, and to some extent inverted faces, facilitated the saccades towards the target. Faces are thus salient and capture attention. More importantly however above and beyond their raw saliency based on low-level features, canonical upright faces capture attention stronger than inverted faces. Therefore, faces are 'special' and our visual system is tuned to their meaning and not only to low-level features making up a face.

Scrambling horizontal face structure: behavioral and electrophysiological evidence for a tuning of visual face processing to horizontal information

Valerie Goffaux^{1,2}, Christine Schiltz², Corentin Jacques^{3,4}

¹ Cognitive Neuroscience Department, Maastricht University, The Netherlands

² EMACS, Department of Psychology and Educational Sciences, University of Luxembourg, Luxembourg

³ Department of Psychology, Stanford University, USA

⁴ ISPSY, Research Institute for Psychological Science, UCL

Filtering faces to remove all but the horizontal information largely preserves behavioral signatures of face-specific processing, including the face inversion effect (FIE). Conversely, preserving only vertical information abolishes this effect. In contrast to previous studies which used filtering, the present studies manipulated orientation content of face images by randomizing Fourier phase spectrum in a narrow horizontal orientation band (H-randomization) or vertical orientation band (V-randomization). Phase-randomization was performed on face images in which spatial frequency amplitude spectrum (SF-AS) was either left unaltered or equalized across all SF orientations. We further investigated the time course of horizontal tuning using event-related potentials (ERP). We observed that (1) upright faces were best discriminated when the horizontal structure was preserved (i.e. V-randomization) compared to H-randomization. (2) This phase-randomization effect was eliminated by inversion, resulting in (3) a smaller FIE for H-randomized than V-randomized faces. This pattern was still present but was less consistent when SF-AS was equalized across SF orientations, suggesting that SF-AS in horizontal orientation contributes to the horizontal tuning of face perception. ERP evidence of horizontal tuning for upright face processing was observed in the N170 time-window, a well-known face-sensitive electrophysiological component. The N170 was delayed for H-randomized compared to V-randomized faces. Additionally, and in line with behavioural data, face inversion increased N170 latency to a smaller extent for H-randomized compared to V-randomized. Altogether, our findings indicate that horizontal tuning is a robust property of face perception that arises early in high-level visual cortex.

Activation of fusiform face area by Greebles is related to face similarity but not expertise

Marijke Brants^{1,2}, Johan Wagemans², Hans P. Op de Beeck¹

¹ Laboratory of Biological Psychology, KULeuven

² Laboratory of Experimental Psychology, KULeuven

Some of the brain areas in the ventral temporal lobe, such as the fusiform face area (FFA), are critical for face perception in humans, but what determines this specialization is a matter of debate. The face specificity hypothesis claims that faces are processed in a domain-specific way. Alternatively, the expertise hypothesis states that the FFA is specialized in processing objects of expertise. To disentangle these views, some previous experiments used an artificial class of novel objects called Greebles. These experiments combined a learning and fMRI paradigm. Given the high impact of the results in the literature, we replicated and further investigated this paradigm. In our experiment eight participants were trained for ten 1-hour sessions at identifying Greebles. We scanned participants before and after training and examined responses in FFA and LOC. Most importantly, and in contrast to previous reports, we found a neural inversion effect for Greebles before training. This result suggests that people process the 'novel' Greebles as faces, even before training. This prediction was confirmed in a post-experimental debriefing. In addition, we did not find an increase of the inversion effect for Greebles in the FFA after training. This indicates that the activity in the FFA for Greebles does not depend on the degree of expertise acquired with the objects, but on the interpretation of the stimuli as face-related.

Stereotype-Based Modulation of Person Perception

Susanne Quadflieg^{1,3}, Natasha Flannigan¹, Gordon D. Waiter², Bruno Rossion³, Gagan S. Wig⁴, David J. Turk¹, & C. Neil Macrae¹

¹ School of Psychology, University of Aberdeen, Scotland/UK

² Aberdeen Biomedical Imaging Centre, University of Aberdeen, Scotland/UK

³ Institute of Research in Psychology and Institute of Neuroscience, UCL

⁴ Department of Neurology, Washington University, USA

A core social-psychological question is how cultural stereotypes shape our encounters with other people. While there is considerable evidence to suggest that unexpected targets – such as female airline pilots and male nurses – impact the inferential and memorial aspects of person construal, it has yet to be established if early perceptual operations are similarly sensitive to the stereotype-related status of individuals. To explore this issue, the current investigation measured neural activity while participants made social (i.e., sex categorization) and non-social (i.e., dot detection) judgments about men and women portrayed in expected and unexpected occupations. When participants categorized the stimuli according to sex, stereotype-inconsistent targets elicited increased activity in cortical areas associated with person perception and conflict resolution. Comparable effects did not emerge during a non-social judgment task. These findings begin to elucidate how and when stereotypic beliefs modulate the formation of person percepts in the brain.

Oral session on Neuroscience**Phenomenology, function, and neural correlates of mind-wandering**

David Stawarczyk, Steve Majerus, Arnaud D'Argembeau

Department of Cognitive Sciences, ULg

Mind-wandering refers to the occurrence of thoughts whose content is both decoupled from stimuli present in the immediate environment and unrelated to the task currently being carried out. In a series of experiments, we used a newly designed experience sampling method to assess mind-wandering episodes and to distinguish them from other kinds of distractions (irrelevant interoceptive/exteroceptive sensory perceptions and interfering thoughts related to the appraisal of the current task). In Experiment 1, we examined the impact of mind-wandering on performance of the Sustained Attention to Response Task (SART; a Go/No-Go task). Analyses demonstrated that episodes of mind-wandering impair SART performance to the same extent as irrelevant sensory perceptions. In Experiment 2, we focused on the content of mind-wandering in order to assess its possible functions. We observed that most of reported mind-wandering episodes refer to the anticipation and planning of future events. Furthermore, this “prospective bias” was increased when participants’ attention had been oriented toward their personal goals prior to performing the SART. In Experiment 3, we examined the neural correlates of mind-wandering using functional magnetic resonance imaging. The results showed that the brain regions that were more active during episodes of mind-wandering are similar to the regions that have been associated with imagining future events in previous studies. Together, these results suggest that although episodes of mind-wandering negatively impact current task performance, they may have important adaptive value and could, in particular, play a key role in planning for the future.

Keywords: Mind-wandering; Experience sampling; Future thinking

Is sleep-related consolidation impaired in focal idiopathic epilepsies of childhood? A pilot studyCharline Urbain^{1,2}, Tiziana Di Vincenzo¹, Philippe Peigneux¹ and Patrick Van Bogaert^{2,3}¹ Neuropsychology and Functional Neuroimaging Research Unit, ULB² Laboratoire de Cartographie Fonctionnelle du Cerveau (LCFC), Erasme Hospital, ULB³ Department of Pediatric Neurology, Erasme Hospital, ULB

We investigated sleep-related declarative memory consolidation in four children with focal idiopathic epilepsy. In a population of healthy control children, recall of learned pairs of words was increased after a night of sleep, but not after a daytime wakefulness period. In epileptic children (1 case of benign epilepsy with centro-temporal spikes, 1 case of benign childhood epilepsy with occipital paroxysms, and 2 cases of epileptic encephalopathy (EE) with continuous spike and waves during slow-wave sleep, CSWS), recall performance significantly decreased overnight, suggesting impairment in sleep-related declarative memory consolidation. Hydrocortisone treatment in one patient with EE with CSWS resulted in normalization of the sleep EEG together with normalization of overnight memory performance, which was not the case in the other EE/CSWS patient whose sleep EEG was only partially improved. These preliminary results suggest that interictal epileptiform discharges in idiopathic focal epilepsies may disrupt the brain processes underlying sleep-related memory consolidation.

Keywords: Sleep-related consolidation processes; Interictal epileptiform discharges; declarative memory

The Role of Mirror Neurons in Action Understanding: Clues from Upper Limb Aplasia

Gilles Vannuscorps^{1,2}, Michael Andres³, and Agnesa Pillon^{1,2}

¹ Université catholique de Louvain, Belgium

² Fonds National de la Recherche Scientifique

³ University of Ghent, Belgium

What is the role of mirror neurons (MN) in action understanding? Two kinds of MN have been observed in the monkey and assumed in humans (Rizzolatti & Sinigalia, 2008): “strictly congruent” MN, which discharge in an observer’s brain when an observed action implies the same motor act as an action represented in his motor repertoire, and “broadly congruent” MN, which discharge when an observed action has the same goal as an action represented in the observer’s motor repertoire, even if it involves another effector (Gazzola & Keysers, 2007). According to the “direct-matching hypothesis” (Rizzolatti et al., 2001), MN play a “fundamental” role in action understanding by allowing the observer to activate his own motor representation of an observed action. Here we aimed at evaluating their contribution to fast and accurate action understanding.

We report the study with DC who suffers a congenital absence of arms and hands (limb aplasia) but who nonetheless is able to perform some manual actions with his feet. We presented to DC and six control subjects non-manual and manual actions (videotapes, photographs, pantomimes) they had to name as fast as possible. These actions were either (i) actions DC had already performed with the same effector, (ii) manual actions DC performed with his feet, or (iii) actions DC had never performed. The results indicated that DC named equally well all three types of actions when compared to the controls. These findings showed that the involvement of MN is not mandatory for fast and accurate action understanding.

Keywords : Mirror neurons, Action understanding, Upper limb aplasia

Cue-switch and task-switch effects rely on distinct neural systems.

Wouter De Baene^{1,2,3} and Marcel Brass^{1,2}

¹ Department of Experimental Psychology, Ghent University

² Ghent Institute for Functional and Metabolic Imaging, Ghent University

³Research Foundation Flanders (FWO)

The cued task-switching paradigm is often used to study cognitive control. In this paradigm, people are generally slower and make more errors when switching tasks compared to repeating the same task. When mapping two cues to each task, these switch costs could result from a mixture of cue-switch effects (which are thought to reflect cue-encoding) and task-switch effects (which are thought to reflect task set preparation). In the behavioural literature, there has been a lively debate on the degree to which cue-switch effects and task-switch effects indeed reflect different phenomena. In the present study, we used fMRI to examine whether and to what extent the underlying neural networks of these two effects overlap. We found the frequently observed preparation-related activation in fronto-parietal areas to be involved in task preparation, but not in cue-encoding. Higher activation when the cue switched was observed in two separate areas: the left middle occipital/inferior temporal gyrus and the caudal cingulate zone. These results suggest that the fronto-parietal areas displaying preparatory activity in task-switching paradigms are not engaged in cue-encoding and that task preparation and cue-encoding engage totally distinct brain areas.

Keywords: Switch effects; fMRI

Bereavement

Organizer : Emmanuelle Zech, UCL

Chair : Emmanuelle Zech

The death of a loved one is an experience that occurs some time or other in nearly everyone's life. Many of us will suffer multiple losses long before we reach old age, when such events occur with increasing frequency. Bereavement is a very frequent phenomenon, and it is a personally impactful life event for most people. This symposium proposes different perspectives on the processes that are at hand when people grieve for their loved ones. Investigations that addressed the predictors of adjustment as well as cognitive and coping processes that may explain why people develop pathological grief reactions will be presented. In particular, the role of avoidant processes that are traditionally considered to be maladaptive will be discussed. Suggestions for clinical interventions will also accordingly be proposed.

Keywords: Grief processes; Adjustment; Avoidance and confrontation

Grief of cancer patients' spouses: evaluation and subjective experience

Léonor Fasse¹, Cécile Flahault¹, Anne Brédart¹, Sylvie Dolbeault¹, and Serge Sultan²

¹ Institut Curie, Université Paris Descartes, France

² Université Paris Descartes, France

Although spouses of cancer patients in end-of-life are considered by public authorities as vulnerable people, few empirical studies have explored their daily caregiver experience in coping with impending death, and when death occurs, their grief process. This research aims at identifying sociodemographic and psychological factors related to the spouse's psychosocial adjustment to the loss. In a first study, spouses of palliative cancer patients (N =40) were assessed at T1 (from 1 to 6 months before death) on potential predictors of social and emotional adjustment at T2 (6 months after death). These included: (1) Attachment (Brennan, Clark and Shaver, 1998); (2) Burden (Montgomery and Borgatta, 2000); (3) Coping with bereavement (Carver, Scheir and Weintraub, 1989; Casserta and Lund, 2007); and (4) Personality (Plaisant et al, 2008). Adjustment at T1 and T2 was evaluated with depressive (Beck, 1961) and grief symptoms questionnaires (Prigerson et al., 1995) as well as using personal growth (Tedeschi and Calhoun, 1996) and social adjustment (Weissman et al., 1974) measures. In a second qualitative study, semi-structured interviews (at T1 and T2) were conducted with the spouses to examine their subjective experience of caregiving, their grief process and needs, and the perceived factors of vulnerability, resilience and dysfunctioning. Data are now being analyzed using Grounded Theory, a systematic and standardized method of content analysis. We expected that the burden experienced in end-of-life care, as perceived by the spouse, and his/her attachment style to the ill person will be crucial predictors of his/her psycho-emotional adaptation to loss. The results will be discussed.

On the necessity of multiple and flexible strategies to cope with bereavement: Theory, empirical findings and clinical perspective

Emmanuelle Zech

Center for Research on Health and Developmental Psychology, UCL

The Dual Process Model of Coping with Bereavement (Stroebe & Schut, 1999, 2010) specifically addresses coping strategies (i.e., processes, strategies, or styles) used for managing bereavement. It was developed to better explain individual differences in the ways people come to terms with the loss of a loved one. It defines two categories of stressors related to bereavement, those directly related to the loss experience itself and secondary stressors that result from bereavement (called restoration-oriented). It also includes a necessary oscillation process between different types of stressors and coping strategies. It provides a framework for understanding differences in types of complicated grief reactions and in patterns of reactions according to attachment (Stroebe, Schut, & Stroebe, 2005) and gender (Stroebe, Stroebe, & Schut, 2001). The model and its predictions, a number of empirical studies and their findings, as well as the clinical implications of the model will be presented and discussed.

Confrontation and avoidance over grief-related thoughts among individuals suffering from prolonged grief

Emily Delespaux and Emmanuelle Zech

Center for Research on Health and Developmental Psychology, UCL

Pathological grief following the death of a loved person is known to be a mental illness which is associated with comorbidities and even a higher risk of mortality. In order to understand why some people develop pathological grief and why some do not, pathological cognitive processes that could underlie such maladjustment were investigated. The flexible oscillation between confrontation and avoidance of grief-related information is postulated to be necessary for coping with grief. On the contrary, the impairment in the oscillation process should lead to pathological grief. To test this hypothesis, in a first study, 319 bereaved people answered an online questionnaire addressing confrontation and avoidance processes. In support of the hypothesis, results indicated that confrontation without avoidance led to more intense grief reactions compared to the use of both confrontation and avoidance processes.

Addressing more specifically those who do not use avoidant processes, we tested the hypothesis that a deficit in grief-related avoidance would be responsible for the process of grief maladjustment. In a second study, 38 bereaved people performed an emotional Stroop task after a 5-min period of avoidance of grief-related information. An implicit rebound effect of grief-related information during the Stroop task was expected for those having more severe grief reactions. Results will be presented, discussed and further studies will be considered.

Searching for a bearable distance after the loss of a child: A qualitative analysis

An Hooghe

Centre for Marital, Family and Sex Therapy, University Hospital Leuven

A common theme in the grief literature is the view that avoiding intense feelings of grief is maladaptive in coping with the loss of a loved one. Correspondingly, talking about one's grief is often favoured over not talking. Drawing on a thematic analysis, with a special attention to a metaphor used by a bereaved couple, we suggest the complexity of proximity regulation as a way to regulate emotional intensity in the grief process. Most parents want to keep their child close and keep memories alive, and at the same time stay at a bearable distance from agonizing and overwhelming anguish associated with the death. We propose that emotion regulation processes in grieving entail a continuing and dynamic search for a bearable distance from the pain of the loss, which is also reflected in the talking and not talking about the (loss of the) child in the grief process. More than an individual challenge to monitor one's distance from the emotional core of grief, this distance is also guarded by a relational dynamic between the partners. Implications for clinical practice will be discussed thoroughly.

Dynamic perspectives in forensic psychology

Organizers: Kasia Uzieblo; Jan Winter

Chairs: Kasia Uzieblo; Jan Winter

For the past decades forensic psychology research has known a remarkable boost in both quantity and quality. The incorporation of rigorous scientific designs has led to better theoretical insights into the various offender groups, the common mental health issues in criminal populations, the forensic utility of diagnostic instruments and important improvements of clinical forensic work. Still we face many challenges. A very significant challenge is to move away from static, one-snapshot designs and assessment methods to more dynamic, and therefore more ecological valid alternatives, in order to create a 'bigger picture'.

This symposium will address several possibilities. For example, the benefits of broadening the assessment context are demonstrated in Uzieblo et al. study. They investigated how the psychosocial and relational well-being of spouses interact with the profiles of their psychopathic partners. Also, Koeck presents several arguments how an experimental Choice Reaction Time paradigm has the potential to tie the measurement of sexual preference, classification and risk assessment more validly together. Another study by Melis et al. explored how interpersonal traits and influence strategies in co-offending could be better understood within the imbedded social network. Finally, Winter et al. report on their efforts of taking time into account by integrating the offender-victim interaction in rapes through a novel sequence analysis method.

In this symposium, we hope to present convincing evidence that forensic psychology remains a dynamic, ever evolving research field where context is crucial. We offer several promising research venues to capture challenging phenomena, and translate the implications for policy makers and practitioners.

Keywords: Offending; Forensic psychology

The Fatal Parent: Living with a Psychopathic Partner

Kasia Uzieblo¹, Barbara Soetens¹, & Patricia Bijttebier²

¹ Lessius Antwerp

² K.U.Leuven

Psychopathy is characterized by callousness-unemotionality, a manipulative, deceitful interpersonal style, and an antisocial, impulsive lifestyle. These traits are related to a wide range of behavioral correlates, like violent behavior and sexual promiscuity, all hampering the life of the psychopathic individual. Past research has mainly focused on the psychopathic individual himself, often disregarding the environment of this individual. Consequently, our knowledge regarding the effect of psychopathy on the well-being of those living with a psychopathic individual, remains mainly restricted to case studies. These case reports suggest that partners of psychopathic individuals tend to struggle with psychosocial problems (e.g., symptoms of depression) and often endure several types of abuses (e.g., physical abuse). In the present study, we aimed to expand scientific knowledge on the manifestation of psychopathy within a relational context. More specifically, we investigated the relationship between psychopathic traits in the male partner and the psychosocial and relational well-being of the female partner. We expected that psychopathic traits in the male partner would be related to a diminished psychosocial and relational well-being in the female partner. Hundred thirty-six heterosexual couples participated in the current study. The Self-Report Psychopathy Scale III (SRP-III; Paulhus, Hemphill, & Hare, 2003), the Dutch Relationship Questionnaire (NRV; Barelds, Luteijn, & Arrindell, 2003) and the International Self-Report Delinquency (ISRDI; Junger-Tas, 1994) were assessed in the male partner. In the female partner, the NRV, and the Symptom Checklist-90 (SCL-90; Arrindell & Ettema, 2003) were administered. Preliminary results will be presented.

Classification, sexual preference and risk assessment: Concurrent validity

Siegfried Koeck

OPZC Rekem, Belgium

Studies using indirect methods to assess the sexual preference of child molesters, vary in underlying theories and techniques, which prevents any reliable generalization. Moreover, results refer to relatively small samples that differ on several crucial variables (e.g., variance in victim gender and age). After a brief review of existing research, this paper deals with a study in progress that (1) starts off with a clear, criteria based sample description, (2) implements the Choice Reaction Time procedure to assess sexual preference, and (3) includes a risk assessment procedure. It is expected that child molesters who are classified as highly fixated toward children show more latency toward child stimuli in comparison to low fixated child molesters and will achieve higher scores on an actuarial risk scale. This way, evidence of concurrent validity between indirect measures of sexual preference, classification and risk assessment could facilitate a more comprehensive and efficient clinical approach of child molesters.

Interpersonal adapt? Influence within a co-offending context

Sarah Melis¹, Jan Winter¹, Gina Rossi¹, & Louise Porter²

¹ VUB

² Griffith University, Brisbane, Australia

Group crime is a frequent and dynamic phenomenon. This study aims to examine how offenders influence each other to co-offend. Participants included male, adult offenders ($n = 43$) and a matched community sample ($n = 36$). Two questionnaires were administered, gauging the interpersonal style and the preference of influence tactics in a legal and an illegal scenario. 33 offenders were subsequently interviewed about their personal experience in persuading others to co-offend. The results revealed that offenders exhibited more dominant-boastful ($r = .28, p < .01$) and rough-aggressive ($r = .29, p < .01$) behavior than non-offenders. Both samples did not significantly differ from each regarding the choice of influence tactics in the legal scenario. However, each interpersonal quadrant was related to a certain set of tactics in the community sample, but offenders' tactics were only related to a dominant interpersonal style. In an illegal scenario offenders chose less often rational persuasion ($r = .37, p < .01$) and ingratiation ($r = .31, p < .05$), and their tactics were only related to a hostile interpersonal style. The qualitative analysis lead to several new, crime specific influence tactics and revealed the time consuming process of persuading someone to co-offend. A theoretical model with several pathways of persuasion according to the social context is proposed. The results support the hypotheses that offenders were not as prosocial and interpersonal flexible as they perceived themselves. The qualitative analysis generated several improvements and hypotheses for further research.

Does the offender-victim interaction matter? Examining local cue-response contingencies in stranger rapes

Jan Winter, Gina Rossi, Julie Ivaldi, and Olivia Serruys

VUB

Criminal profiling (CP) has been traditionally informed by attempts to use existing or create novel classifications of offenders' motives and behaviours. By averaging out the situational variance and neglecting the unfolding dynamics of rape as an *event*, studies conducted on these offences so far appear to paint a picture of "*what was*" rather than "*what happened*". However, criminological and other studies on offence pathways and rape avoidance clearly *do* highlight the importance of various situational and contextual factors on criminal behavior. Consequently, we aimed to apply whole event sequence analysis on a sample of serious sexual assaults to explore the effects of physical and verbal victim resistance strategies on various forms on offender physical, sexual and verbal behaviour. Using a novel method of sequence analysis (i.e., the proximity coefficient; Taylor, 2006; Taylor & Donald, 2007), we investigated the offence dynamics in a sample of Belgian attempted and completed rapes ($N=201$). The results point to a variety of possibilities regarding unfolding offence events, forms of victim resistance, which are often due to offence location and time of the offence. Therefore, we propose that research in criminal profiling would benefit immensely by particularly exploring the offender-victim interaction through a sequential analysis of local-cue response contingencies. If certain cue-response contingencies can be proven to be consistent within or even across certain well-defined situations, they could also be successfully used for the purpose of linking a series of crimes to a common offender.

Obsessive compulsive symptoms across the life span from a clinical, vocational and educational perspective

Organizer: Barbara De Clercq

Discussant: Filip De Fruyt

The present contributions all share their focus on the area of obsessive-compulsive symptoms across the Axis I (Obsessive-Compulsive Disorder) and Axis II (Obsessive-Compulsive Personality Disorder) conditions, but address unique aspects in terms of the population, life stage, and potential features of impairment. The first paper explores this much debated issue of impairment from a recently developed taxonomy that is believed to be sensitive to severity characteristics associated with personality pathology, such as the Axis II obsessive-compulsive personality disorder symptoms. In line with previous studies, the lack of overall impairment associated with obsessive-compulsive personality disorder symptoms in adult life can be considered a notable finding of this first study and closely connects with the longitudinal results of the second study, that suggests no longitudinal associations of obsessive-compulsive personality disorder symptoms with career (mal)adaptation. These findings are especially interesting, because of the sharp contrast with the well-established evidence on impairment that is associated with the traditional Axis I Obsessive-Compulsive Disorder(OCD). Both study 3 and 4 underscore this OCD-related functional impairment from a childhood perspective and suggest that children with high scores on OCD-related measures are particularly at risk to dysfunction over time and across different situational contexts.

Keywords: Obsessive compulsive; Personality, Life span

Delineating functional impairment associated with obsessive-compulsive personality symptoms in psychiatric patients

Leen Bastiaansen¹, Gina Rossi¹, & Filip De Fruyt².

¹ Vrije Universiteit Brussel

² Ghent University

Although some aspects of psychosocial functioning have been studied in the context of obsessive-compulsive personality disorder (OCPD) symptoms (e.g., Skodol et al., 2002), a detailed and differentiated picture has not yet been drawn. The current study aims to focus specifically on the level of personality functioning, as measured by the Severity Indices of Personality Problems (SIPP-118), in relation to OCPD symptoms.

The SIPP-118 was administered to a heterogeneous sample of 145 psychiatric inpatients, along with the Assessment of DSM-IV Personality Disorders (ADP-IV) questionnaire, from which dimensional PD scores were obtained. First, OCPD scores were compared with other PD scores in how strong they correlated with the total SIPP-118 score. A multiple regression analysis was then executed in order to detect which SIPP-118 facets were specifically associated with OCPD symptoms. These facets were then correlated with each single OCPD criterion in order to obtain a more detailed picture.

Consistent with previous literature (Skodol et al., 2002), the OCPD scale showed the weakest correlation with functional impairment, as measured by the SIPP-118. However, when shifting to the facet level, some SIPP-118 facets appeared particularly related to OCPD symptoms, i.e. 'cooperation'(-), 'enjoyment'(-), and 'feeling recognized'(-). Because these facets also showed a specific pattern of correlations with the individual OCPD symptoms, we believe our results contribute to a better understanding of this clinical construct, and how each symptom is differentially related to functional impairment. Diagnostic repercussions will be discussed.

Longitudinal associations between obsessive-compulsive symptoms and vocational behavior

Bart Wille

Ghent University

A study is presented on the longitudinal stability and validity of Five-Factor Model (FFM) personality disorder (PD) compounds over 15 years. Since the development of the FFM PD counts methodology, a series of studies have examined aspects of concurrent validity with regard to clinically relevant criteria. At this time, there are no empirical studies that address the longitudinal validity of FFM PD counts, like the Obsessive-Compulsive PD count, to predict aspects of career adaptation. The study presented here expands upon the extant research by exploring the stability of the FFM PD compounds in a longitudinal sample of undergraduates ($N = 251$) entering the labor market, and examines their ability to predict career adaptation and success, a life domain in which functional impairment may be unfolded as explicitly mentioned in the general DSM definition of a PD. The results demonstrated that FFM PD compounds (a) were highly stable across time, including risk classification beyond specific FFM PD cut-offs, and (b) all –except the Obsessive-Compulsive PD count– predicted a number of career success criteria substantially and beyond FFM domains. The implications of this research for the assessment of dark side traits and the dark side of bright traits in psychological assessment are discussed.

A typological approach of obsessive-compulsive symptoms at young age: Personality correlates and longitudinal associations with depression and quality of life

Elien De Caluwé, Marleen De Bolle, & Barbara De Clercq

Ghent University

Objective: The current study attempts to validate a typological approach of obsessive-compulsive (OC) symptoms at a young age. General and maladaptive trait aspects of the resulting classes are explored, and the predictive validity of class membership probability for later depression and quality of life is examined across a two-year time span.

Methods: Latent class analysis on maternal ratings of the Obsessive-Compulsive Child Behavior Checklist (OCS CBCL) items was conducted to identify OC classes in a sample of 710 Flemish referred and non-referred children and adolescents (54.5% girls, mean age = 10.72 years, $SD = 1.37$), who were assessed twice in two years. Cross-sectional and longitudinal associations were explored using Pearson correlation analysis.

Results: The present study suggests 3 latent classes, including a typical OC class, a moderate odd-perfectionist class, and a no symptom class. Each class shows differential trait correlates, and the OC class is associated with depression and impaired quality of life over time.

Conclusions: A specific group of children displays a scoring profile on the OCS CBCL items that is associated with an increased risk of dysfunction over time.

An update on obsessive-compulsive disorder and school functioning

David C. Rettew

University of Vermont, College of Medicine, Department of Psychiatry, USA

Obsessive-compulsive disorder is a common condition that affects children of all ages and in multiple settings. Many of the symptoms of OCD can be manifested in the school setting and can appear on the surface as behavioral problems in other areas such as inattention or oppositionality. Other symptoms of OCD such as refusal to use school lavatories due to contamination concerns can lead to some medical complications such as constipation. The occurrence of OCD symptoms in school, however, allow for opportunities for both identification and intervention. While punishment of OCD symptoms in the school setting are counterproductive, incentives can help motivate efforts to overcome symptoms. Other specific school based interventions can also help OCD children, many of whom have average or above average intelligence, succeed maximally in the school setting. Some challenges can arise in distinguishing between OCD and typical limit testing behaviors.

Oral session on Social Cognition

Could I have seen it coming? The protective function of hindsight bias

Marchal Cynthie^{1,2} & Klein Olivier¹¹ Université Libre de Bruxelles² Fonds National de la Recherche Scientifique

When people hear that an interpersonal aggression took place, they often overestimate its predictability. This “hindsight bias” may lead to victim blame. We examined the socio-motivational function of this process. Specifically, we posit that identification with the victim (IdV) may lead people to care for the victim’s fate and thereby alter their perception of the aggression. Minimizing the perceived predictability of the aggression may exonerate victims, and by extension the self, from their failure to prevent an aggression. In experiment 1, women read a testimony in which a male performed ambiguous behaviors towards a female. This account either ended in a sexual aggression (hindsight) or not (foresight). Participants were then asked to answer to some questions that presented the information either with the active voice (he aggressed her) or with the passive one (e.g. she was aggressed by the man). We assumed that passive voice would yield participants to take the perspective of the victim. As expected, in hindsight condition, participants in a passive voice condition identified more with the victim position and blamed the aggressor more than in active voice condition. They also perceived the aggression as less predictable. Study 2 replicated these findings on IdV and aggressor’s derogation in an academic setting. This aggression was judged as mostly determined by the aggressor in a passive hindsight condition. These results suggest that IdV may increase the aggressor’s blame and in some cases even, attenuate aggression predictability in order to minimize potential self-blame.

Keywords: Hindsight bias, Position identification with victim, Derogation

Communicating Stereotypes: Stereotype-incongruent information about a higher-status group may change the stereotype of a lower-status group

Stefanie Maris^{1,2} & Vera Hoorens²

¹ Fonds voor Wetenschappelijk Onderzoek Vlaanderen

² Katholieke Universiteit Leuven

Stereotypes are generally believed to resist change. This belief is based on the observation that stereotype-incongruent information does not always reduce stereotypes as much as would normatively be expected. In contrast with the mainstream belief, we recently showed that stereotypes may sometimes change all too easily. More specifically, in the case of two mutually exclusive groups stereotype-incongruent information about one group (the target group) may not only change the stereotype of that group but also the stereotype of the other group (the alternative group). In the current studies we tested whether this Communicating Stereotype (CoSt) Effect depends on the relative status of the groups. Study 1 examined this issue for stereotypes in the domain of competence. Participants learned that one group scored high and that another group scored low on a test of a thinking style. After the group stereotypes had been created, participants received additional stereotype-congruent information about both groups or stereotype-incongruent information about the high scoring group (and stereotype-congruent information about the low scoring group) or about the low scoring group (and stereotype-congruent information about the high scoring group). Stereotype-incongruent information about the high scoring target group changed participants' stereotype of the target group and the alternative group whereas stereotype-incongruent information about the low scoring target group changed the stereotype of the target group only. Study 2 replicated Study 1 using stereotypes about warmth. We thus showed that the CoSt effect is asymmetrical: it occurs from high status groups to low status groups but not vice versa.

Keywords: Communicating Stereotype effect, Stereotype-incongruent information, Target group characteristics

The influence of vicarious shame on learning

Stephanie C. M. Welten, Marcel Zeelenberg, and Seger M. Breugelmans

Department of Social Psychology, Tilburg University, the Netherlands

People can experience shame for another person's shameful transgressions, even when they don't know this other. The question is: why are people able to feel such an intense negative emotion as shame vicariously? While the functions of other emotions that can arise for another's misfortune – such as empathic concern or *schadenfreude* – seem clear, the function of vicarious shame is yet unknown. We claim that vicarious shame serves a learning function. Three studies reveal that when people imagine themselves in another's shameful mistake, they experience shame and learn vicariously from this other's mistakes, subsequently avoiding making the mistakes themselves. Study 1 demonstrates that people can experience shame when they take a perspective in which they *imagine themselves* in the other's shameful situation. In contrast, shame did not occur when participants *imagine the other* in the situation or *watch objectively* (Davis et al., 1996). Study 2 replicated these results with a different method: participants' shame for another's situation was uniquely predicted by dispositional *imagine self* tendencies and not by *imagine other* tendencies. Study 3 focused on the behavioral effects of vicarious shame. Students watched a fellow student tell about a shameful bad course result from a *imagine self*, *imagine other*, or *objective* perspective. Again, only *imagined self* tendencies predicted vicarious shame. More importantly, these tendencies predicted performance on a subsequent course assignment. Our studies reveal not only a learning function of vicarious shame; they also show that experiencing shame for another's mistakes has important effects on people's own behavior.

Keywords: Vicarious emotions, Shame, Learning

Conversational silence and retrieval-induced forgetting

Charles B. Stone¹, Alin Coman², Adam D. Brown³, Jonathan Koppel⁴, and William Hirst⁵

¹ UCL

² Carnegie Mellon University, Pittsburgh, USA

³ New York University School of Medicine, New York, USA

⁴ University of Aarhus, Aarhus, Denmark

⁵ New School for Social Research, New York, USA

Conversational silences about past events permeate everyday, current acts of remembering, with marked mnemonic consequences. In particular, conversational silences lead discussants to forget. Most scholars account for this resultant forgetting by alluding to theories of decay or repression. We explore the extent to which work on retrieval-induced forgetting may illuminate the way that forgetting occurs following conversational silences. We delineate four types of conversational silence and discuss literature directly or indirectly relevant to each type of conversational silence. We then focus on the retrieval-induced forgetting paradigm to demonstrate the consequences that these types of conversational silence have on when and how individuals forget. We argue that not all conversational silences are equal. Some types of conversational silence promote greater forgetting than other types. Only by appreciating the psychological mechanisms involved when interpreting conversational silence can we better understand when and how individuals forget. Finally, to the extent to which conversations are a social artifact (i.e., they occur between 2 or more individuals), we discuss how conversational silences in the course of a group discussion may help shape the collective memories of said group through collective remembering and forgetting. In turn, we hope to illustrate the pertinence of including a psychological perspective when examining when and how collective memories are formed and maintained.

Keywords: Induced forgetting; Silence; Socially shared

Oral session on Cognitive and Emotional Development**Evidence for Impaired Consolidation and Lexicalisation of Serial-order Information in Dyslexia**

Louisa Bogaerts, Arnaud Szmalec, Maaïke Loncke, & Wouter Duyck

Department of Experimental Psychology, Ghent University

The Hebb repetition effect refers to the improved recall that is observed when a particular ordered sequence of items is repeated throughout a short-term serial recall experiment. Recent research showed that dyslexic subjects exhibit a reduced Hebb repetition effect, both for visual and verbal material. On this basis, we proposed a novel account of dyslexia according to which dyslexia and its many associated disorders can be explained by a deficit in serial-order learning. The present study investigated how the language learning and reading problems in dyslexia can be traced back to this Hebb learning impairment. We hypothesized that impaired Hebb learning in dyslexia affects the consolidation of the order between elements in a sequence, which results in poorly specified lexical representations of the learned verbal materials. We conducted an experiment in which a group of adults with dyslexia and a group of matched control subjects performed a verbal and a visuo-spatial Hebb procedure. One month later, the same subjects relearned the Hebb sequences used in the first session; their performance was contrasted with the performance on new sequences. Dyslexic subjects demonstrated a reduced benefit in relearning visuo-spatial Hebb sequences compared to control subjects, indicating impaired consolidation. Results from a pause detection task further showed that the Hebb materials exerted weaker lexical competition effects in dyslexic participants, suggesting that poorer lexical representations had been established during Hebb learning.

Keywords: Hebb repetition effect; Dyslexia

The contribution of intelligence and cognitive flexibility to children's strategy selection and execution

Koen Luwel^{1,2}, Ageliki Foustana³, Patrick Onghena⁴, & Lieven Verschaffel²

¹Centre for Educational Research and Development, Hogeschool-Universiteit Brussel

²Centre for Instructional Psychology and Technology, KULeuven

³Department of Special Education and Psychology, University of Athens, Greece

⁴Methodology of Educational Sciences Research Group, KULeuven

The present study investigated the extent to which intelligence and cognitive flexibility contribute to children's strategy selection and execution. One-hundred twenty 12-year-old children were administered the WISC-III, the Wisconsin Card Sorting Test and the arithmetic subtest of the French Kit to assess their IQ, cognitive flexibility, and arithmetic proficiency, respectively. Next, they were engaged in a numerosity judgement task in which they had to determine different numerosities of coloured cells that were presented in a square grid. Children could either use an addition strategy in which they simply counted the coloured cells, or a subtraction strategy in which they subtracted the empty cells from the total number of cells in the grid. Application of the choice/no-choice method enabled assessing children's strategic competence in this task on four different parameters: strategy repertoire, frequency, efficiency, and adaptivity. For each parameter, a regression analysis was carried out with verbal intelligence (VIQ), performance intelligence (PIQ), and cognitive flexibility as independent variables and arithmetic proficiency as a control variable. Results showed that at least one of the two intelligence measures was a significant predictor for all parameters of strategic competence. Contrary to our expectations, cognitive flexibility was not involved in the adaptivity of strategy choices; it only played a small role in the accuracy of strategy execution. The implications of these results will be discussed.

Keywords: Intelligence, Cognitive flexibility, Child

The development of phonological processing in reading: A cross-sectional study in beginning readers of Dutch

Eva Van Assche, Wouter Duyck, and Robert Hartsuiker

Department of Experimental Psychology, Ghent University

The present cross-sectional study investigated the development of phonological processing in beginning readers of Dutch using a proofreading task with pseudohomophones and control misspellings. In Experiment 1, children in grades 1 to 3 rejected fewer pseudohomophones (e.g., *nagt*, sounding like *nacht* [night]) as spelling errors than control misspellings (e.g., *narf*). The size of this pseudohomophone effect decreased between grades 1 and 2 and remained constant between grades 2 and 3. In Experiment 2, we replicated the pseudohomophone effect in beginning readers and we tested how orthographic knowledge may modulate this effect. Children in grades 2 to 4 detected fewer pseudohomophones than control misspellings and this effect decreased between grades 2 and 3 and between grades 3 and 4. The magnitude of this effect was modulated by the development of orthographic knowledge: reliance on phonological recoding decreased much more between grades 2 and 3 for more advanced spellers, than for less advanced spellers. Although the persistence of the pseudohomophone effect across all grades illustrates the importance of phonological recoding in Dutch readers, these findings clearly show that early stages of reading development are characterized by an evolution towards a smaller reliance on phonology, especially for children with better orthographic knowledge.

Keywords: Reading, Phonologic processing, Child

The role of task characteristics in scalar implicature comprehension

Leen Janssens and Walter Schaeken

K.U. Leuven

In two experiments, we aimed to show the importance of task characteristics in scalar implicature comprehension. More specifically, we tested the comprehension of the implicature stemming from 'some (not)' in five-year-olds and seven-year-olds. In Experiment 1a and 1b we found that the nature of the task is of great importance: an Action-Based Task (ABT) in which children had to perform an action to respond, caused five-year-olds to be significantly more pragmatic than a Truth Value Judgement Task (TVJT) in which children had to evaluate the truth-value of statements. This shows that a more cognitive task –TVJT- leads to less pragmatic answers than a do-task –ABT- and thus that burdening cognitive resources causes a decrease in scalar implicature comprehension. This effect was also found when we compared Experiment 1a with Experiment 1b in which the same task (the TVJT) was used, but performed with different materials. The TVJT with the less complex set-up led to more pragmatic answers than the more complicated TVJT. Experiment 2 showed that seven-year-olds are almost exclusively pragmatic on the same ABT and TVJT that we used with the five-year-olds. However, we found a 31% drop in pragmatic responding when the content of the TVJT was made up of world-knowledge statements (in comparison to statements about simple materials such as marbles). Together these two experiments provide evidence that not only the nature of the task, but the specific content of the tasks as well are crucial in determining the extent to which young children comprehend scalar implicatures.

Keywords: Scalar implicatures; Cognitive resources; Task characteristics

The development of working memory and its relation to language processing

Organizer: Steve Majerus, University of Liège
Chair: Steve Majerus

The field of verbal working memory has changed significantly during the recent years, evolving from a modular approach to an interactive approach, considering verbal working memory as emerging from the interaction of multiple cognitive processes, including language, attention and serial order processing. In this symposium, we will illustrate the heuristic value of this interactive approach for our understanding of verbal working memory development, its relation to language acquisition and its impairment in developmental disorders.

Keywords: Working memory, Language acquisition, Serial order

Memory for serial order and phonological word-form learning

Arnaud Szmalec¹, Wouter Duyck¹, and Mike P.A. Page²

¹ Ghent University, Ghent, Belgium

² University of Hertfordshire, Hatfield, UK

The Hebb repetition effect is the observation that immediate recall of serial information is typically improved when one particular sequence of items is repeated across an experimental session. Based on a series of experiments using the Hebb repetition paradigm, I will demonstrate that language learning relies on the same cognitive mechanisms as those involved in the short-term representation of verbal serial-order information and accordingly, I will defend the theoretical position that Hebb repetition learning mimics naturalistic word-form learning. Finally, I will present a series of studies which use the Hebb repetition effect as a laboratory analogue of word-form learning to further investigate phonological word-form learning in both healthy participants and adults with dyslexia.

Specific contribution of short-term memory for serial order information to early reading acquisition: A longitudinal study

Trecy Martinez Perez^{1,2}, Steve Majerus^{1,2}, and Martine Poncelet¹

¹ University of Liège, Liège, Belgium

² Fund for Scientific Research FNRS, Belgium

Early reading acquisition skills have been linked to verbal short-term memory (STM) capacity. However, the nature of this relationship remains controversial, since STM, like reading acquisition, depends upon the complexity of underlying phonological representations. The central question is whether verbal STM capacities and phonological processes have independent associations with reading development. To answer this question, we conducted a longitudinal study trying to predict the development of reading abilities by STM measures distinguishing between STM for item and STM for order information; recent studies have shown that while STM for item information depends on phonological processing abilities, this is not the case for STM for order information. Tasks maximizing STM for serial order or item information, measures of phonological abilities and reading tests were administered to children followed from kindergarten through 1st grade. We observed that order STM capacity and phonological awareness, measured when children were at kindergarten, accounted for independent variance in reading abilities measured at 1st grade. These results not only confirm that phonological awareness is a strong predictor of reading but they highlight the specific role of STM for order in reading acquisition.

Verbal STM impairment in children with SLI: a deficit in serial order processing?

Anne-Lise Leclercq^{1,2} and Steve Majerus^{1,2}

¹ University of Liège, Liège, Belgium

² Fund for Scientific Research FNRS, Belgium

Children with specific language impairment (SLI) consistently show poor performances in verbal short term memory (STM) tasks. However, the precise mechanisms at the root of these difficulties remain poorly understood. Recent theoretical models highlight the specificity of mechanisms involved in the processing of order information for verbal STM. Moreover, recent studies have shown serial order STM capacity to be a critical determinant of language development. This study re-explored the nature of verbal STM deficits in children with SLI by specifically exploring STM for order, as opposed to STM for item information. Four experiments assessed the ability to process, store, and learn serial order information in 12 children with SLI. Although the SLI group showed impaired performance in a serial order reconstruction task and in a serial order recognition task relative to age-matched and language-matched control groups, these differences disappeared when SLI group was compared to a mental age-matched control group. Moreover, all children with SLI showed normal serial position effects, and performances in an incidental serial learning task were at age appropriate levels. Our results provide no evidence for a limitation in serial order processing abilities as underlying poor verbal STM performances in children with SLI.

Rehearsal, refreshment, and their role in working memory development: A TBRS approach

Vinciane Gaillar

Université Libre de Bruxelles

Working memory is a system devoted to the simultaneous maintenance and processing of information that is assumed to be involved mainly in complex cognitive activities. Despite an extensive body of research dedicated to the development of working memory capacity, and several attempts to propose potential loci of this capacity increase, it is still difficult to explain the underlying mechanisms of change. I will present a series of studies in the framework of the Time-Based Resource-Sharing model (TBRS, Barrouillet, Bernardin, & Camos, 2004) that pinpoint the crucial role of attentional refreshment in working memory development. I will further elaborate on attentional refreshment on the one hand, phonological rehearsal on the other hand, and their relative implication in working memory development.

What does psychology have to say about the Belgian Linguistic Conflict?

Organizer: Olivier Klein, ULB and Bernard Rimé, UCLouvain
Chair: Olivier Klein
Discussant: Stephen Reicher, University of Saint Andrews, UK

The perennial debates and confrontations existing between linguistic communities in Belgium provide the science of social psychology with a particularly rich field of investigation. In spite of their proximity to the vast puzzle thus available to their studies, Belgian social psychologists traditionally manifested only very little direct scientific interest for it. Strikingly however, social psychology teams in our various universities developed in parallel abundant expertise in research areas such as "emotion and communication", "collective memory", "stereotypes and intergroup attitudes", "intergroup emotions", "emotion in cross-cultural relationships, "intergroup conflict, negotiations and reconciliation". At some point, such resources had to address the intergroup and cross-cultural questions to which citizens in Belgium are exposed daily. This symposium will propose a number of theoretical and empirical steps recently undertook in that direction.

Keywords: Intergroup relations; Stereotypes, National identification

A Waffle-shaped Model on How Realistic Dimensions of the Belgian Conflict Structure Collective Memories and Stereotypes

Nicolas Van der Linden¹, Olivier Klein^{1,2}, Laurent Licata¹, Aurélie Mercy¹, and Olivier Luminet³

¹ Social Psychology Unit, ULB

² UMons

³ Fonds National de la Recherche Scientifique & UCL

Belgium has a long-standing history of conflicts between Flemings and French-speakers. At present, the conflict revolves mainly around two dimensions, i.e. territorial and linguistic policy on the one hand, financial and political autonomy on the other. In this communication, we present a model of the Belgian conflict which posits that the content of intergroup representations, including stereotypes and collective memories, is structured by these dimensions. More specifically, the model predicts that, depending on the dimension of the conflict which is salient and on the position of the ingroup within the conflict, different justice principles (i.e. territoriality vs. personality principles, equity vs. need-based principles) are applied by each community regarding the distribution of specific resources. Respect or violation of these principles determines the content of the stereotype. Collective memory can then be used to justify the ingroup's justice principles and to present such stereotypes as anchored in the past. Results of 3 correlational and 1 experimental studies substantiating the model will be presented at the conference. They will be discussed with respect to their general implications for existing stereotype-content models as well as for the study of the role of collective memory in intergroup conflict.

Emotions motivate our actions more when we have less information: A study in the Belgian intergroup context

Ellen Delvaux¹, Batja Mesquita¹, Aurélie Mercy², Olivier Klein², Laurent Licata² & Bernard Rimé³

¹University of Leuven

²Social Psychology Unit, ULB

³University of Louvain

Emotions inform our judgments, preferences, and actions (e.g., Lerner & Keltner, 2000). There is some evidence suggesting that emotions are particularly powerful sources of information when respondents lack other information that could inform their judgments and preferences in a particular domain (e.g., Isbell & Wyer, 1999). In the current study, we focus on the role of intergroup emotions in informing people's preferences for action within the Belgian intergroup context. We predicted that emotions generally inform people's preferences for intergroup action, but that this effect should be particularly strong for respondents whose national identification was low, and would therefore guide their attitudes towards the other linguistic community.

More than 1400 participants (359 Flemish- and 1052 French-speaking Belgians) took part in an online survey on emotions and intergroup behavior that was held at a time when intergroup relations were presumably salient: only one week after the fall of the Belgian government.

Across linguistic communities, intergroup anger was positively associated with both avoidance of the outgroup and support of violence action against it, while sympathetic feelings towards the other group was linked to a willingness to make concessions and seek proximity to the outgroup. However, consistent with our hypothesis, this effect was much stronger for low than for high national identifiers.

In sum, intergroup emotions reliably predict preferred action towards the outgroup, but the effect was the strongest for those respondents whose actions were least dictated by a strong national identification.

Factors underlying the choice of a representative in intergroup negotiations: Consequences for the Belgian linguistic conflict.

Stéphanie Demoulin, Cátia P. Teixeira, and Vincent Y. Yzerbyt

Center for the Study of Social Behavior, UCL

Notwithstanding the undeniable importance of ideological preferences in people's choice for political leaders, other intergroup processes are also at play when individuals have to decide which group member should represent them at a negotiation table. We present recent research that has explored the roles of (1) instrumental versus identity motivations, (2) ingroup status, and (3) individual's own status within the ingroup, on people's relative preference for typical and (pro-ingroup and pro-outgroup) deviant representatives. Second, we explore the consequences of an elected representative's level of typicality on the reactions of the counterpart outgroup to the ingroup's choice. Finally, we discuss the implication of our findings for understanding the current Belgian linguistic conflict.

Cognitive Processing of Affective Information in Anxiety

Organizer: Mandy Rossignol, UCL

Chair: Mandy Rossignol

Four talks will offer an overview of emotional information processing in fear and anxiety disorders. The orators will articulate behavioural and electrophysiological cues to infer the cognitive processes involved in the development of emotional biases typically reported in anxiety. More precisely, the first presentation introduces the question of fear conditioning, a cognitive process involved in the development of all anxious disorders. The role of awareness in aversive conditioning will be discussed through a series of studies. The second and the third talks focus on the temporal dynamic of emotional processing in social anxiety and trait anxiety. Relying on electrophysiological data, the second talk presents cues attempts to disentangle the role of bottom-up and top-down factors during threatening face perception. The third talk explores how trait anxiety modulates cognitive control and performance monitoring. The fourth and last talk presents how attention retraining may help to reduce emotional bias in social phobic individuals; it will also attempt to identify the active attentional processes involved. Finally, the chair will conclude the session by outlining the main contributions of these investigations to the current models of cognitive processing of emotional information in anxious disorders.

Keywords: Anxiety, Emotions, Attention, Physiology, Facial Expressions

Do we attend to conditioned threat without being aware of it? The effect of fear conditioning on subliminal spatial cueing.

An K. Raes¹, Ernst H.W. Koster¹, Stefaan Van Damme¹, Wim Fias², & Rudy De Raedt¹

¹ Experimental-Clinical and Health Psychology, Ghent University

² Experimental Psychology, Ghent University

In the literature on aversive conditioning the role of awareness is heavily debated. Some authors state that affective learning can occur without contingency learning, whereas others argue that contingency awareness is required to acquire conditioned responding. To date, the evidence for conditioning without awareness remains inconclusive. We designed a series of experiments in which we installed and measured conditioning concurrently. The pairings between the conditioned and unconditioned stimuli were embedded within a spatial cueing task, in which the conditioned stimuli served as cues. Response times to targets that followed the conditioned cues were used as measure of conditioning. We manipulated awareness through instructions or through subliminal presentations of the conditioned stimuli. After conditioning, awareness was stringently checked using verbal reports of contingency awareness and/or perceptual awareness checks (awareness of the perceptual differences between the CSs). Taken together, the results of this series of experiments show that conditioning in the absence of contingency awareness produces small but significant effects on spatial cueing, with slower responses on targets following conditioned threat cues compared to targets following neutral cues. Interestingly, follow-up experiments showed that these subliminal conditioning effects were most pronounced in those participants showing post-conditioning expectancy awareness (awareness of a threat feeling when confronted with the CS+, but not when confronted with the CS-) and in participants who were encouraged to attend to their own bodily signals (interoception). These recent findings suggest that interoceptive awareness might be a facilitating factor in acquiring conditioned threat in the absence of contingency awareness.

The role of configural and analytic factors on facial processing in social anxiety: An electrophysiological study.

Virginie Peschard^{1,2}, Pierre Philippot¹ & Mandy Rossignol^{1,2}

¹ Université Catholique de Louvain, Louvain-la-Neuve, Belgium

² National Fund for Scientific Research, Brussels, Belgium

Social anxiety is characterized by a hypervigilance towards faces and social threat. However, it remains unclear why attention towards faces is modulated by social anxiety. This vigilance could be linked to abnormal pattern of fixations. N170 and P100 components should allow us to explore the normality of face processing in social anxiety. This study aimed at investigating the role of configural and analytic visual factors on processing of emotional faces through electrophysiological activity. On the basis of the Liebowitz Social Anxiety Scale, forty university students were grouped as low (LSA) vs. high (HSA) socially anxious. Event-related potentials (ERP) were recorded in response to an adapted emotional Stroop paradigm including emotional facial expressions. The role of bottom-up influences was examined by manipulating emotional load and by inducing physical transformations whereas the role of top-down influence was explored by contrasting implicit vs. explicit face processing tasks. HSA showed increased P100 component with a reduced influence of visual interference as well as enhanced N170 component to angry faces with increased influence of visual interference. Finally, our results suggest that social anxiety is associated with amplified perceptual process without influence of top-down factors, together with an enhanced structural encoding of emotional faces and particularly angry faces.

Anxiety disrupts selectively the evaluative component of performance monitoring: An ERP study

Kristien Aarts, Gilles Pourtois

Experimental-Clinical and Health Psychology, UGent

Although previous studies showed that anxiety alters cognitive control primarily when the monitoring of internalized error signals is required, it remains unclear whether anxiety also impairs performance monitoring when this process is based instead on the processing of external signals like evaluative feedbacks. Here we addressed this question and focused on the Feedback-Related Negativity (FRN), an ERP component that is sensitive to the valence of feedback. Thirty low and 30 high trait anxious individuals performed a speeded Go/noGo task during which they had to rely on feedbacks to infer whether their actions were timely (correct) or not. Neutral or emotional faces were used as evaluative feedbacks. In one condition, neutral faces served as positive feedbacks, while in the other condition the same neutral faces served as negative feedbacks, enabling a comparison of the same feedback stimuli across two different evaluative contexts. As expected, the FRN was larger when negative feedbacks were presented, but this effect was only observed for low anxious individuals. The FRN of high anxious individuals did not discriminate between neutral faces when used either as positive or negative feedbacks. However, before the FRN, we also found evidence for a differential perceptual effect at the level of the N170 face-specific component between the two feedback conditions, equally so in low and high anxious individuals. These results suggest that anxiety disrupts selectively the evaluative (but not the perceptual) component of performance monitoring, which presumably allows to ascribe a given value to an action.

How does attention training work in social phobia: Disengagement from threat or reengagement to non-threat?

Alexandre Heeren^{1,2}, Laurent Lievens¹, & Pierre Philippot¹

¹ *Université Catholique de Louvain, Louvain-la-Neuve, Belgium*

² *National Fund for Scientific Research, Brussels, Belgium*

Social Phobics exhibit an attentional bias for threat in probe detection paradigms. Attention training programs, whereby probes always replace nonthreat cues in a display presenting both threat and non-threat cues, reduce attentional bias for threat and self-reported as well as behavioral anxiety. However, it remains unclear whether the therapeutic benefits of attention training result from learning to disengage attention from threat cues or learning to orient attention towards nonthreat cues. In the present single-session experiment, individuals suffering from social phobia were randomly assigned to one of four conditions in which they were trained either to disengage their attention from threat cues, or to engage it towards nonthreat cues, or to disengage it from threat cues and reengage it to nonthreat cues, or to a control condition. The differential effects of the experimental manipulation were examined on subjective as well as behavioural responses to a subsequent speech performance. The data revealed that training social phobics to disengage from threat cues reduces self-report and behavioral measures of social anxiety during speech. The present findings support the notion that selective attention to threatening social stimuli plays a causal role in the maintenance of this disorder. Further, the results bolster the arguments that the difficulty to disengage attention from threat is a key process in the maintenance of the disorder.

Social, affective and political neurosciences

Organizer: Frank Van Overwalle, VUB

Chair: Frank Van Overwalle

Social neuroscience is a new interdisciplinary field in which researchers started to unravel the biological foundations of social behaviors. Several fascinating strands of research emerged tackling various facets of social behaviors. How does our brain drive the first impressions we have of other people? Does this differ when we judge people from another group, such as political extremists? How do we think about our past and envisage a better more peaceful future? How does our brain make it possible to read other people's emotions and to regulate our own emotions? What mechanisms in our brain can explain those behaviors? Are these brain mechanisms unique to social reasoning?

To answer these types of questions, researchers in social neuroscience have used a wide variety of methods, capitalizing, for example, on new technologies which can record and visualize brain activity. As social neuroscience touches on the pillars of our life in society, it provides valuable information on human behavior in areas as diverse as politics, economics and mental health. The aim of the symposium is to provide a snapshot of the fast developing field of social neuroscience in Belgian research.

Keywords: Neuroscience; Social psychology

A dissociation between social mentalizing and general reasoning

Frank Van Overwalle

VUB

It has recently been suggested that brain areas crucial for mentalizing, including the medial prefrontal cortex (mPFC), are not activated exclusively during mentalizing about the intentions, beliefs, morals or traits of the self or others, but also more generally during cognitive reasoning including relational processing about objects. Contrary to this notion, a meta-analysis of cognitive reasoning tasks demonstrates that the core mentalizing areas are not systematically recruited during reasoning, but mostly when these tasks describe some human agency or general evaluative and enduring traits about humans, and much less so when these social evaluations are absent. There is a gradient showing less mPFC activation as less mentalizing content is contained in the stimulus material used in reasoning tasks. Hence, it is more likely that cognitive reasoning activates the mPFC because inferences about social agency and mind are involved.

Counterfactual Thinking: Changing the past for a better future

Nicole Van Hoeck, Marie Vandekerckhove, and Frank Van Overwalle

VUB

Recent studies suggest that a brain network mainly associated with episodic memory (frontal and medial temporal-parietal lobe) has a more general function in imagining oneself in another time, place or perspective (e.g. episodic future thought, theory of mind, default mode). If this is true, counterfactual thinking (e.g. "If I had left the office earlier, I wouldn't have missed my train.") should also activate this network. Moreover, counterfactual thoughts imply recalling the past and creating a new hypothetical situation and therefore close the gap between episodic past and episodic future thinking. Until today neurological evidence on the localization of counterfactual processes in the brain is scarce. The present fMRI study explores these processes by directly comparing the imagining of upward counterfactuals (creating better outcomes for negative past events) with the recall of negative past events and the imagining of positive future events. Results confirm that episodic and counterfactual thinking share a common brain network. In contrast to episodic thinking, counterfactual thinking additionally recruits the medial prefrontal cortex and temporal-parietal junction (social mentalizing; stronger focus on goal-directed behavior), and additionally activates the posterior medial frontal cortex (executive function; conflict monitoring and inhibition control).

A Step into the Anarchist's Mind: Examining Political Attitudes and Ideology through Event-Related Brain Potentials

Kristof Dhont¹, Alain Van Hiel¹, Sven Pattyn¹, Emma Onraet¹, & Els Severens²

¹ Department of Developmental, Personality and Social Psychology, UGent

² Department of Experimental Psychology, UGent

The present study investigates patterns of event-related brain potentials (ERPs) following the presentation of attitudinal stimuli among political moderates ($N = 12$) and anarchists ($N = 11$). We used a modified oddball paradigm to investigate the evaluative inconsistency effect elicited by stimuli embedded in a sequence of contextual stimuli with an opposite valence. Increased Late Positive Potentials (LPPs) of extreme political attitudes were observed. Moreover, this LPP enhancement was larger among anarchists than among moderates, indicating that an extreme political attitude of a moderate differs from an extreme political attitude of an anarchist. The discussion elaborates on the meaning of attitude extremity for moderates and extremists.

A voxel based diffusion tensor analysis demonstrates white matter pathways involved in emotion regulation

Marie Vandekerckhove, Van Hecke W., Waegeman, A., Weiss, R., Parizel, P., Frank Van Overwalle, & Raymond Cluydts

VUB

The goal of this study was to investigate the human brain networks that are involved in emotion regulation. To this end, a voxel based diffusion tensor imaging (DTI) analysis (VBA) was used. 20 healthy, female subjects between 18 and 55 years were scanned. These subjects were subdivided in two groups based on their emotion regulation strategy: affective/experiential vs cognitive/analytical. DTI data sets were acquired on a 3T scanner with 64 diffusion weighted images, a resolution of $2 \times 2 \times 2$ mm³ and a b-value of 900 s/mm². All data sets were aligned to a DTI atlas with a non-rigid coregistration algorithm. After anisotropic smoothing with a kernel of 3 mm, the FA values were compared between both subject groups in every voxel. Clusters of at least 10 voxels with a $p < 0.005$ were considered as significant. FA values were found higher in the cognitive/analytical group in the following white matter structures: genu of the corpus callosum, corona radiata, inferior and superior longitudinal fasciculus, and internal capsule. FA values were higher in the affective/experiential group in the splenium of the corpus callosum, forceps major, and the cingulum. Our results suggest that different white matter pathways are involved in analytical vs affective emotion regulation in healthy female subjects.

Oral session on Clinical psychology

Sensitivity and specificity of the Human Figure Drawing to screen for children's emotional and/or behavioural problems in FACE-perspective

Stefaan Baert¹, Smadar Celestin-Westreich¹, and Leon-Patrice Celestin²¹ Dept. Clinical & Life Span Psychology, VUB² Department of Psychiatry, Hospital Simone Veil, Paris, France.

The widespread use of the Human Figure Drawing in children's emotional screening (HFD-ES) calls for strengthening its psychometrical and theoretical underpinnings. Although the few extant validity studies suggest clinical versus control group differences, empirical evidence on the HFD-ES's screening accuracy is lacking. As part of the FACE-program (Facilitating Adjustment of Cognition and Emotion), this study examines the sensitivity and specificity of the HFD-ES. Fifty children with emotional and/or behavioural problems (ages 6-11), matched for age and gender with controls, completed the HFD (triple procedure, including a man-, woman-, and self-drawing). Their HFDs were analysed on emotional indicators (EIs) with the Draw-A-Person: Screening Procedure for Emotional Disturbance (DAP:SPED). Receiver Operational Curve was used to assess sensitivity and specificity.

The results revealed that, as expected, clinically referred children drew significantly more HFD-EIs than controls ($t(98)=-3.753, p<.001$). The best accuracy was reached with a cut-off of seven HFD-EIs, resulting in a sensitivity of .58 and a specificity of .76. It is concluded that the HFD may be acceptably *specific* for ruling out emotional and/or behavioural problems in children within a normal sample. Currently achieved sensitivity (hardly above chance level), however, calls for substantial work to accurately identify such problems when present. Given our concurrent validity research, specifying which socio-cognitive and emotional aspects of children's functioning are reflected in their HFD provides a start toward this objective. The Human Figure Drawing currently shows moderate specificity, but insufficient sensitivity for children's emotional screening. Validity research drawing on the FACE-model provides leads to increase the latter.

Keywords: Human figure drawings, Sensitivity, Specificity

Affect regulation and dissociation in subtypes of deliberate self-harm in Belgian adolescents

Ingrid Van Camp

UGent

Although deliberate self-harm (DSH) is a very heterogeneous phenomenon, empirical studies treat all participants with a history of DSH as one sample. Clinical studies, however, show that there are dimensions on which the DSH differs across people. This suggests that there exist subtypes of DSH, that can also differ in their prognosis and susceptibility to treatment. This study uses the impulsive – premeditated dimension from clinical observations into an empirical study to distinguish subtypes of DSH. First-year psychology students completed a questionnaire packet that assessed several psychological characteristics, besides screening for a history of DSH. Thereafter self-harming students participated in an individual interview, during which the characteristics of their DSH behaviour were assessed on the impulsive – premeditated dimension. Subsequently the two phenomenologically derived subtypes were statistically compared on the previously assessed characteristics. Of this sample 34.91% indicated that during their life time they had at least once engaged in DSH. The premeditated subtype showed significantly more dissociation compared to the impulsive subtype and the non-DSH control group. The impulsive subtype showed significantly more other risk-full behaviours (e.g. excessive drinking, outwardly directed aggression, ...) than the premeditated subtype and the non-DSH controls. This study suggests that the characteristics of different subtypes, such as dissociation in premeditated DSH and the absence of a thinking phase in impulsive DSH, should be taken into account in the development of psychotherapeutic treatments..

Keywords: Outcome measurement; Outcome systems; Community mental health

French Norms for the Waterloo-Stanford Group C (WSGC) Scale of Hypnotic Susceptibility

Pedro Magalhaes de Saldanha da Gama, Davy Thomas, and Axel Cleeremans

Consciousness, Cognition and Computation Group (CO3), ULB

French norms of the Waterloo–Stanford Group Scale of Hypnotic Susceptibility, form C, (WGSHS) are presented. A French translation of the WSGC was administered to 150 Belgium college students between October and December 2009. Belgium has two main linguistic groups, Dutch speakers, and French speakers. The present translation was conceived to be applied to all French–speaking populations. Score distribution, item analysis, and reliability of the WSGC are presented and compared to the normative sample of the Waterloo–Stanford Group C Scale (WSGC Bowers, 1993, 1998). The results were also compared with two North American norms (University of Connecticut and Seton Hall University) and a Portuguese (translated) norm. The findings show that normative data from the French (Belgium) sample are in line with the reference samples. The only significant difference was the lower proportion of participants scoring within the high range of hypnotic suggestibility on the WSGC.

Keywords: Hypnosis; Susceptibility; Scale

Attitude Formation and Change

Organizer: Anne Gast

Chairs: Anne Gast, Jan De Houwer (Ghent University, Belgium)

Attitudes guide many aspects of our thoughts, emotions, and behavior. Most often, attitudes are not inborn but acquired. This symposium consists of four talks about the way in which new attitudes can be formed and how existing attitudes can be changed. Riccardo Zanon reports evidence that the formation of implicit attitudes is not (only) due to the repeated pairing of stimuli but also to rule learning. Dinska Van Gucht and Tom Beckers report a study on craving for chocolate elicited by a cue that was previously paired with chocolate. Such craving can be reduced if the cue is paired with a disliked liquid in a counterconditioning procedure. The authors investigate the influence of a context change on counterconditioning. Colin T. Smith also investigates the formation of implicit attitudes and shows that they are more prone to change if attitude relevant information is presented after exposing the participants to an affective rather than to a cognitive context. Kate A. Ratliff reports results on the generalization of attitudes about one person to the person's ingroup. She shows that an attitude that we have toward a person can be generalized to "innocent" group members. This generalization effect occurs more quickly on an implicit than on an explicit measure. Together these talks give an overview of new ideas and developments in research on attitude formation and change.

Keywords: Attitude change; (evaluative) Conditioning; Implicit attitudes

A good pair can be made of two bad cards. Evidence for the direct effect of inference on implicit attitude change

Riccardo Zanon, Jan De Houwer, and Anne Gast

Experimental-Clinical and Health Psychology, Ghent University

Dual process models postulate that implicit attitudes are exclusively due to associations in mind, formed in a gradual manner by direct experience of many stimulus pairings. In four studies we tested whether not only mere pairings of stimuli but also propositional knowledge (i.e. inferences) can influence implicit attitudes formation. A first set of stimuli pairings were determined by an abstract rule. In condition Opposite, a cue was followed by the opposite outcome when presented alone than when presented with another cue (i.e. A - positive outcome; AB - negative outcome). Conversely, in condition Same, a cue was always followed by the same outcome, regardless of whether it was presented alone or in a compound (i.e. A - positive outcome; AB - negative outcome). In both conditions, two pairings of test cues (E and G) were presented, but only in compounds with other cues and never alone (EF - positive outcome; GH - negative outcome). After the pairings, the implicit liking for the two single test cues E and G was measured. Results showed that participants in condition Same had liked E (i.e., the cue paired with the positive outcome) more than the cue G (i.e., the cue paired with the negative outcome). This preference was not found in condition Opposite even though the pairings of the test cues did not differ between the conditions. We argue that the impact of stimulus pairings on implicit attitudes can be moderated by inferences about the implications of those stimulus pairings.

Renewal after counterconditioning: Divergence between expectancy and liking

Dinska Van Gucht and Tom Beckers

KULeuven

Previous research showed that a cue, initially paired with chocolate consumption, did not cease to elicit craving for chocolate after extinction (repeated presentation of the cue without chocolate consumption), but did so after counterconditioning (repeated pairing of the cue with consumption of a highly disliked liquid, Polysorbate 20). This effect persisted after one week. Counterconditioning moreover was more effective than extinction in disrupting reported expectancy, and also appeared to be more effective in reducing actual cue-elicited consumption. Phenomena that thwart the endurance of extinction can similarly affect the effect of counterconditioning. Like extinction, counterconditioning involves second learned information, which does not necessarily destroy the information learned first. Therefore, we will investigate, whether counterconditioning is also sensitive to contextual control and thus renewal. We used our chocolate craving paradigm, in which the AAA-group receives acquisition, counterconditioning and test for renewal in the same context A, and the ABA-group receives counterconditioning in a different context B. We also included a classic extinction-group, to evaluate whether renewal after counterconditioning is smaller than after extinction. Data indicate that a context switch after extinction/counterconditioning (ABA-groups) results in a return of the expectancy that was reduced through both procedures. However, acquired liking does not change through an extinction procedure but does so after counterconditioning, but remains intact even after a context switch.

These results can provide useful suggestions for improving treatments in clinical practice so as to help reduce relapse rates; not only with regards to eating behaviour, but also regarding other forms of appetitive behaviours.

Forming and Changing Implicit Evaluations through Affective Means

Colin T. Smith

Experimental-Clinical and Health Psychology, Ghent University

Recently, the prevailing view of implicit evaluations is shifting from one in which implicit evaluations were believed to be quite slow to change, to one in which they are seen as being much more malleable. However, when and why one would expect implicit evaluations to be changeable is still not well-understood. This understanding may well be furthered by examining variables previously linked to implicit evaluations. Building on research showing that implicit evaluations are more strongly related to affect (i.e., feelings and emotions) than to cognition (i.e., thoughts and beliefs), I will pursue the hypothesis that affect is particularly relevant for forming and changing implicit evaluations, whereas cognition is relatively inconsequential implicit evaluations. In one study, participants were asked to complete a word-search task in which they searched for words that were affective, cognitive, or neutral. Participants were then presented with information about two fictitious people. Information about one of the individuals was presented as being positive, while the other was negative; thus the information should form a preference for the first individual relative to the second. Stronger implicit evaluations formed following the affective prime than the cognitive prime or the neutral prime. In addition, existing implicit evaluations among current self-reported smokers were assessed following affective or cognitive anti-smoking messages. Implicit evaluations of smoking were more effectively changed using a persuasive message that was affective rather than cognitive in nature. These studies indicate that implicit evaluations can be formed and changed more effectively through “affective” means than through “cognitive” means.

Understanding Implicit and Explicit Attitude Formation and Generalization

Kate. A. Ratliff

Tilburg University, the Netherlands

Because people value fairness they explicitly resist using knowledge about one person to evaluate another person from the same group. However, the present results demonstrate that a simple link between two individuals leads to implicit attitude generalization despite conscious resistance. In Study 1, participants were exposed to positive and negative behaviors performed by an individual from each of two different social groups. Then, participants were introduced briefly to new individuals from the groups. Implicit evaluations of the original individuals readily generalized to the new individuals; explicitly, participants resisted such generalization. Days later, both implicit and explicit evaluations of the original individuals generalized to the new individuals. The results suggest that associative links (e.g., shared group membership) are sufficient for implicit attitude generalization, but deliberative logic (e.g., individual group members are not necessarily the same) can reduce explicit generalization-by-association. Follow-up studies demonstrated that not all attitude generalization is created equally (as a simple associative account would suggest). For example, negative attitudes generalize to a greater extent than positive attitudes (Study 2) and attitudes toward an outgroup member generalize to a greater extent than attitudes toward an ingroup member (Study 3).

What can we learn from qualitative methods in research on learning and developmental disabilities?

Organizers: Jolien De Brauwer and Dieter Baeyens, CODE Lessius
Chair: Astrid Geudens, CODE Lessius

In this symposium we focus on the potential benefit of combining quantitative and qualitative methods in psychological research. The combination of both methods can take different forms: Qualitative methods can be used to pinpoint themes and topics that will be quantified in subsequent studies. Another approach considers qualitative methods as complementary to quantitative methods. In a first presentation Marc Brysbaert will offer us a framework on this topic and review the different ideas about it. The surplus value of a combination of both methods will then be illustrated by means of three studies on three different topics within the domain of learning and developmental disabilities.

A first study focuses on teaching and exam accommodations for students with ADHD. To this aim a questionnaire was administered to student counselors. Subsequently, interviews with students and student counselors aimed to collect feedback on the findings from the questionnaire. In a second study experiences of therapists working with children with mathematical disabilities were collected by means of interviews. Next, the findings of these interviews were checked in focus groups. In a third study experiences of young adults with dyslexia and their network on aspects of (in)effective support and therapy were collected by means of semi-structured interviews. In a follow-up study, the topics collected from the interviews will be used to quantify these aspects (by means of questionnaires).

These three studies illustrate the surplus value of qualitative research methods when used in combination with quantitative methods.

Key words: learning disabilities, developmental disabilities, qualitative research

The contribution of quantitative and qualitative research methods to psychological understanding

Marc Brysbaert

Department of Experimental Psychology, UGent

Qualitative research methods have grown within the hermeneutic tradition of psychology, which questions the positivistic orientation of mainstream psychology. As a result, some authors have claimed that qualitative and quantitative research methods are mutually exclusive because they are based on incompatible views (idealism vs. realism). On the other hand, an increasing number of researchers feels that qualitative and quantitative research methods are complementary and correct for the weaknesses of the other method. I will review the various positions and summarize the arguments given.

Supporting students with ADHD: indications for and effectiveness of teaching and exam accommodations

Lotte Van Dyck and Dieter Baeyens

CODE, Lessius

ADHD symptoms negatively affect school and academic functioning: In general adolescents and adults with ADHD show higher drop-out rates and tend to achieve lower levels of education than could be expected based on their intellectual capacities. In this study we aim to make an inventory of the teaching and exam accommodations for students with ADHD and explore their effectiveness. In a quantitative study, 91 tutors in institutes of secondary (SE) and higher education (HE) were enrolled in an online survey. We investigated the presence of teaching and exam accommodations for ADHD (in comparison to learning disorders (LD)) as well as the requirements to obtain them. In a qualitative study, we interviewed students with ADHD and their tutors (n=21) to give adequate interpretation to the findings of the quantitative study and to explore the effectiveness of the most common accommodations.

The quantitative study revealed that institutes of SE (LD: 100%, ADHD: 75.5%) and HE (LD: 100%, ADHD: 90.2%) offered significantly more teaching and exam accommodations for LD than for ADHD ($\chi^2(1)=3.82$, $p=0.05$). In the interviews tutors reveal that there is no government policy available for accommodations urging tutors to solely rely on their personal experience. Students with ADHD feel the need for individually designed accommodations because of the heterogeneous nature of ADHD and the difference in experienced effectiveness of these accommodations. Further nuances and insights of the quantitative findings through this qualitative research method will be discussed.

Combining individual interviews and focus groups to enhance data richness on problems and remediating problems due to mathematical disabilities

Annemie Desoete

Department of Experimental Clinical and Health Psychology, UGent

A convenience sample of 20 experienced therapist was interviewed on the problems of children with mathematical disabilities (MD) and on how to remediate these problems. All interviews were audio taped and transcribed verbatim afterwards. The group was divided into two groups, a first sample group and a similar sampling group. During the continuous process of open and axial coding in NVivo and constantly comparison of the codes, codes were clustered into themes (domains of problems: semantic memory problems, procedural problems, visuospatial problems, problems with number knowledge) and patterns of good-practice (core components of remediation: individualized, collaboration with school and home context, STICORDI, working on self-esteem) related to MD. Then the second phase started by interviewing the similar case-sampling group, following the same procedure as in the first phase. In a third phase, two focus groups and six member check interviews were conducted. The purpose of this phase was to test the domains and components previously identified. The interviewees were asked to reflect on these domains and components and to tell if those aspects were also important for them or not. Further we asked if they could think of other important domains and components. The component 'working on several domains' was added after the discussion representing aspects of the therapeutic experience that are considered to be important for a good remediation of problems due to MD.

Support of young adults with dyslexia: What is (in)effective support according to the young adult, their parent(s), tutor and therapist?

Jolien De Brauwer, Ellen Meerschaert, Annelies Aerts, Maaïke Loncke and Astrid Geudens

CODE, Lessius

Young adults with dyslexia face specific problems related to their studies and/or internship. This poses specific demands to the support of this target group. In the present study we aimed to gather as much effective aspects of support as possible, from the viewpoints of different parties involved, by means of semi-structured interviews. In a follow-up study questionnaires will be developed to quantify the findings of the interviews. Four different roles were considered: young adults with dyslexia, their parent(s), tutor and therapist. The majority of the young adults was enrolled in a higher education program. We also included a small group of secondary education students to enable a comparison of both contexts. One young adult already started a job. All participants ($N = 66$) took part in a semi-structured interview, which included different themes: the impact of the learning disorder (both in studies and in daily life), effective and ineffective aspects of therapy, effective and ineffective aspects of support and perceived needs. One of the most frequently and most intensely formulated *needs* is the need for *individually adapted* support. Participants also mention the need for *correct information as a prerequisite for understanding* and acceptance by teachers. Another interesting finding is that quite some participants believe that software could be helpful but they mention *barriers* for using it. In this presentation we will give an overview of the results for each theme separately and for the different roles involved. Implications for the support of young adults with dyslexia and their network will be discussed.

Oral session on Applied and Cognitive psychology**Lack of recognition in the workplace is associated with poor mental health**Annalisa Casini¹, Isabelle Godin², Els Clays³, and France Kittel⁴¹ School of Public Health, Université Libre de Bruxelles and F.N.R.S.² School of Public Health, Université Libre de Bruxelles³ Department of Public Health, Ghent University⁴ Faculté de Médecine, ULB

This study investigated the relationship between recognition in the workplace and workers' mental health. Building on the theory of recognition developed by Honneth (1995) it is hypothesized that a lack of recognition on the part of organization, supervisors, and colleagues is associated with workers' high level of anxiety and chronic fatigue. Four types of recognition were considered as a function of the spheres of relations with others in which they are generated: (1) the social esteem stemming from social relations; (2) the respect of worker's rights, stemming from moral/legal relations; (3) the emotional support from colleagues and (4) from supervisors stemming from interpersonal affective relations.

The database results from the merger of data from two large Belgian studies – Belstress III and Somstress – and comprises 4013 participants (2304 women), aged 21-66, and working in 9 organizations. Selected items from Siegrist's ERI scale, Karasek's JDC-S scale, and Quine's mobbing scale were used for measuring the 4 types of recognition. Results show that the perception of lack of social esteem, respect of workers' rights and emotional support from colleagues and from supervisors are associated with high levels of anxiety (all O.R. above 2.15, $p < .001$) and chronic fatigue (all O.R. above 1.72, $p < .001$) even after adjusting for original databases, sex, age, and company. Moreover, these tendencies remain unvaried as a function of workers' occupational grade.

These results confirm that denying social esteem, respect of worker's rights and emotional support can be harmful for workers' mental health.

Keywords: Workplace; Recognition; Mental health

Implicit contingency learning in a performance task with evaluative stimuli

James R. Schmidt and Jan De Houwer

UGent

In the reported experiments, we study implicit contingency learning in a performance task with evaluative stimuli. Specifically, in our paradigm participants made speeded evaluative judgements to target valenced words. Each of a set of distracting nonwords was presented most often with either positive or negative target words and participants responded faster when the conditioned valence of the nonword matched the unconditioned valence of the target. The learning also produced changes in liking: in a subsequent explicit evaluative rating task, participants rated positively-conditioned nonwords more positively than negatively-conditioned nonwords. Furthermore, the response time effect correlated with this explicit rating effect, suggesting that the response time effect may be partially driven by learned evaluative relationships. Conveniently, learning in this paradigm is assessed as it occurs, is extremely reliable, and the task is short in duration (less than ten minutes).

Keywords: Evaluative conditioning, Contingency learning, Performance tasks

Split them!" Smaller item sizes of snack foods lead to a decrease in energy intake

David Marchiori, Laurent Waroquier, and Olivier Klein

ULB

The high availability of large portions of snack foods favors obesity-promoting eating behaviors. Insofar, studies and prevention strategies have predominantly focused on altering total amount of food (e.g., 50g vs. 100g), while very little literature focused on altering the size of foods (i.e., small vs. large candies and cookies). In study 1, undergraduate psychology students ($n = 33$) were offered candies to free consumption in a psychology laboratory during a distraction task (individual cubicles). In study 2, first and sixth graders ($n = 77$) were offered cookies during an afternoon tea at their school. For half of the participants, foods were cut in two to make the small item size, while gram weight was kept identical across conditions. Short-term food intake (number of candies/cookies, gram weight and energy intake) was examined using analysis of variance. Decreasing the item size of foods lead to a decrease of 50% in gram weight of candies (60 kcal) and 25% in gram weight of cookies (68 kcal). Appetitive ratings, subject and food characteristics had no moderating effect. People tend to consider that one unit of food (e.g. ten candies/cookies) is the appropriate amount to consume, regardless of the size of the food items in the unit. Reducing the item size of foods alters the perception of the appropriate quantity of food to consume by providing more cut off points at which a person can reassess his consumption and could prove a useful dietary prevention strategy based on decreased consumption at snacking occasions.

Keywords: Food item size; Energy intake; Dietary strategy

Psychometric characteristics of outcome and feedback management systems: preliminary findings based on the multi-dimensional, web-based Tool for Outcome Measurement (TOM)

Stefaan Baert

Flemish Mental Health Association, Ghent

Despite increasing interest in routine outcome and feedback management systems in Flanders, outcome questionnaires are hardly part of community mental health daily practice. Reasons to ignore them are their time-consuming and uni-dimensional nature. The goal of this study was to validate a multi-dimensional Tool for Outcome Measurement (TOM). The TOM contains fourteen visual analogue scales about client's symptoms, interpersonal relationships, satisfaction with treatment, and therapeutic alliance. Two-hundred clients completed the TOM online during three consecutive sessions, along with the Outcome Questionnaire (OQ-45), Quality of Life Questionnaire (WHOQOL-brief), the adapted Dutch treatment satisfaction scale, and the Working Alliance Inventory (WAI). Construct and convergent validity of the TOM were examined using Confirmatory Factor Analysis (CFA) and Pearson's correlations. The internal consistency of factors was expressed in terms of Cronbach's alphas. CFA confirmed the four-factor-structure of the TOM, although three items were dropped due to low factor loading. The TOM-symptom subscale was highly associated with OQ-45 symptom distress (.65), WHOQOL-brief physical (.68) and WHOQOL-brief psychological well-being (.59). The TOM-interpersonal subscale was highly associated with WHOQOL-brief-daily life (.51) and WHOQOL-brief-social relationships (.51). The TOM-alliance subscale was moderately associated with WAI-task (.41), WAI-aim (.47) and WAI-band (.39). Finally, both the TOM-satisfaction and TOM-alliance subscales were highly associated with client's treatment satisfaction (respectively .88 and .82). Coefficient alphas were high for all factors (.88-.95). It can be concluded that the TOM was confirmed to be a psychometrically sound instrument, which provides professionals with useful information concerning the outcome and progress of their clients.

Keywords: Scale; Feedback systems

Best Thesis Award

Gradually revealed properties of general and familiar face processing – an fMRI study

Joan Liu

Université Catholique de Louvain

The ability to recognise known individuals is vital in situations of social interaction. However, many questions about the nature of familiar face recognition remain unanswered. While there are definite behavioural advantages related to familiar faces, studies of the neural bases of these effects have led to many inconsistent results, especially with respect to the activation patterns of face-preferential regions such as the FFA (fusiform face area). The goal of this event-related fMRI experiment was therefore to clarify familiar face processing by determining when and where the neural activation would differ between familiar and unfamiliar faces. To this aim, we presented sequences of spatially-filtered images of 10 personally familiar and 10 unfamiliar faces, which were gradually and smoothly “revealed”. Thus, each sequence began with a “blurred” face, filtered at 1.5 cycles per face (cpf), which progressively “sharpened” until it reached 28.54 cpf. Fourteen subjects decided whether the faces shown were familiar or unfamiliar. We carried out regions-of-interest (ROI) analyses on predefined face-preferential regions, as well as whole-brain (WB) analyses. ROI analyses revealed significantly greater activation for familiar faces in the left FFA, the bilateral pSTS (posterior superior temporal sulcus), and bilateral amygdala, with the greatest difference in terms of amplitude and latency found in the right amygdala. WB contrasts further showed the involvement of non-face-preferential clusters in the perirhinal cortex and the anterior hippocampus. These results suggest an early involvement of the medial temporal structures in detecting familiar faces and potential top-down modulation on posterior face-preferential areas.

Keywords: fMRI; Face processing

POSTERS

Cognition and cognitive processes

The importance of short-term memory for order in dissociating short-term memory and language deficits

Lucie Attout¹, Marie-Anne Van der Kaa², Mercédès George², and Steve Majerus^{1,3}

¹ Department of Cognitive Sciences, University of Liège, Belgium

² Neuropsychological Rehabilitation Unit, University Hospital of Liège, Belgium

³ Fund for Scientific Research FNRS, Belgium

Selective verbal short-term memory (STM) deficits are rare, and when they appear, they are often associated with a history of aphasia, raising doubts about the selectivity of these deficits. We explore here the distinction between STM for item information and STM for order information to separate STM and language impairments. Recent models of STM consider that STM for item information depends upon activation of the language system, and hence item STM deficits should be associated with language impairment. By contrast, STM for order information is considered to recruit a specific system, distinct from the language system. In this view, order STM should be impaired in patients with STM deficits that cannot be accounted for by language impairment. We applied this rationale to the exploration of STM profiles of patients MB and CG. Patient MB showed mild phonological impairment and associated STM deficits. As predicted, these were characterized by poor item STM but preserved order STM. Patient CG showed verbal STM deficits with no associated language deficits. His STM deficit was characterized by poor order STM but relatively preserved item STM. This study presents the first double dissociation between item and order STM deficits, demonstrating the necessity of this distinction for understanding selective STM impairment.

P1 **Keywords:** Order processing ; Short-term memory; Aphasia

Arousal in cognitive control

Marlies E. van Bochove, Lise Van der Hagen, Wim Notebaert, and Tom Verguts

Department of Experimental Psychology, UGent

Emotional stimuli lead to enhanced processing and subsequent improved memory (e.g., McGaugh, 1990). Verguts and Notebaert (2009) proposed that a similar process is responsible for increased cognitive control in congruency tasks after incongruent stimuli. For example, after an incongruent flanker trial, it is assumed that an arousal signal is sent throughout the cortex which strengthens active task-relevant associations. This arousal-induced learning leads to a reduced congruency effect on the next trial (i.e., Gratton effect). The current study therefore investigated arousal in the flanker by measuring pupil dilation, an index of arousal (possibly related to LC activation (Jepma & Nieuwenhuis, in press)). We asked participants (N = 13) to perform a flanker task and collected both reaction times and pupil width. We found that pupil width is larger during incongruent than congruent trials. This is consistent with the hypothesis that conflict leads to arousal and more generally, in line with the hypothesis that learning might play a key role in cognitive control (Verguts & Notebaert, 2009).

P2 **Keywords:** Arousal; Cognitive control; Pupil dilation

French Cued Speech perception and expertise: psychophysiological analysis

Clémence Bayard^{1,2}, Anne-Sophie Tilmant^{1,4}, Cécile Colin², and Jacqueline Leybaert³

¹ LCLD (Laboratoire Cognition Langage Développement), ULB

² Unité de Recherche en Neurosciences Cognitives, ULB

³ Laboratoire Cognition Langage Développement, ULB

⁴ UCL

Speech perception in hearing subject involves audio-visual integration (McGurk and MacDonald, 1976). Since French Cued Speech (CS) is also multi-signal (sound, lips movements and LPC gestures), we wondered whether this perception involves integrative treatment and how expertise affects it. We conducted an eye tracking study. Our paradigm consisted of three conditions: (1) a multi-signal condition consisting of a video of a speaker who simultaneously speaks and cues words or pseudowords without sounds (CS), (2) a meaningless multi-signal (ML) condition consisting of a video showing a speaker producing words or pseudowords with meaningless gestures, (3) and a lipreading (LR) alone condition, consisting of a video showing the same speaker uttering words or pseudowords with neither sounds nor cues. Participants had to identify words or pseudowords uttered between three options (i.e, correct answer, labial distractor or manual distractor). Distractors were words (or pseudowords) that shared the same labial image or manual cue than the word (or pseudoword) uttered. Behavioral and eye tracking data (i.e., interest region: lips or hand) were collected on hearing people who were either experts in CS perception (N = 12) or completely naïve toward CS (N = 19). The eye tracking and behavioral data showed that experts focused on lips region in LR condition and on both regions in CS and ML conditions. However, in CS condition they focused more on the hand region. Non-experts paid more attention to lips regions in all conditions. This suggests that only experts integrate hands and lips information in French Cued Speech perception.

P3 **Keywords:** French Cued Speech perception; Multi-modal integration. Eye tracking

Rumination and worrying are associated with shifting impairments

Mieke Beckwé¹, Natacha Deroost¹, and Evi De Lissnyder²

¹ Experimentele en Toegepaste Psychologie, VUB

² Experimenteel-Klinische en Gezondheidspsychologie, UGent

It is commonly assumed that rumination and worrying play an important role in the development of major depressive disorder (MDD) and generalized anxiety disorder (GAD). But, despite their clinical significance, little is known about the underlying mechanisms of rumination and worrying. The present study investigated the shifting capacity of working memory, when processing non-emotional and emotional verbal information, using an Internal Shift Task (IST). The IST was administered to a group of high-ruminators (N=31) and high-worriers (N=32) versus non-ruminators (N=39) and non-worriers (N=38). The main finding was that rumination and worrying were both related to general shifting impairments. This increased shifting cost for ruminators and worriers was most pronounced when they had to shift attention away from negative words. Interestingly, these results were only found when the negative words we used reflected relevant worry-themes for the participants. The possible implications of these findings in relation to vulnerability for MDD and GAD are further discussed.

P4 **Keywords:** Worrying, Rumination, Shifting function

Lexical and inflectional spelling abilities in French: same or different?

Florence Binamé

Unité de Neuropsychologie du Langage et des Apprentissages, ULG

Inflectional spelling abilities have been less extensively studied than lexical spelling abilities and the relationship between these two types of spelling abilities is poorly understood. In this study, we compared lexical and inflectional spelling abilities in 12-year-old children, by hypothesizing that attentional load may be particularly detrimental for sentence context-dependent inflectional spelling abilities, in contrast to sentence context-independent lexical spelling abilities. Ninety-five sixth graders had to write to dictation sentences containing orthographically inconsistent words as well as inflected words (plural nouns and verbs at the 3th person) in three different cognitive load conditions. In a medium load condition, a time constraint obliged the subjects to write the sentences as quickly as possible. In a high load condition, the participants had to write the sentences as quickly as possible while further carrying out calculation problems (additions). The minimal load condition corresponded to standard writing to dictation, with no time constraint or any secondary task. The number of spelling errors for orthographically inconsistent words (lexical spelling abilities) and inflected words (inflectional spelling abilities) was calculated for each condition. We observed that spelling performance for inconsistent words was not impacted by cognitive load. On the other hand, spelling performance for inflected words decreased significantly in the medium and high load conditions. These results suggest that inflectional spelling abilities are less proceduralized than lexical spelling abilities, and rely to a greater extent on cognitive control processes.

P5 **Keywords:** Lexical spelling abilities ; Inflectional spelling

Development and organization of executive functions in 4- to 11-year-old children: A factor study

Corinne Catale¹, Fabienne Colette¹, Caroline Lejeune¹, Yana Charlier² and Thierry Meulemans¹

¹Neuropsychology Unit, University of Liège, Belgium

²Quantitative Psychology, University of Liège, Belgium

Executive functioning (EF) is an umbrella term used to refer to the higher-order cognitive processes whose principal function is to facilitate the adaptation of an individual to new and non-routine situations. In the present study, inhibition, mental flexibility, and working memory were assessed through 6 executive tasks administered to 329 children aged from 4 to 11 years, in order to examine the development and organization of executive functioning in both early and middle childhood. Results reveal specific developmental trends for each component, with a period of rapid general development during the preschool period. Confirmatory factor analyses were used to examine the organization of EF in our sample. First, the poor fit of the unitary model was found for both groups, confirming the fractionated nature of EF in preschoolers as well as in older children. Second, the analyses confirmed the adequacy of the fit of the three-dimensional model (i.e., inhibition, flexibility, and working memory), while also indicating that other specific two-dimensional models gave reasonable fits to the data from both age groups. The factor structure obtained supports both the unitary and diversity nature of the executive organisation during early and middle childhood. Furthermore, our data suggest a progressive differentiation of executive processes (in particular flexibility and working memory) in the course of development.

P6 **Keywords:** Executive functions; Children

Time course of attentional bias for gambling information in problem gambling

Damien Brevers¹, Axel Cleeremans², Antoine Bechara³, Cédric Laloyaux¹, Charles Kornreich¹, Paul Verbanck¹, and Xavier Noël¹

¹ Psychological Medicine Laboratory, CHU Brugmann, ULB

² Consciousness, Cognition & Computation Group, ULB

³ McGill University, Canada, and University of Southern California, USA

There is a wealth of evidence showing enhanced attention towards drug-related information (i.e. attentional bias) in substance abusers. However, little is known about attentional bias in deregulated behaviors without substance use such as abnormal gambling. This study examined whether problem gamblers (PrG, as assessed through self-reported gambling-related craving and gambling dependence severity) exhibit attentional bias for gambling-related cues. Forty PrG and 35 control participants performed a change detection task using the flicker paradigm, in which two images differing in only one aspect are repeatedly flashed on the screen until the participant is able to report the changing item. In our study, the changing item was either neutral or related to gambling. Eye movements were recorded, which made it possible to measure both initial orienting of attention as well as its maintenance on gambling information. Direct (eye-movements) and indirect (change in detection latency) measures of attention in individuals with problematic gambling behaviors suggested the occurrence of both engagement and of maintenance attentional biases towards gambling-related visual cues. Compared to non-problematic gamblers, PrG exhibited (1) faster reaction times to gambling-cues as compared to neutral cues, (2) higher percentage of initial saccades directed toward gambling pictures; (3) an increased fixation duration and fixation count on gambling pictures. In the PrG group, measures of gambling-related attentional bias were not associated with craving for gambling and gambling dependence severity. Theoretical and clinical implications of these results are discussed.

P7 Keywords: Gambling; Attentional bias; Eye-tracking

Impact of visual modality on acoustic assessment of rooms

Aurore Defays¹, Stéphane Safin², Alexis Billon³, Christine Decaestecker⁴, and Nadine Warzee⁴

¹ LECIT (Laboratoire d'Ergonomie Cognitive et Interventions au Travail) – ULG

² LUCID (Lab for User Cognition and Innovative Design) – ULG

³ INTEL SIG (Laboratory for signal and Image exploitation) – ULG

⁴ LISA (Laboratory of Image Synthesis and Analysis) – ULB

In the context of the conception of a multimodal immersive environment aimed to support the task of assessing the acoustical quality of rooms based on numerical simulations, we study the relationship between image and sound. Auralias project aims to develop an immersive environment for a collaborative work between architects and acousticians combining 3D sound rendering and 3D view of the room model. In this study, we analyzed the impact of a room picture on the acoustic assessment. We chose reverberation as acoustic parameter. First, we confronted 70 subjects with a sound clip and asked them to assess the reverberation degree (control condition). Then, we divided the subjects into three groups and repeated the same judgment task. However, in the first group, subjects listening the sound clip were confronted with a room picture consistent with the sound. In the second group, they were confronted with a « distractor » room picture (no link with the sound). In the last group, they listened the sound clip without any room picture. Our results showed a positive impact of consistent pictures on reverberation assessment but we found no effect of distractor pictures.

P8 Keywords: Multimodality; Human-computer interaction; Mixed modality displays.

Memory consolidation and resistance to interference for verbal material after sleep deprivation

Gaetane Deliens, Remy Schmitz, Alison Mary, and Phillippe Peigneux

Neuropsychology and Functional Neuroimaging Research Unit, ULB

The aim of this study was to test post-learning consolidation and protection against interference processes in healthy volunteers ($n = 9$) in a within-subjects sleep deprivation (SD) paradigm. After learning a list of unrelated word pairs (A) subjects sleep or stay awake a whole night. Two days later, a novel list of word pairs (B) was learned just before delayed recall of the list A. List B was composed of 50% word pairs in which the initial word of the pair was also presented in list A, hence creating interference. Results indicate an interference effect in the sleep but not in the SD condition ($p=0.004$). Recall of word pairs subjected to interference in list B was lower than recall of word pairs not subjected to interference. Our findings may be in line with the reconsolidation theory in that after a night of sleep the reactivation of consolidated memory traces puts them back in a labile form, hence again sensitive to interference. By contrast, in the SD condition, subjects would create a dual trace (AB and AC) allowing them to fend off the negative impact of interference: the second list does not modify the first but the two lists coexist.

P9 Keywords: Interference; Sleep deprivation

Cross-situational learning in mono- and bilingual adults

Ana Franco, Estibaliz San Anton, Arnaud Destrebecqz, and Axel Cleeremans

Consciousness, Cognition & Computation Group, ULB

Prior research has shown that learners possess powerful statistical learning abilities to solve the word-to-world mapping problem. However, little is known about the capacity to use statistical information to map a new word for an already known object. The present study explores the capacity to use statistical information to map two words with one object and the effect of bilingualism on this capacity. We adapted the cross-situational learning paradigm proposed by Smith & Yu (2008). Participants were first exposed to twelve word-referent pairs (Language A). They were then exposed to another twelve word-referent pairs (Language B) composed of the same objects but new words. On each trial, two spoken words were presented with the two related objects and a variable number of distractors (0, 2 or 4). The test phase consisted in an adaptation of the Process Dissociation Procedure (Jacoby, 1991) in order to test their knowledge and their conscious access to it. We found that monolingual and bilingual participants learn both languages in the 0 distractors condition. However, in the 2 and 4 distractors condition, both groups learn equally Language A but only bilinguals were able to learn Language B.

P10 Keywords: Bilingualism; Statistical information

Aging and working memory: A time-based resource-sharing account

Sophie Fagniard, Audrey Gaublomme, Aurélie Lebrun, Thomas Olszowy, Marie Simon, Erika Wauthia,
and Vinciane Gaillard

Psychology and Educational Sciences, ULB

It is well-established that working memory capacity (WMC) declines with age. The present experiment investigates the mechanisms underlying this deficit in the context of the Time-Based Resource-Sharing model (Barrouillet et al., 2004). According to this model, the dual functioning of working memory is achieved through a mechanism of time-based resource-sharing between processing and storage. Young and older adults (aged 20-30 and 70-86) performed a computer-paced operation span task, in which they had to maintain series of letters while verifying 2-operands additions. We manipulated cognitive load in two conditions, depending on whether the additions require a carry (high cognitive load) or not (low cognitive load). Above and beyond the main effects of age group and cognitive load, results indicate that cognitive load has a more detrimental effect on recall in the older group. Implications for the development and aging of WMC are discussed.

P11 Keywords: Aging; Working Memory; attention

Number Sense and Mathematical Expertise: the Strategic Perspective.

Mathieu Guillaume^{1,2}, Julie Nys¹, & Alain Content¹

¹ Université Libre de Bruxelles

² Fonds National de la Recherche Scientifique

In the field of numerical cognition, a growing number of data have linked innate numerical abilities with mathematical expertise. Recently, several studies pointed the relation between the acuity of the number sense (internal Weber fraction w) and the overall arithmetic performance from childhood to adulthood. In the present study, we aim to precise the relation between these two factors as we think that the former could influence the latter by affecting the strategic choice and execution during arithmetic processing. In this context, we set up an experiment composed of one non-symbolic comparison task and one complex additions resolution task. Participants were either students from Mathematical courses or Psychology students. During the arithmetic task, they were asked to verbalize every intermediate result they got during the calculation process in order to shed light on the strategy they used to solve each addition. Weber fraction w index was computed from the performance in the non-symbolic comparison task. Our results confirmed that participants from Mathematical courses performed better in the arithmetic task than Psychology students did. Furthermore, the first group's w was significantly more accurate than the second group's. As for the strategic aspect, Mathematic students referred to a greater extent to memory retrieval and used more elaborate strategies than Psychology students did. Moreover, we observed a small positive correlation between w and the utilization of elaborate strategies. Taken together, these results suggest that accuracy in number sense is related to better mathematical expertise and to a more elaborated strategic choice in arithmetic.

P12 Keywords: Numerical Cognition; Mental Arithmetic; Resolution Strategy

Does Inter-Stimulus Interval Impact the Strength of the Stroop Effect?

Sophie Galer^{1,2}, R. Schmitz², X. De Tiège¹, P. Van Bogaert¹ and P. Peigneux^{2,3}

¹LCFC - Laboratoire de Cartographie Fonctionnelle du Cerveau, Hôpital Erasme, Bruxelles

²UR2NF - Neuropsychology and Functional Neuroimaging Research Unit, ULB

³CRC - Cyclotron Research Center, ULG

In the Stroop task, an interference effect between reading a word naming a color and its printed color is a robust phenomenon. Here we tested whether within-task variations in the interstimulus interval (ISI) may impact on this interference. Twelve healthy young adults performed a modified version of the Stroop task, where they responded by pressing buttons to the color of a color-word stimuli when the two sources of information were congruent (e.g., "red" printed in red) or incongruent (e.g., "red" printed in blue). Control stimuli, i.e. neutral words matched with each color were interspersed to annihilate undesirable effects. Within the task, ISI was pseudo-randomly manipulated so that stimuli within each category were displayed after 1000, 1500 or 3000 msec. A repeated measures ANOVA with interval and condition as within-subject factors was computed on mean reaction times for correct responses. Results disclosed higher RTs for incongruent than congruent stimuli ($p < 0.01$), and than control items ($p < 0.01$). The main effect of the interval ($p > 0.05$) and the interaction between interval and category ($p > 0.05$) were non-significant. These results indicate that interference effects in the Stroop task are not influenced by ISI variations within this time range.

P13 Keywords: Stroop effect; Interference; Stimulus interval

The SNARC effect – Does it depend on the level of mathematical training?

Danielle Hoffmann¹, Christophe Mussolin¹, and Christine Schiltz²

¹ Educational Measurement and Applied Cognitive Science Research Unit, University of Luxembourg

² Lab. Cognition, Language and Development, ULB

Behavioural studies show a relation between numbers and space (DeHevia et al., 2008). One instance of this link is the SNARC (Spatial Numerical Association of Response Codes) effect, consisting in faster reaction times responding to small/large digits with the left/right hand respectively (Dehaene et al. 1993). The SNARC effect has often been replicated, but it is also characterized by high inter-subject variability (Wood et al. 2006a,b). Although differences in mathematical skills are an obvious candidate source for SNARC variability, this variable has not yet been explored systematically. While in their seminal study Dehaene and colleagues had included two groups of participants differing in their field of study (science vs. literature), the differences in SNARC effect strengths indicated by the result figures were not tested formally (see also Fischer and Rottmann (2005)). The present study aims to assess the influence of mathematical training, as instantiated by the enrollment in study fields characterized by distinct levels of mathematical requirements, on the SNARC effect. We only included students of either a subject with a strong mathematical focus (e.g. mathematics, computer sciences), or no mathematical requirements at all (e.g. literature, philosophy). Results (N=36; 18/group) yielded a significant overall SNARC effect, i.e. interaction between digit magnitude and response side [$F(1,35)=9.51$; $p=0.004$], but no influence of study group on this interaction [$F(1,35)=0.92$; $p=0.345$]. Interestingly though, including gender in the ANOVA yielded a significant four-way interaction [$F(1,35)=6.34$; $p=0.017$]. These results replicate previous findings in children (Schweiter et al. 2005), interpreted as gender-related differences in mental strategy use.

P14 Keywords: SNARC; Training

Feedback effects on implicit learning

Koen Homblé, Natacha Deroost, & Eric Soetens

Experimentele en Toegepaste Psychologie, VUB

In educational, managerial, and movement sciences it is generally assumed that feedback enhances performance. A meta-analysis by Kluger and DeNisi (1996), however, has shown that over a third of feedback interventions have a negative effect on task performance. The use of external feedback on performance is also often applied in cognitive tasks. Yet, little research has been performed on the actual influence of this information on task performance. Therefore, we examined the effect of different types of feedback on implicit learning in an explorative study. In a serial reaction time (SRT) task, in which participants incidentally acquire sequential regularity, we manipulated the amount, timing, and content of external feedback. The amount and timing of providing feedback were based on behavioristic reinforcement schemes. Feedback content was based on performance results, valence, or both. Results will be discussed during the presentation.

P15 Keywords: Feedback; Learning

Sleep-dependent consolidation of procedural learning in children

Emeline Houyoux and Philippe Peigneux

Neuropsychology and Functional Neuroimaging Research Unit, ULB

It is now widely accepted that sleep participates in the off-line consolidation of declarative and procedural memories. Although this hypothesis has been corroborated by numerous studies in adult participants, it remains debated whether post-training sleep similarly contributes to the consolidation of all memory types during the developmental period of childhood. Indeed, recent reports suggest that sleep supports consolidation for declarative, but not for procedural memories in children (e.g. Wilhelm et al. 2008, *Learn Mem*, 15: 373-377). In the present study, we tested the effect of post-training sleep on procedural memory using a motor adaptation task previously shown sleep-sensitive in adults (Huber et al. 2004, *Nature*, 430: 78-81). In this task, subjects have to reach visual targets using the computer's mouse, while unconsciously adapting to systematic rotations imposed on the trajectory of the cursor. Thirty-two healthy children (age 10-12 years) were tested under two experimental conditions. In the Morning-Evening-Morning (MEM) group, 16 children were trained to the task in the morning, then tested the evening of the same day and tested again the next morning after a night of sleep. In the Evening-Morning-Evening (EME group), 16 children were trained to the task in the evening, then tested the next morning after a night of sleep, and then in the evening of the same day. Results showed higher motor adaptation after post-training sleep than wakefulness ($p < .05$), indicating a beneficial effect of sleep. Our results support the hypothesis that sleep plays an active role in the consolidation of procedural memories in childhood.

P16 Keywords: Sleep; Children; Procedural motor learning

The development of dual-process reasoning and implicatures

Katrijn Pipijn and Walter Schaeken

Lab. Experimental Psychology, K.U.Leuven

This study investigates the development of deductive reasoning in children. The development of two forms of reasoning, scalar implicatures and dual-process reasoning, are examined and their corresponding theories will be compared. The commonly accepted Relevancy Theory and the influential dual process theories of reasoning (e.g., Evans, 2003; Stanovich & West, 2000) both make predictions on the development and automaticity of logical and pragmatic reasoning. Yet these predictions are not easily reconciled. Previous research on Gricean errors and syllogisms has been done, yet no attention had been drawn to the contradictions in underlying theories. In this study, we will try to bring more clarity on the matter by testing children on both implicatures tasks as on general logical reasoning tasks. We will also compare their results to general school results on mathematics and language arts. Two hundred children between the ages of 8 and 12 years old took part in this study. All participants received the same tasks. Numerous tasks were used in this study. From the classical reasoning experiments, we used syllogisms and base rate neglect tasks. From the implicatures experiments, we used two methods for scalar implicatures, some and or, and we also tested implicit negations. The data in this study are already collected but have not yet been analyzed. The results will be discussed in terms of the two conflicting theoretical accounts and compared to the general measures of mathematical and language arts performance.

P17 Keywords: Implicatures; Dual-process reasoning; Development

The composite face illusion and its disappearance with misaligned faces: an effect of metric distance or part separation?

Renaud Laguesse and Bruno Rossion

Center for Cognitive and Systems Neuroscience, UCL

Evidence that faces are perceived holistically comes from the composite face effect: identical top halves of a face are perceived as being different if they are aligned with different bottom halves. The illusion disappears when the bottom half of the face is moved away from the top half. One unresolved issue is whether the composite illusion disappears in the misaligned condition because the two halves do not form a whole object, or because the bottom part is located away from the top part. To address this issue, 34 participants had to match two top halves of composite faces presented sequentially. There were 3 conditions ("same": two halves identical; "different": two halves different; "composite": top half identical, bottom part different) and 7 levels of alignment between the top and bottom halves: from spatially aligned to completely misaligned. Compared to "same" trials accuracy rates decreased significantly only in the aligned condition. Response times were also increased only in that condition. Strikingly, even a small spatial misalignment between top/bottom parts in the composite face paradigm disrupted completely the influence of the bottom part on the perception of the top part. There was no difference between all other levels of (mis)alignment. This observation implies, practically, that it is not necessary to use a wide spatial misalignment in such studies. From a theoretical standpoint, these data show that it is the spatial alignment/separation of the facial halves rather than the metric distance between the face parts that explain the presence/absence of the composite face effect.

P18 Keywords: Illusion; Face perception

The Influence of Directionality and Negation-Type in Truth Table Tasks

Aline Sevenants, Kristien Dieussaert and Walter Schaeken

Lab. Experimental Psychology, KULeuven

Two types of truth table task are used to examine people's mental representation of conditionals: possibilities tasks and truth tasks. Despite their high degree of resemblance, the two task types not only differ regarding their number of answer alternatives, but also regarding their directionality: The truth task concerns the evaluation of the given rule on the basis of situations, while the possibilities task concerns the assessment of situations with respect to the given rule. The aim of the present study is to assess whether participants' answer patterns depend on the difference in directionality when the difference in number of answer alternatives is controlled for, by presenting both the extended possibilities task and the truth task in both directions, i.e. from rule to situation and from situation to rule. Moreover, we make use of both implicit and explicit negations. Concerning the negation type, we find more three-valued patterns with implicit than with explicit negations. This is in line with the robust phenomenon of 'matching bias'. It was replicated that possibilities tasks yield more two-valued answer patterns than truth tasks, which in turn yield more three-valued patterns than possibilities tasks. No effect of task directionality was observed.

P19 Keywords: Truth Table Task; Mental Models Theory; Suppositional Theory

Comparability of the numerical distance effect between tasks

Karolien Smets, Titia Gebuis, and Bert Reynvoet

Lab. For Experimental Psychology, KULeuven

Non-symbolic numeric processes are rooted in the Approximate Number System, which represents quantities with overlap between numerically close quantities. This overlap underlies the so-called 'distance effect', which is assumed to be a measure of numeric processing in general and has been shown to be related to mathematical performance. A large variety of tasks are used to assess this distance effect within age groups, but also between age groups. More specifically, adult participants are usually tested with comparison or same-different tasks, whereas habituation tasks are normally applied to infants. Recently, some doubt has been casted on whether these tasks are comparable and whether the distance effects derived from both tasks all originate at the same level. In the current study, comparison and same-different tasks were contrasted while using exactly the same stimuli in both tasks. Careful precautions were taken to ensure that participants were not able to rely on visual cues which are associated with number while doing the task. On a behavioral level (i.e., reaction times), the correlation between the comparison distance effect and the same-different distance effect did not reach significance. This points to a different origin for both distance effects which indicates that comparison and same-different tasks may not be entirely comparable.

P20 Keywords: Number processing; Comparison; Same-different

The effect of mood on susceptibility to memory distortion

Ilse Van Damme & Lien Seynaeve

Lab for Experimental Psychology, KUL

In the misinformation paradigm, participants are presented with misleading information after they have witnessed an event. The 'misinformation effect' refers to the distorting influence of that information on memory for the original event. Recently, researchers have started to look into the effect of mood on such memory distortion. Results are inconsistent: Evidence has been obtained both for greater susceptibility to misinformation in positive than in negative moods (Forgas, Laham, & Vargas, 2005), and for greater susceptibility to misinformation when feeling sad than when feeling happy or angry (Levine, Burgess, & Laney, 2008). In the present experiment, we tried to clarify these findings by investigating the effects of both valence and arousal. Participants watched a movie about a tradesman snooping around an unoccupied home. There were six mood conditions: positive mood with high/low arousal (happy and serene), negative mood with high/low arousal (angry and sad), a neutral mood condition, and a control condition. Participants were exposed to misleading information by means of a story. Memory was tested in a surprise forced-choice recognition task. The mood induction procedure was shown to be effective. A misinformation effect was obtained, confirming that participants were misled by the false information provided. Mood significantly influenced participants' belief in their false memories. More specifically, feeling sad induced the highest confidence ratings. Hence, not valence or arousal, but rather the specific emotion elicited affected the degree to which people were misled. This can be explained in terms of the problem-solving strategies associated with discrete emotions.

P21 Keywords: False memory; Misinformation paradigm; Mood

Expertise effects on the access of consciousness

Astrid Vermeiren¹, U. Beyens¹, Q. Fu², and Axel Cleeremans¹

¹ Consciousness, Cognition and Computation Group, ULB

² State Key Laboratory of Brain and Cognitive Science, Chinese Academy of Sciences

Expertise in a certain domain can increase the visibility for stimuli from that domain. For example, car experts will recognize a car better when they see a flash of a car on the street. Here, we study whether expertise can influence not only the objective identification performance, but also the subjective feeling of having seen a stimulus. Chinese and European participants were asked to identify chinese and maya signs which were presented only for a short amount of time (16 ms). Furthermore, they were asked to rate their awareness of the stimuli. It was found that both identification and awareness were higher for the chinese signs than for the maya signs when testing Chinese participants, while the opposite was true for the European participants. This effect started already at very short SOA's (stimulus-onset-asynchrony) between the stimulus and the post-mask. This suggests that early on in the visual processing stream, feedback loops render previous knowledge (expertise) available, allowing identification performance and subjective awareness of visual objects to increase more rapidly.

P22 Keywords: Subliminal perception; Expertise; Consciousness

Freezing of gait in Parkinson's disease is associated with impaired implicit sequence learning

Jochen Vandebossche^{1,2}, Natacha Deroost¹, Eric Soetens¹, Daphné Coomans¹, Sarah Vercruyse³,
and Eric Kerckhofs^{1,2}

¹ Cognitive Psychology, Vrije Universiteit Brussel, Brussels, Belgium

² Neurological Rehabilitation, Vrije Universiteit Brussel, Brussels, Belgium

³ Department of Rehabilitation Sciences, Katholieke Universiteit Leuven, Leuven, Belgium

We studied implicit sequence learning in single and dual task conditions in patients with freezing of gait (FOG), a major disturbing symptom in Parkinson's disease (PD). Our goal was to find out whether the disruption of rhythmic movements in FOG is related to working memory limitations by determining to what extent implicit sequence learning is affected by additional working memory load (secondary counting task). Fourteen freezers (FR), 14 non-freezers (nFR) and 14 matched healthy controls (HC) performed a serial reaction time (SRT) task with deterministic stimulus sequences under single and dual task conditions. The increase in reaction times for random as compared to sequenced trials was used as a measure of implicit learning. Scales for Outcomes in PD-cognition (SCOPA-COG) and tests for cognitive flexibility and set shifting were used as measures of cognitive functioning. Our results indicate that under dual task conditions, HCs and nFRs showed significant learning, whereas learning was absent in the FOG group. The disruption of implicit sequence learning under dual task conditions suggests that PD patients with FOG need more working memory capacity to learn a movement sequence. This result could give more insight in the observed problems with executive functioning in PD with FOG.

P23 Keywords: Sequence learning; Freezing of Gait; Parkinson's disease

How implicit is visual statistical learning?

Julie Bertels^{1,2}, Ana Franco^{1,3}, Estibaliz San Antón¹, & Arnaud Destrebecqz¹

¹ Consciousness, Cognition & Computation Group (CO3), Université Libre de Bruxelles

² Fonds de la Recherche Scientifique – FNRS

³ Fonds National de la Recherche Luxembourg – FNR

In visual statistical learning (VSL), participants learn the statistical regularities present in a sequence of visual shapes. A recent study (Kim, Seitz, Feenstra, & Shams, 2009) suggests that VSL occurs implicitly as it is not accompanied by conscious awareness of these regularities. However, Kim et al.'s conclusion depends on two unwarranted assumptions concerning the nature and the sensitivity of the tasks used to measure participants' knowledge of the regularities. In a replication of this study, we used a Rapid Serial Visual Presentation (RSVP) task as an indirect measure of learning, as well as a direct measure consisting in a four-choice completion task. Crucially, binary confidence judgments were recorded after each completion trial, in order to systematically measure the extent to which sequence knowledge was available to consciousness. Our results show that a subset of participants does not have conscious access to their knowledge. In most cases, however, we observe a significant correlation between performance and confidence, suggesting that participants were conscious of the knowledge they were using in the completion task.

P24 Keywords: Visual statistical learning, consciousness, confidence judgments

Neuropsychology

P300 is more sensitive to discriminate subclinical states with a bimodal oddball paradigm

Dyna Delle-Vigne, Charles Kornreich, Paul Verbanck, and Salvatore Campanella

Lab. of Psychological Medicine, ULB

Studies exploring neurophysiological correlates of psychiatric disorders have commonly used event-related potentials during a visual or an auditory oddball task. The main results concern modulations of the P300 component. The present study aims to further explore a possible improvement of clinical sensitivity of this P300 by using a cross-modal oddball design, using synchronized pairs of audio-visual stimuli. Two groups of healthy participants, one composed of controls and one of students displaying anxious-depressive tendencies completed visual, auditory and two kinds of audio-visual oddball tasks (one using emotional stimuli, the other one geometrical figures and simple sounds), in which they had to detect deviant rare stimuli among frequent ones as quickly as possible. Behavioral performance and P300 data were analyzed. The results revealed that subjects displaying anxious and depressive tendencies exhibited lower P300 amplitude than controls, but only in the cross-modal tasks. It is concluded that although the two groups differed in their levels of anxiety and depression, unimodal oddball tasks did not allow us to detect this difference, while the cross-modal task did, independently of the kind of stimuli. These results suggest that cross-modal oddball design should be used in future studies to increase the sensitivity of the P300 differences between healthy participants and those with clinical symptoms.

P25 Keywords: P300; Crossmodal; Psychiatry

Construction and validation of a new perceptual priming task: The contrasted word task

Marie Geurten and Thierry Meulemans

Department of Cognitive science/Neuropsychology, ULG

In clinical neuropsychology, different rehabilitation techniques – e.g., vanishing cues, spaced retrieval, errorless learning – developed for patients with memory impairments are considered to make use of the preserved implicit memory abilities shown by these patients, and notably the perceptual priming effects (Harrison et al., 2007). It might be therefore important for clinician neuropsychologists to determine whether these abilities are preserved or not in their patients. However, and quite surprisingly, assessment tools aimed at assessing implicit memory abilities in brain damaged patients are lacking. The aim of this study was to build and validate a new perceptual priming task – the contrasted word task – which could be used by neuropsychologists in their clinical practice. Seventy-two young healthy participants were included in this study, and were administered the contrasted word task in which 60 words counterbalanced in 2 orders and 3 types of priming (Visual; Auditory; New) emerged gradually from a white background on a computer screen. Subjects were asked to press the response key when they thought they had recognized the word. Results show a perceptual priming effect which is specific to the exposure modality (i.e., no inter-modality transfer), proving the efficacy of the contrasted word task to highlight a facilitated identification for words that were shown previously, and confirming the perceptual specificity of the priming effect (Schacter, 1992).

P26 Keywords: Implicit memory ; Perceptual priming; Measurement

Characterization of the cerebral waves associated with response inhibition toward alcohol-related cues in heavy and light drinkers

Fanny Kreuzsch and Etienne Quertemont

Department of Quantitative Psychology, ULG

Alcohol addictive behaviors are associated with a combination of deficits in executive function, such as a weak response inhibition, and potent automatic appetitive responses for alcohol-related cues. Previous studies reported differential cerebral patterns of activity between heavy and light alcohol drinkers during various cognitive tasks, even when the behavioral responses did not differ. The aim of the present studies was to investigate cerebral wave responses associated with the inhibition for alcohol and neutral cues in heavy and light drinkers. Response inhibition was assessed in a GO/NOGO task using pictures of alcohols or neutrals objects. The behavioral results show that both light and heavy drinkers produce faster and better responses to alcohol cues relative to neutral cues in GO trials. ERp data reveals an increased P300 and a decreased N200 in heavy drinkers in GO trials compared to light drinkers. However, this pattern is not observed with the classical GO/NOGO paradigm using letters as stimuli. These results suggest an enhanced cue-reactivity in heavy drinkers when the task involves alcohol-related stimuli. In alcohol GO trials, earlier P300 waves were observed in both groups, while the inhibition of a response to alcohol-related stimuli (alcohol NOGO trials) induced a delayed P300 and a higher N200 compared to neutral stimuli. As the NOGO-N200 has been suggested to reflect a frontal inhibition, its higher amplitude in the present study might be due to a greater difficulty to inhibit a response toward alcohol-related stimuli.

P27 Keywords: Alcohol; Inhibition; Evoked potential

Numerical and temporal magnitude comparisons in neglect patients

Nicolas Masson, Mauro Pesenti Mauro, & Valérie Dormal

Centre de Neurosciences, Système et Cognition, UCL

Interactions between numerical, spatial and temporal magnitude processing are commonly reported, suggesting that these magnitudes could all be represented within a common processing system (Walsh, 2003). Numbers might be represented spatially along a mental number line, with small numbers on the left and larger numbers on the right. Whether this spatial organization also applies to nonsymbolic numerosities and durations is still a matter of debate. It has been shown that patients suffering from spatial neglect deviate towards larger numbers in number bisection tasks (e.g., Zorzi, Priftis, & Umiltà, 2002) or present difficulties to process small symbolic numbers (Vuilleumier, Ortigue, & Brugger, 2004). Here we assessed in neglect patients whether this spatial bias observed in symbolic comparison also extends to (1) nonsymbolic numerical judgment (i.e., rapidly flashed dot sequences) and to (2) duration processing (i.e., comparison of the duration of single dot). In each task, neglect patients and healthy age and sex matched controls had to judge whether the stimulus was smaller or larger than a standard value (i.e., either "5" or 500 ms). The results showed that neglect patients have global difficulties to process symbolic and nonsymbolic numerical and temporal information. Accordingly to previous observations, in symbolic numerical comparison, the neglect patients responded to "4" slower than to "6". In nonsymbolic comparison, they were also less accurate to respond to sequences of 4 dots. In the duration task, performance of the neglect patients was globally worse than controls, whatever the size of the relative interval duration.

P28 Keywords: Magnitude comparison; Neglect; Numerical cognition

Dissociation in the social brain: The role of the TPJ and mPFC in goal and trait inferences

Ning Ma, Nicole Van Hoeck, Kris Baetens, Laurens Van der Cruyssen and Frank Van Overwalle

Experimentele en Toegepaste Psychologie, VUB

In his meta-analysis, Van Overwalle (2009) suggested that the Temporo-Parietal Junction (TPJ) is involved in inferring immediate goals and intentions from behaviors, while the medial PreFrontal Cortex (mPFC) integrates social information at a more abstract level, such as traits. However, to date, this division of inference processes in the social brain has not been investigated in a single study. We explored the differential role of TPJ and mPFC in goal and trait inferences respectively, using fMRI. Participants were given verbal descriptions of agents, together with a photo of the agent. In one half of the trials (Behavior Condition), the agent was described as engaging in a simple goal-directed behavior, whereas in the other half this description was absent. Orthogonal to this, in another half of the trials (Trait Condition), the participants had to answer a question about a trait of the agent, whereas in the other half the question was about the agent's physical appearance. The results revealed that the dorsal mPFC was strongly recruited when participants inferred the agent's trait, irrespective of the presence of a behavioral description. In contrast, the TPJ, posterior Superior Temporal Sulcus (pSTS), anterior IntraParietal Sulcus and PreMotor Cortex were activated when behavioral information was presented, irrespective of whether a trait question was asked or not. In addition, the posterior medial Frontal Cortex and left PFC typically associated with conflict monitoring were also recruited under both trait and behavior processing. This may be due to the multiple types of information between which the participants had to select, in order to provide an answer. These findings confirm that in a social context, the TPJ (and pSTS) and mirror areas are activated for understanding goal-directed behaviors, while the mPFC is involved in processing traits.

P29 Keywords: mPFC; TPJ; Goal inferences; Trait inferences

Efficacy of errorless learning in the acquisition of a new procedural skill in Alzheimer's disease

X. Schmitz, Caroline Lejeune, N. Vervecken, & Thierry Meulemans

Department of Cognitive Science, ULG

In Alzheimer's disease (AD), implicit or procedural rehabilitation techniques would be more effective to train new skills than explicit or declarative learning methods (van Halteren-van Tilborg, 2007). Following Baddeley and Wilson (1994)'s assumption, Maxwell et al. (2001) showed that reducing errors during motor learning minimizes the building of declarative knowledge and would allow implicit knowledge accumulation. However, most studies on errorless learning focused on learning of face-name associations (Clare et al., 2001), and very few studies have investigated errorless learning in procedural learning situations, even though some data suggest that errorless learning would be efficient for learning instrumental activities of daily living (e.g., Thivierge et al., 2008). The aim of this study was to examine the efficacy of an error-reducing versus an errorfull method in motor skill learning. We examined the acquisition of a new motor skill in 24 patients with AD and 24 healthy older adults matched for age, sex, and education. In this task, subjects had to follow with a reversed mouse the contour of a form (a star) displayed on a computer screen. Half the subjects learned in an error-reducing condition, and the others in an errorfull condition. After the learning phase, all the subjects had to complete a novel form. Results show an advantage for the error-reducing condition in the AD group, whereas the performance of the healthy participants did not differ between the two conditions, confirming the efficiency of errorless learning principles in AD for procedural learning situations.

P30 Keywords: Procedural learning; Errorless learning; Alzheimer's disease

Early attentional modulation by alcohol-related cues in young binge drinkers: An event-related potentials study

Géraldine Petit, Xavier Noël, Pierre Maurage, Charles Kornreich, Paul Verbanck, Salvatore Campanella

Lab. of Psychological Medicine, ULB

Episodic excessive alcohol consumption (i.e., binge drinking) is now considered to be a major concern in our society. Previous researches have demonstrated that alcohol cues are able to capture attentional resources in chronic alcoholic populations and that the phenomenon is linked to the development and maintenance of alcoholism. The current study examined college students binge drinkers' attention to alcohol-related pictures by means of event-related potentials (ERP) recording. Two groups of eighteen participants, one composed of binge drinkers and the other of controls completed a simple visual oddball paradigm in which alcohol-related and non-alcohol related pictures (either positive, neutral or negative) were presented. ERPs were recorded to explore the electrophysiological activity associated with the cues' processing during the different cognitive stream's steps. While no behavioural differences were found between groups on alcohol and non alcohol-related cues' detection, ERP data provided indication that processing of alcohol-related stimuli is modulated by binge drinking: The amplitudes of P100 elicited by the alcohol-related pictures were significantly larger than those elicited by the non-alcohol ones, but only in the binge drinkers group. It can be concluded that the present study provides evidence for an early processing enhancement, indexed by an increased P100 amplitude, for binge drinkers confronted to alcohol cues. This suggests that higher reactivity to alcohol cues is not a phenomenon limited to adult alcoholics, but that young binge drinkers already exhibit signs of prioritizing processing related to alcohol. Prevention intervention for alcohol misuse in youths should begin to consider approaches addressing this automatic cue reactivity.

P31 Keywords: Binge drinking; Attention; Alcohol cues

Electrophysiological evidences of visual avoidance of emotional faces and bodies in social anxiety

Mandy Rossignol¹, Pierre Philippot¹, Sophie-Alexandra Fisch¹, Salvatore Campanella², Frédéric Joassin¹

¹ Institut de Recherche en Science Psychologiques, UCL

² CHU Brugmann, Psychiatry Department, Lab. of Medical Psychology, ULB

Social anxiety disorder (SAD) is characterized by a fear of interpersonal evaluation. In that context, many studies have explored face processing in SAD. However, faces are not the only cues considered in social interactions and bodily expressions are extremely important carriers of social information. Accordingly, the present study aimed to compare the capture of attentional resources by facial and postural stimuli, and to explore the influence of SAD on these mechanisms. To this purpose, thirty-six participants reporting high or low social anxiety performed an attention-shifting task. A cue depicting a face or a posture expressing neutrality, happiness or anger, was presented for 1250ms. After 600ms, a neutral target appeared for 50ms in four possible locations around the cue. Participants had to identify the target while recording visual event-related brain potentials. Analyses showed that the P1 in response to cue was not influenced by cues' type while the N170 was higher for facial as compared to postural cues. Moreover, the P1 and the P3 recorded in response to targets were higher in the case of facial cues. Importantly, anxious participants evoked a diminished P1 in response to facial and postural cues, correlated with slower reaction latencies. These results suggest that faces capture more intensely attention than postures. However, the reduced perceptual processing of cues observable in SAD (on the P1) may indicate a visual avoidance of social stimuli, not only faces but also body postures. Finally, the corollary behavioral retardation demonstrated the ineffectiveness of this strategy in SAD.

P32 Keywords : Social anxiety; Emotional processing; ERP; Faces; Body postures.

Holistic face perception impairment in acquired prosopagnosia as evidenced by eye-gaze-contingency: generalization to several cases

Goedele Van Belle¹, Thomas Busigny¹, Anthony Hosen², Boutheina Jemel², Philippe Lefèvre¹ and Bruno Rossion¹

¹ Université Catholique de Louvain, Belgium

² University of Montreal, Canada

By gaze-contingently revealing/masking a selective portion of the visual field, we showed that the face recognition problems of a brain damaged patient with acquired prosopagnosia (patient PS) are caused by a deficit in holistic face processing. Contrary to normal observers, PS's performance did almost not decrease by seeing only one feature at a time (foveal window condition), while she was largely impaired by masking the fixated feature only (mask condition), forcing holistic perception (Van Belle et al., *JOV*, 2009; *Neuropsychologia*, 2010). We extended these observations to two cases of acquired prosopagnosia with unilateral right hemisphere damage causing face-specific recognition impairment: GG (Busigny et al., *Neuropsychologia*, 2010) and LR (Bukach et al., *J.Cog. Neurosc.*, 2006). They were tested in a delayed face matching task with a full view, gaze contingent window, and gaze contingent mask condition. Similar to PS and contrary to normal observers, both patients were significantly more impaired with a mask than with a window, demonstrating problems with holistic face perception. These observations support a generalized account of acquired prosopagnosia as a selective impairment of holistic face perception, and imply that holistic perception is a key element of normal human face recognition. Furthermore, the similar behavioral pattern of all three patients despite their very different lesion locations supports a distributed network view of the neural face processing structures, meaning that the key function of face perception requires the activity of several brain areas of the right hemisphere and their mutual connectivity.

P33 Keywords: Face perception, Prosopagnosia, Holistic processing

Defining the fundamental stimulation frequency for individual face perception

Esther Alonso Prieto & Bruno Rossion

University of Louvain, Louvain-la-Neuve, Belgium

It has been recently shown that human EEG amplitude at a constant frequency of stimulation (3.5 Hz) is much larger when different individual faces are presented compared to when the same face is presented repeatedly (*Rossion & Boremanse, 2011*). This habituation of the steady-state visual evoked potential (SSVEP) is localized on occipito-temporal sites, in particular over the right hemisphere. Here, we defined the suitable stimulation frequency ranges of this effect. Five observers were submitted to 81s sequences of faces presented at different rates (1 Hz to 16 Hz or faces/second) while high-density EEG (128 channels) was recorded. Fast-Fourier Transform (FFT) of EEG and computation of signal-to-noise ratio (SNR) showed a larger response to different faces than identical faces between 3 Hz and 9 Hz on occipito-temporal sites. Overall, and in most individual observers, the difference was the largest at 6Hz, and decreased linearly for the surrounding frequencies (5hz to 3Hz, and 7hz to 9Hz). This observation indicates that individual faces are best discriminated perceptually when the face stimulation oscillates at 6 Hz. Such a fundamental frequency rate should be used by future studies that aim to tag the sensitivity to individual faces in the human brain. Interestingly, at 6 Hz it takes 160 ms for the sinusoidal stimulation to complete a full cycle, and this time value coincides with the latency of the earliest face identity adaptation effect as found on the face-sensitive N170 component after flash stimulation (*Jacques et al., J Vis, 2007*). Hence, while the exact nature of the relation between the N170 and the phenomenon reported here in the frequency domain is still to be determined, these results support the view that the human brain requires about 160 ms to process individual facial information efficiently.

P34 Keywords: EEG, Face perception

Developmental and Educational Psychology

Attitudes about science and technology and the effects of gender in students of 11-12 years old

Peter Dejonckheere and Kristof Van de Keere

University College of Katho, Teacher Department

With the aid of a quasi-experimental design, the development of attitudes towards science and technology was investigated with students of 11-12 years old. The students came from three different classes from the same school and followed five sessions about science and technology during a week. In both the pretest and the posttest students accomplished an attitude questionnaire based on Jarvis and Pell (2002) together with questions about their stereotypical thinking and their involvement in the science and technology program. Results showed that more boys than girls had developed a positive attitude towards science and technology after the program week was finished. Moreover, when the trajectory between pre and posttest was analyzed, high involved boys showed a more positive attitude towards science in contrast to low involved boys. Remarkably, both high involved and low involved girls developed a significant *lower* attitude after the program week was finished. Finally, results showed that more boys than girls thought to be better in science and technology. In contrast girls evaluated themselves equal to boys' competences. Conditions for setting up programs about science and technology in primary schools were discussed.

P35 Keywords: Primary schools; Scientific thinking; Gender

Developmental differences in the procedural learning of a perceptual-motor skill

Christophe Lejeune, Corinne Catale, S. Merbah, Sylvie Jacquemin, and Thierry Meulemans

Department of Cognitive Science, ULG

It is generally admitted that procedural learning is efficient early in childhood. However, few studies have brought empirical data confirming this assumption, and many questions remain regarding the cognitive mechanisms that sustain procedural learning in children. The aim of our study was to investigate whether perceptual-motor procedural learning was present to the same extent in 7-, 10-year-old children and in adults. We also examined the role of executive functions, working memory, general intelligence, and motor ability during the learning process. A total of 76 subjects divided into 3 age-groups were tested. The task included 4 blocks of 3 trials during which each subject had to trace the contour of a triangle with an inverted computer mouse. Analyses show an important difference between groups in the initial phase of the learning process. They also reveal that executive functions intervene during the first learning phase, which might explain the observed age effect. In addition, results show significant but different learning effects for the procedural task: while the improvement was equivalent between 10-year-olds and adults, 7-year-old children showed a greater learning slope than the other groups; despite their slowness during the first blocks, younger children showed an equivalent performance at the end of the learning phase. These results suggest that, if executive processes are important during the first learning steps, they are not a "necessary condition" for motor skill learning to occur. The role of compensatory strategies sustaining learning in younger children is discussed.

P36 Keywords: Procedural learning; Memory; Children.

Primary school-children's self-concept relates to the pattern of their relationships with parents, teachers, and peers

Jeroen Sels, Sarah Doumen, Sofie Wouters, and Karine Verschueren

Department of Psychology, School Psychology and Child and Adolescent Development, KUL

Individual differences in children's self-perceptions have repeatedly been found to predict later social-emotional and academic adjustment (e.g., Marsh, Byrne, & Yeung, 1999; Verschueren, Buyck, & Marcoen, 2001). Research regarding possible antecedents of children's self-concept is, therefore, important. The current study examines the role of the pattern of relationships with parents, teachers, and peers for children's social, academic, and global self-concept. Participants were 393 fourth grade children. Children's self-concept was assessed by means of the Self-Description Questionnaire (Marsh, 1992). Parent-child relationship quality was measured with Kerns' Security Scale (Kerns, Klepac, & Cole, 1996). Peer acceptance was assessed by means of a sociometric procedure (Putallaz, 1983) and teacher-child relationship quality was measured with the Child Relationship Questionnaire (Hughes, 2008). Alphas of all scales were adequate. Based on cluster analysis (Gore, 2000), four groups of children were distinguished according to their relational pattern (Positive Relationship Network, Negative Relationship Network, Peer-Oriented, Adult-Oriented). After controlling for gender, children who had positive relationships with all social partners scored the highest and children who had negative relationships scored generally the lowest on the three dimensions of self-concept. Only for academic self-concept, peer-oriented children did not differ from children who had negative relations with all social partners. No differences were found on global and academic self-concept between children who only had positive relationships with peers and children who only had positive relationships with adults. Peer-oriented children, however, had a more positive social self-concept than adult-oriented children.

P37 Keywords: self-concept, social network, elementary school children

Interactions between number and space processing in adults with dyscalculia

Christophe Mussolin¹ and Christine Schiltz²

¹Laboratoire Cognition, Langage, Développement, ULB

²Educational Measurement and Applied Cognitive Science Research Unit, University of Luxembourg

A large body of evidence indicates clear relationships between numbers and space processing in healthy and brain-damaged adults, as well as in children. The present study addressed this question regarding atypical math development. Adults who have encountered dyscalculia (DYS) during childhood were compared to adults with average or high abilities in mathematics across two bisection tasks. Participants were presented with Arabic number triplets and had to judge either the number magnitude or the spatial location of the middle number relative to the two outer numbers. For the numerical judgment, adults with DYS were slower than both groups of control peers. They were also more strongly affected by the factors related to number magnitude such as the range of the triplets or the distance between the middle number and the real arithmetical mean. By contrast, adults with DYS were as accurate and fast as adults who never experienced math disability when they had to make a spatial judgment. Moreover, number-space congruency affected performance similarly in the three experimental groups. These findings support the hypothesis of a deficit of number magnitude representation in DYS with a relative preservation of some spatial mechanisms in DYS. Results are discussed in terms of direct and indirect number-space interactions.

P38 Keywords: Dyscalculia; Number processing; Space processing

Cognitive control of sequential knowledge among children and children with autism

Pichon Cora-Lise and Arnaud Destrebecqz

Consciousness, Cognition, and Computation Group, ULB

Implicit learning in children remains largely unexplored. Indeed, Learning experiments are often based on explicit instructions. A well-known test of cognitive control is the card-sorting test, in which subjects have to classify cards according to one of two successive dimension (i.e., the color or the shape of the stimuli). Children are usually able to switch rules by the age of 4. Bremner et al. (2007) have postulated that the ability to manipulate mental representations in a flexible way could be present early in development, especially when learning is implicit. Their results indicate that 2-years-old children, trained on a sequence of movements, are not only able to reproduce this sequence but also to inhibit its reproduction. It seems that the incidental nature of learning allows to inhibit the expression of knowledge early in life. We have replicated this study in children suffering from autism. After the learning stage, we compared the ability of normal and autistic children to generate an incidentally learned sequence (inclusion condition) or to produce a different sequence (exclusion condition). Are children with autism able to learn a visual sequence? Will they inhibit the production of the first sequence in order to learn and produce another one? Results will be presented at the conference and will be discussed in terms of flexible cognitive control of implicit learning.

P39 Keywords: Implicit learning; Cognitive control; Children

Clinical Psychology

Alexithymia moderates the affective influence of sounds on visual processing of emotional stimuli

Marie Bayot¹ and Nicolas Vermeulen^{1, 2}

¹ UCL

² National Fund for Scientific Research (FRS-FNRS)

Alexithymia is a multifaceted personality construct which encompasses difficulties in identifying and expressing feelings along with an externally oriented cognitive style. In alexithymia research, very few studies examined the cross-modal influence of emotion in sounds on the concomitant processing of affective information presented in the visual channel. In different experiments, we investigated how affective sounds (either musical sounds or prosody) influence the simultaneous processing and memory recognition of visual emotional information depending on the alexithymia level. For instance, using musical context, we examined whether congruent vs. incongruent emotional musical priming (happy and angry music) during encoding would moderate the effects of alexithymia on recognition rates. Our findings showed that congruency effects appeared between sounds and the processing of emotional stimuli in the visual channel. Moreover, the congruency effects were moderated by the alexithymia level of our participants. The congruency and incongruency effects between affective sounds and affective visual stimuli depended on the alexithymia level of our participants. Our results are discussed in relation with the recent findings in alexithymia research.

P40 Keywords: Alexithymia; Visual processing; Emotional stimuli

Role-plays and debriefings: from the practice of therapeutic attitudes to self-development

Céline Brison¹, Nady Van Broeck^{1,2}, Emmanuelle Zech¹

¹ UCL

² KUL

How is it possible to learn therapeutic attitudes, i.e., a new way of “being”? The three therapeutic attitudes of empathy, congruence and unconditional positive regard are currently considered as essential components of the therapeutic efficacy (e.g., APA *Task Force 29*). However, research on the efficacy of its training is limited and has serious methodological limitations (Hill, 2006, 2008). In the current research, 119 psychology students were trained for one month with role plays and debriefings. They were assessed before and after training on self- and client-perceived therapeutic attitudes as well as on stable individual characteristics. The results indicated that the students significantly improved their levels of empathy, congruence, and warmth. Interestingly, the training had also changed their personality in a positive direction: lower alexithymia and higher cognitive flexibility. Objectively, they had also made fewer errors to recognize their client’s emotions. Thus, at the end of the training, students felt and were appraised to be better therapists and it happened to be the reality. Helping skills can thus effectively be trained by role plays associated with supervisions.

P41 Keywords: Psychotherapeutic attitudes, Training; Role plays

Opinions and practice of forensic psychologists about credibility assessment

Jérôme Beerten and Adélaïde Blavier

Centre d'expertise en psychotraumatismes et psychologie légale, ULG

Assessing victim's credibility is essential but very complex when physical evidence is lacking. The dual query of evaluating victim's credibility and sequels and unclear mandates increase the confusion. Similarly, the use of the controversial term "credibility" illustrates the different expectations of the various protagonists involved in the judicial process. The conditions of evaluation and the limitations of available methods and assessment tools make this task difficult for the forensic psychologists. In this context, our exploratory study aimed to understand how forensic psychologists actually performed their task. In 2007, we interviewed 11 forensic psychologists with a questionnaire on their training, their practice, their use of the different methods of assessment, their understanding of the concept of credibility, their perception of their role and the content of their forensic report. Different practices were observed, although a majority of forensic psychologists used the Statement Validity Analysis (SVA) and seemed to use the assessment tools within the limits of their duties. Despite the use of scientifically-validated tools, they gave a great attention and value to nonverbal behaviors and symptoms in their evaluation. Moreover, 5/11 forensic psychologists considered transmission of data about the reality and/or truth of the facts was an integral part of their mission. Another sample of 16 forensic reports we analyzed in parallel showed under-utilization of scientifically valid assessment tools of suggestibility and an overuse of SVA elements (e.g., without video-tape-recording). In conclusion, forensic psychologists seemed to support their conclusions more on a range of consistent elements than on scientifically-based salient information.

P42 Keywords: Credibility assessment; Child abuse; Forensic psychology

Alexithymia is associated with a hyperarousal profile towards painful facial expressions

Delphine Grynberg^{1,2}, Nicolas Vermeulen^{1,2}, Olivier Corneille¹, Olivier Luminet^{1,2}

¹ Université catholique de Louvain

² Belgian National Fund for Scientific Research (FNRS)

Alexithymia is defined as a difficulty in identifying and describing one's own feelings, and is characterized by a pragmatic way of thinking. Previous data showed that high alexithymia scorers (HA) report greater discomfort and arousal when confronted with someone in distress than do low scorers (LA). More specifically, data showed that HA exhibit greater activity in brain regions associated with personal distress when watching someone's body parts in painful situations than do LA. Although HA show increased physiological arousal in these situations, compared to LA, they evaluate the individuals as experiencing less pain. The aim of the present study was to replicate this discrepancy among HA between arousal and intensity ratings of the pain felt using facial expressions of pain. Sixty-nine participants were instructed to label the emotion displayed on pictures of different facial expressions (anger, fear, happiness, pain, and neutral), and to assess the intensity of the expression as well as the arousal they felt watching these expression. After controlling for positive and negative affectivity, the results showed that greater difficulty in identifying feelings were associated with reduced accuracy to label painful expressions and increased feelings of arousal towards them. There was no significant correlation between alexithymia and intensity ratings. Our results confirm the hypothesis of a discrepancy among HA between arousal and intensity ratings to painful facial expressions. It suggests that HA may feel distress rather than empathy for distressed individuals. Moreover, difficulty identifying painful expressions increases the risk that HA engage in fewer prosocial behaviours.

P43 Keywords: Alexithymia; Pain; Arousal

How conditioning by one's job leads to visual misrepresentation: Evidence from Rorschach test in nurse population

Jérôme Englebert, Adélaïde Blavier

Centre d'Expertise en Psychotraumatismes et Psychologie Légale, ULG

Exner (1974, 2003, 2005) has developed an empirical method for analyzing answers at Rorschach test. This analysis is not focused on the answer content but more on perception, information processing and quality of the answer. Thus, contrary to psychoanalysis, the content and its interpretation are not systematically studied in this empirical approach. In this perspective, our purpose was to empirically study how answers and performance at Rorschach test were conditioning by one's job. We administrated Rorschach test to 38 nurses and 38 paired subjects (matched for gender and age). Our data showed nurses gave significantly more anatomical answers than control subjects, this first result confirmed a clinical assumption that was never objectified by previous studies: conditioning by one's job influences the answer content at the Rorschach test (e.g., people from medical sector tend to see organs). The second main result is the formal qualities of anatomical answers given by nurses were significantly worse and more unusual than anatomical answers given by the control group. These findings suggest that conditioning by one's job is so strong that it overrides the other choices of answers and can lead to a deformation of the visual perception. Furthermore, the content is the main answer element subjects can control in this test and thus, it could be a means of affirming his/her identity (e.g., nurse's identity by anatomical content). Moreover, in regard to the bad formal quality of anatomical answers, it seems that nurse's identity takes precedence over the reality and the actual form perception.

P44 Keywords: Misrepresentation; Rorschach

Children and parents: intergenerational transmission of anxiety sensitivity?

Céline Stassart and Anne-Marie Etienne

Health Psychology, Department of person and society, ULG

Anxiety sensitivity (AS) is the fear of anxiety-related sensations. This work examines the relationships between childhood learning experiences and the development of AS, in a non-clinical sample of children. Seventy normal children aged 9 to 12 years were interviewed about their learning experiences with anxiety-related and cold-related somatic symptoms. Three learning status were examined: - reinforcement, verbal transmission and observational (mother and father) learning- using the Questionnaire d'Expérience d'Apprentissage (QEA). AS levels were assessed using the Childhood Anxiety Sensitivity Index (CASI). The results revealed significant correlations between QEA and CASI (r between .31 and .60, $p < .01$), except for the reinforcement of somatic symptoms in learning by observation of the father. For boys, all learning experiences correlate with CASI scores (r between .33 and .62, $p < .001$), except the reinforcement in learning by observation of the father. For girls, two correlations are observed: for verbal transmission learning following anxiety ($r = .57$) and cold ($r = .55$) symptoms ($ps = .001$). The level of AS correlates with learning by observation of the father only for boys ($r = .38$, $p < .05$). These results could suggest that learning experiences seem to play a significant role in the development of AS and suggest also a gender transmission: between different status of learning for boys and girls and between the observation of the mother and the father. Learning by observation of the father will only be linked to boy's AS. These findings bring to question the specific impact of a father's fears in the development of children's AS.

P45 Keywords: Anxiety sensitivity; Questionnaire

Breaking bad news in pediatric departments: Families and health care professionals perceptions

I. Lambotte^{1,2,3}, F. De Gheest^{1,2}, L. De Coster², A. Courtois², N. Delvaux¹, D. Detemmerman³

¹ Secteur de Psychosomatique Infanto-Juvénile, Service de Psychologie, Hôpital Erasme

² Service de Psychologie du Développement et de la Famille, ULB

³ Clinique de Pédiatrie, Hôpital Erasme, ULB

The goal is to elaborate upon the necessary and sufficient conditions for the implementation of a partnership between parents and medical health care professionals, and to improve communication by supporting parental roles. Thirty-one patients suffering from acute or chronic neurological disorders, as well as 42 parents and 40 health care professionals were included in the study. This is a qualitative and prospective investigation that compares literary recommendations and descriptive accounts of the measures taken by pediatric hospitals during the communication of severe diagnoses. Research tools include an anamnestic questionnaire, a summary of medical data, a survey containing a checklist for HCP and an opinion related questionnaire. The results revealed that 40% of communications are assessed by parents as being inappropriate. Medical caregivers are, in general, more satisfied than parents. We present here a clinical tool with key points to pay attention and psychic process associated. Conclusions: The process of communication is marked by key milestones: 1) The set up of a framework, time to prepare and be prepared for the communication, 2) the communication, and the establishment of a trusting relationship between HCP and the family, and 3) the post-communication follow-up that ensures continuity of support and assistance. Parents must be acknowledged for their competencies but also for their vulnerability, so that doctors not only transmit their own message, but also listen to parents' experiences and understanding of the situation. Parents must be given an active role in their child's care so that, gradually, shared decisions may be made that will promote emotional expression within the family.

P46 Keywords: Communication; Parental experience; Professional practice

Role-plays and debriefings: from the practice of therapeutic attitudes to self-development

Céline Brison¹, Nady Van Broeck^{1,2}, Emmanuelle Zech³

¹ UCL

² KUL

How is it possible to learn therapeutic attitudes, i.e., a new way of "being"? The three therapeutic attitudes of empathy, congruence and unconditional positive regard are currently considered as essential components of the therapeutic efficacy (e.g., *APA Task Force 29*). However, research on the efficacy of its training is limited and has serious methodological limitations (Hill, 2006, 2008). In the current research, 119 psychology students were trained for one month with role plays and debriefings. They were assessed before and after training on self- and client-perceived therapeutic attitudes as well as on stable individual characteristics. The results indicated that the students significantly improved their levels of empathy, congruence, and warmth. Interestingly, the training had also changed their personality in a positive direction: lower alexithymia and higher cognitive flexibility. Objectively, they had also made fewer errors to recognize their client's emotions. Thus, at the end of the training, students felt and were appraised to be better therapists and it happened to be the reality. Helping skills can thus effectively be trained by role plays associated with supervisions.

P47 Keywords: Psychotherapeutic attitudes, Training; Role plays

Cross-cultural validity of the Five Facets Mindfulness Questionnaire: Adaptation and validation in a French-speaking sample

Alexandre Heeren^{1,2}, Céline Douilliez³, Virginie Peschard^{1,2}, Laetitia Debrauwere¹, and Pierre Philippot¹

¹ Université catholique de Louvain

² Fonds National de la Recherche Scientifique

³ Université Lille Nord de France, UDL3, PSITEC, Villeneuve d'Ascq, France

Recent research has revealed that mindfulness training improves mental health and psychological functioning. Although several questionnaires have been developed to measure mindfulness, the Five Facets Mindfulness Questionnaire (FFMQ) (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) is currently one of the most frequently used scales assessing mindfulness. The present study was designed to (1) test the psychometric properties and (2) explore the structural validation of the French version of the FFMQ. Two hundred and fourteen participants were tested using the French version of the FFMQ. Using confirmatory factor analysis, the results showed the French version of the FFMQ has good psychometric properties and a structural validity similar to the initial version. This adaptation constituted a validated mindfulness measure for French-speaking clinicians as well as researchers.

P48 Keywords: Mindfulness, FFMQ, validation

Psychology of migration and losses: Mourning process in families native from Democratic Republic of Congo

Esther Thiltges¹, Salvatore D'Amore², and Adélaïde, Blavier¹

¹ Centre d'Expertise en Psychotraumatisme et Psychologie Légale, ULG

² Service de Clinique Systémique et Psychopathologie Relationnelle, ULG

Migration constitutes a potentially traumatic event along with cultural losses and psychic reorganizations (Moro, 1994, 1998). The lost object is physically absent but psychologically present and this ambiguity precludes the mourning process (Boss, 1999). Indeed migration losses are unclear, incomplete and potentially retrievable (ex: return in the country, Falicov, 2003). The mourning process cannot be achieved because the object (country, family, cultural and social environments) is still existing (Aouattah, 2003). Nevertheless, exile does not have to be seen only as traumatizing but also as a potentially creative experience (Douville, 2001). Therefore, we also took into account benefits of the migration and individual resources. We analyzed a sample of five families from the Democratic Republic of Congo – with open questions during two meetings – and we tested the following hypothesis: "the mourning process is the result of the dynamic interactions between losses, resources and benefits ". We defined these dynamics through three steps: association and confusion; dissociation and identification; integration and achievement of the mourning process. We tested our hypothesis using Alceste – which is a statistical tool for discourse analysis – and the results confirmed it. We can state our conclusions as follows. At the first stage of the process, there exists confusion between losses, resources and benefits. At the second stage, the persons can differentiate and separate these three elements. And at the last step, people can achieve the mourning process, live with their losses and launch themselves into the future.

P49 Keywords: Migration; Loss; Mourning process

Relations between a computerized shopping task and cognitive and clinical variables in patients diagnosed with bipolar disorder and alcohol dependency compared with healthy controls

J. Laloyaux¹, C. Michel¹, N. Pellegrini¹, H. Mourad², H. Bertrand², M.-A. Domken², M. Van der Linden³, F. Larøi¹

¹ Department of Cognitive Sciences, ULG

² Intercommunale de Soins Spécialisés de Liège (Mental Health Sector), Liège

³ Cognitive Psychopathology and Neuropsychology Unit, University of Geneva, Switzerland

Persons diagnosed with bipolar disorder and alcohol dependency are frequently subject to poor everyday life functioning. However, previous studies have primarily used questionnaires or observational methods to assess everyday life functioning, both of which contain a number of limits. In order to address some of these limits, we developed a computerised real-life activity task, in particular, a shopping task where participants are required to shop for a list of 8 grocery store items. Twenty individuals diagnosed with alcoholic dependence and 21 patients diagnosed with bipolar disorder were compared with 20 and 21 matched healthy controls, respectively. All participants completed the shopping task, and both clinical groups were evaluated with an extensive battery of neuropsychological tests and a measure of global functioning. Results showed that, for both clinical groups, performance on the computerised shopping task significantly differentiated patients and healthy controls for a number of variables, especially total time and mean time to consult the shopping list. Performances on shopping task variables, in both clinical groups, were also significantly correlated with neuropsychological tests measuring verbal episodic memory, processing speed and selective attention. Finally, performances on the computerised shopping task were significantly correlated with various clinical variables and with global functioning in both patient groups. These findings suggest that the computerised task used in the present study provides a valid indication of the level of everyday life functioning for these clinical populations, and therefore may be viewed as a valuable instrument in both an evaluation and remediation context.

P50 Keywords: Computerized; Daily living activities; Psychopathology

European Research Network on Borderline Personality Disorders : first result from a projective approach

Francoise De Gheest¹, N. de Kernier², A. Cohen de Lara², M. Emmanuelli², D. Van den Bulke³, D. Drieu⁴, A. Mariage⁵, H. Bénony⁶, V. Delvenne¹, A. Pham-Scottez⁷, M. Speranza⁸, and M. Corcos⁹

¹ Service de Psychologie du Développement et de la Famille, ULB

² Université Paris Descartes, France

³ Université de Bordeaux, France

⁴ Université de Caen, France

⁵ Université de Franche Comté, France

⁶ Université de Bourgogne, France

⁷ Clinique des Maladies Mentales et de l'Encéphale, Paris, France

⁸ Centre Hospitalier de Versailles, France

⁹ l'Institut Mutualiste Montsouris, Paris, France

The main objective of the European Research Network on Borderline Personality Disorders (EURNET BPD) is to identify the main psychopathological characteristics of adolescents with a borderline personality disorder. Methods: the design of the research was a longitudinal study comparing a sample of borderline adolescents with a sample of matched controls. Participants were in and outpatient adolescents, aged between 15 and 18 years, recruited from several academic centers from France, Switzerland and Belgium. BPD diagnosis was made with the SIDP-IV. Psychopathological features of interest in BPD, mainly depression and anxiety, emotional regulation, impulsivity, attachment, traumatic experiences, were assessed with self-questionnaires (ADRS, SIS, BDI, DEQ). A subgroup of 27 BPD and 16 control participants issued from the final sample of the network was explored using a projective approach with the Rorschach and the TAT. Statistical analyses (SPSS) were performed on the results of the Rorschach. According to data from the literature, we made the hypothesis that, in comparisons to controls, BPD adolescents will show some specific psychopathological features in terms of depressive vulnerability (non-development of the depressive position), immature defenses (massive projection, projective identification, denial and cleavage), problematic relationships (marked hostility), negative emotional tone, distortion in understanding the thoughts and behaviors of others, emotional dysregulation, impairment in the manipulation of aggressive impulses and anguish of anaclitic type. Results: We will present the results of the Rorschach psychograms. Data issued from the comparative study between the two groups will be presented and discussed.

P51 Keywords: Borderline; Adolescence; Projective test

Applied Psychology

Olfactive Marketing: The Influence Of Scents On Consumer Behavior: Exploratory Research On Impulse Buying

Sabine Pohl, Alexandra Balikdjian and Malgorzata Bittner

Laboratoire de psychologie du travail et économique, ULB

This field study was carried out in a filling station in Poland with the aim to test the efficiency of a sensory marketing strategy. We were interested in the effect of ambient scents on consumers' perception and impulse buying behaviour. The aim of this study was to observe if an artificial scent, congruent with the product, had an impact on consumers' emotional and behavioral response and what role it played in impulse buying. The research was based on three experimental conditions: scented with "coffee", scented with "café latté" and a control condition (without scent). Two professional diffusers were used to spread the scent in the retail space. Two types of data were collected: purely quantitative data (the service station's daily transactions) and (questionnaire-based surveys carried out on 120 clients). The data allowed us to confirm the hypothesis of the positive impact of olfactory marketing on customers' evaluation of products and on the consumers' evaluation of the stations atmosphere. The results also confirmed that scents can lead to increase sales. We also found that consumers who claim to be sensible to scents, like younger people, are more likely to buy impulsively than other tested groups. In conclusion, given the specific characteristics of the olfactory system, as direct link to the limbic system and the durability of olfactory memory, this type of marketing seems to be a revolutionary and effective strategy for the retail industry.

P52 Key words: Olfactive marketing, coffee, impulse buying

The impact of forms of support on organizational citizenship behaviours in a context of laborious poverty

Sabine Pohl¹, Danny Tungisa Kapela², and Jean Kanga Kalemba-Vita²

¹ Laboratoire de psychologie du travail et économique, ULB

² Faculté de psychologie, University of Kinshasa

Conducted in a context of laborious poverty, this study aims to analyze the impact of family and organizational support on organizational citizenship behaviors. The sample for this study is drawn from 367 employees who work at the University of Kinshasa. The various forms of support have been measured by the scales of perceived organizational support (Eisenberger, 1986), leader-Member Exchange and family solidarity. The family solidarity scale have four dimensions (use solidarity, solidarity barriers, lack of solidarity and solidarity satisfaction). To measure organizational citizenship behavior, we refer to the scale developed by Podsakoff, Mac Kensie, Morman & Fetter (1990). The results of the study show that all forms of support have an impact on altruism. However, the relationship between the use of solidarity, the lack of solidarity, the perceived organizational support and altruism is negative. Only the use of the solidarity has a negative impact on the team spirit.

P53 Keywords: Organizational citizenship behavior; Support; Poverty

Conscious, but not unconscious, logo priming of brands and related words

Gigliola Brintazzoli, Eric Soetens, and Eva Van den Bussche

Department of Psychology, VUB

In an experimental context the existence of subliminal perception is no longer questioned. However, a lot of controversy exists about the applicability of unconscious perception in everyday life. In this study we therefore assessed whether more real-life stimulus material also possesses the power to elicit conscious and unconscious priming. Participants had to decide whether a target was a word or a non-word. The targets were brand names or non-brand names and were preceded by related or unrelated masked primes. The primes consisted of ten brand logos. In a conscious condition (N=39), primes were masked and presented for 17ms, and could be perceived above chance level. In an unconscious condition (N=19) masked primes were presented for 13ms, and could not be perceived above chance. In the conscious condition subjects responded significantly faster when prime and target were related as compared to when they were unrelated. Interestingly, this priming effect emerged when the target was the brand name (e.g. prime logo of McDonald's followed by the word "McDonald's"), but also when the target was a non-brand word related to the prime (e.g. prime logo of McDonald's followed by the word "hamburger"). In the unconscious condition, on the contrary, no priming effects emerged. Our results show that brand logos possess the power to prime their brand names and, remarkably, words associated to the brand. However, this only occurred when they were presented above the consciousness threshold. Whether brand logos can also influence consumer behavior requires further investigation.

P54 Keywords: Subliminal perception; Priming; Brands; Advertising

Can product value be represented implicitly?

Moïra-Phoebé Huet¹, Anne Atas¹, Wim Gevers¹, Caroline Cuny², Axel Cleeremans¹

¹ ULB

² Département Marketing, Grenoble Ecole de Management

How do people represent the value of products to themselves? Many authors have already investigated the influence of different product characteristics on their subjective value. Value is generally linked to both price and brand (Dodds & all, 1991), but the methods used to assess price perception continue to be debated. Thus, O'Neill and Lambert (2001) called into question some parts of the Likert questionnaire established by Lichtenstein and all (1988) to measure internal reference price. More recently, Eberhardt and all (2009) established that self-assessment scales of price knowledge measurements, such as commonly used in marketing research, have poor validity. Here, we propose that prices can be represented implicitly and activated automatically, and propose a novel indirect method to measure people's representations of value. To do so, we investigated the influence of product pictures on reaction time performance in a numerical comparison task. On each trial, participants were shown a reference number (e.g., 20), a product picture, and a target number that had to be judged larger or smaller than the reference. Importantly, participants were told the pictures were but mere distractors. We independently manipulated brand and objective price of the products depicted in the pictures. Results showed an influence of the product's value on reaction time in the numerical comparison task. We also found that brand exerts much more influence on RTs than price. The results suggest that value, as conveyed by the brand, is activated implicitly.

P55 Keywords: Product value; Implicit representation; Cognition

Perspective taking and compassion as distinctive elements of empathy. Are they useful skills for nurses in interactions with patients?

Letizia Dal Santo¹, Adalgisa Battistelli², Sabine Pohl³

¹University of Verona, Department of Psychology and Anthropology, Italy,

² University Paul Valéry, Montpellier 3, Epsilon Lab, France,

³ Université Libre de Bruxelles, Work and Economic Psychology Lab, Belgium

Empathy, a complex and multidimensional concept, has been defined in many ways within the context of nursing. Considering the role of empathy in patient care and a review of relevant literature (Yu, Kirk, 2008), this study aims to verify the following definition proposed by Hojat (2002, p.60): "Empathy is predominantly cognitive attribute that involves an understanding of experiences, concerns and perspectives of patient. Cognition is the dimension that distinguishes empathy from sympathy and compassion is the emotional bridge between them". By distributing the Italian version of JPSE to 222 Italian nurses we verified whether empathy is composed by two factors: perspective taking and compassion. The first one is the main factor and the core cognitive of empathy. It represents the nurses' ability to stand in patient's shoes, without living his/her personal space. Compassion, instead, is the emotional element of empathy and involves feeling the inner experience of the patient. A correlational study shows that perspective taking positively correlates with job satisfaction and work engagement and negatively with the intention of quit. Compassion does not. Our results confirm that cognition and affect have different impact on nurses' work conditions.

P56 Keywords: empathy, nursing, patient care

Emergency physicians' communication: What about a standardized handover?

A. Gillet¹, V. D'Orio², and A. S. Nyssen¹

¹ Department of Work Psychology, ULG

² Emergency Care Department, University Hospital of Liège

In health care organizations, the need for 24-hour care increases the number of patient's transfer. Handover and shift changes are now recognized as particularly critical moments for the reliability of care. However, few studies focused specifically on how physicians share relevant information during these moments. Moreover, emergency departments are known to be extremely vulnerable to error, because of high time pressure, frequent interruptions, high variability and number of patients, etc. Our study aimed to estimate how emergency physicians share information about a patient during handover, and to evaluate the impact of a procedure of medical handover standardization. To do this, we conducted a pre-post test on completeness of transmissions. We first performed observations of 50 physicians' shift changes in an emergency department. All of these were video-recorded and then analyzed. We classified communications into seven categories (identifying information, current pathology, patient's current status, significant patient's tests results, priority medical interventions, diagnose and recommendations, and dispositions). After these observations, we elaborated and implemented a standardization procedure, according to literature, analyses of our observations and physicians' recommendations. We finally assessed this procedure by observing and analyzing 40 handovers, using the same method as previously described. We also evaluated the physician's opinion about the quality of the transmission with a 7-point Likert scale. Our results showed three significant differences before and after the standardization of communications. Physicians share more information about patient's tests results, priority interventions and dispositions. Moreover, we found a significant difference of the perceived quality of the standardized handover.

P57 Keywords: Handover; Emergency department; Standardization

Mobilizations professional and personal commitments in the contemporary work: new tensions in the spaces of qualification

Sabine Pohl¹, Catherine Hellemans, ¹ Pierre Desmarez ¹, Pierre Lannoy², & Isabelle Stengers³

¹ Laboratoire de psychologie du travail et économique – ULB

² METICES - Faculté des Sciences sociales, politiques et économiques – ULB

³ Groupe d'Etudes Constructivistes (GEC) - Faculté de Philosophie et Lettres – ULB

This project aims to develop an innovative and important analysis of neglected but crucial aspects of the contemporary world, mobility/mobilisation and its relation to work and qualifications. The first facet of the mobilization concerns the processing of mobility, referring here to the conditions of use of the work force in a capitalist economic system (Gaudemar, 1976: 260-261). The second important issue posed by the question of the "continuous mobility" concerns the relationship between the actor and his organization, the organizational commitment. The literature distinguishes usually two forms of commitment, affective and continuity organizational commitment (Becker, 1992, Meyer & Allen, 1991, 1997, Pohl 2002). The meeting of these two phenomena (mobilization and commitment) cannot be seized according to a simple model, which would make a mechanical consequence of the other. On the contrary, our project seeks to problematize the junction of these two phenomena, themselves characterized by their complexity. To achieve this, we propose to base the formulation of our research themes on the concept of space of qualification. Furthermore, mobility involves costs for the workers. How individuals operate the assessment of these costs and how they handle issues identified by the injunction of mobility will be also an important research question. Several interpretative models were advanced (Hellemans, 2008; Lazarus and Folkman, 1984). Lazarus (2000) have for example developed a coping model, also called model of subjective stress, which analyses the underlying cognitive processes and actually coping strategies put in place by an individual in an stressful situation

P58 **Keywords:** Mobilization; Affective organizational commitment; Subjective stress

Social Psychology

Oral and written expression: examination of emotional content

S  verine Balon and Bernard Rim  

Centre for Study of Social Behavior – CSSB, UCL

Concerning emotional verbal expression, two areas of research have developed in parallel: the study of ‘social sharing of emotion’ (Rim  , Mesquita, Philippot & Boca, 1991) which refers to oral expression and the development of the ‘writing paradigm’ (Pennebaker & Beall, 1986) which refers as for it to written expression. So far, no research has examined the content differences between those two modalities of emotional expression. To this end, 92 student participants ($M = 19.46$ years; $SD = 1.63$) were invited either to speak ($n = 42$) or to write ($n = 50$) about a personal emotional event. Then, some lexical analyses were conducted with computerized text analysis tools for French language: Tropes (Acetic, 2008) and Emotaix (Piolat & Bannour, 2008). The results revealed significant differences between the two modalities concerning the use of adjectives, verbs, adverbs, conjunctions and pronouns. More specifically, the data surprisingly showed that the percentage of emotional terms was significantly higher in the written than in the oral condition although the latter is known to promote the setting up of a socio-affective dynamics between the two partners. This research highlighted many differences between the two conditions regarding to the structure of the speech as well as to the emotional content. These results could be explained by the inherent specificities of writing and/or possibly the absence of a social audience.

P59 Keywords: Emotional expression, Social sharing, Writing

Sexual Objectification and Dehumanized Social Perception: Evidence of a Link Between Benevolent Sexism and Mechanistic Dehumanization

Philippe Bernard^{1,3}, David Marchiori¹, Christophe Leys¹, Jeroen Vaes², & Olivier Klein¹

¹ Social Psychology Unit, ULB

² Universit   degli Studi di Padova, Italy

³ Belgian Funds for Scientific Research (F.S.R.-NFSR)

Recent research has shown that sexual objectification (i.e., a kind of highlighting sexualized body) affects social perception (Loughnan et al., 2010; Vaes, Paladino & Puvia, 2011). This study examines the effect of sexual objectification on the attribution of human nature by using an indirect method (SCAT; Karpinski & Steinman, 2006). In line with objectification theory (Fredrickson & Roberts, 1997), we assume that sexual objectification can lead to mechanistic dehumanization (i.e., perception assimilating a person to an object) only when female targets are evaluated. Moreover, given that objectification portrays women as not corresponding to benevolent sexist stereotypes, we suggest that benevolent sexism is associated with the attribution of human nature. Results support the assumptions that mechanistic dehumanization stemming from objectification is specific to female targets and that this effect is moderated by benevolent sexism. The implications of these results for social perception are discussed.

P60 Keywords: Dehumanization; Sexual objectification; Benevolent sexism

Diversity management and prejudice: which mediators matter?

Marie Courtois, Stéphanie Delroisse, and Ginette Herman

Center for the Study of Social Behavior and Centre Interdisciplinaire de Recherche, Travail, Etat et Société, UCL

Different diversity ideological approaches have been developed in Western societies in order to lessen discrimination against minority workers. In this regard, two specific ideologies have been contrasted in the social psychological literature: assimilation and multiculturalism (Berry & Kalin, 1995; Ryan, Casas & Thompson, 2010). Previous studies have shown that multicultural approach, compared to assimilation approach, has a positive effect on prejudice reduction (e.g., Rosenthal & Levy, 2010). Furthermore, recent studies (Delroisse, Herman and Yzerbyt, submitted) on justification processes underline that feelings of responsibility can reduce prejudice expression and that responsibility can be activated by egalitarian values. The aim of the present study is to investigate the link between diversity and prejudice with a set of mediators. We hypothesize that multiculturalism reduces resort to justification and increase egalitarian values and responsibility feeling, which in turn decrease prejudice. 428 people working in an administrative setting have participated in a correlational study. As predicted, multiculturalism is positively linked to egalitarian values and to responsibility feeling, which in turn decrease prejudice. Moreover, egalitarian values have a negative impact on justification, which in turn reduces prejudice. Assimilation is not correlated with any variables of the model. Results are discussed in light of the diversity approaches literature.

P61 Keywords: Diversity; Justification; Prejudice

The Influence of Future Time Perspective on Affect and Attentional Bias

Ineke Demeyer and Rudi De Raedt

Department of Experimental Clinical and Health Psychology, Ghent University

The Socioemotional selectivity theory states that future perspective influences information processing and affect. According to this theory, persons with a decreased future perspective value present-orientated goals of well-being. Consequently, these persons should show attentional bias towards positive information or away from negative information, which in turn influences affect. In this study we manipulated future perspective by using imagery to investigate effects on attentional bias towards emotional information and affect. Forty-one students were randomly divided in 2 conditions: imagery with short or long term future scenarios. Before and after this manipulation affect was measured using the PANAS. A Scrambled Sentence Test (SST) measured participants' tendency to interpret ambiguous information in a long term future perspective. Attentional bias was investigated using a exogenous cueing task, in which the location of a target was correctly or incorrectly cued by a happy, sad or neutral facial cue. Significant differences were found between groups for future SST. Moreover, the SST was negatively correlated to maintained attention for negative faces. Finally, there was a general increase of positive and decrease of negative affect, independent of groups. These results indicate that the procedure developed for inducing different future perspectives in both groups was successful. Although no between group differences were found for attentional bias, correlations showed less maintained attention to negative information in participants with a more expansive future time perspective, which contradicts the Socioemotional selectivity theory. This underscores the need for further investigation into motivational aspects behind information processing.

P62 Keywords: Future perspective; Affect; Attentional bias

The Organization of the Social Mental Map: Natural Social Classification at the Subgroup Level

Sven Pattyn¹, Yves Rosseel², & Alain Van Hiel³

¹Department of Developmental, Personality, and Social Psychology, UGent

²Department of Data Analysis, UGent

Although the categorization of novel social stimuli according to the general qualities of gender, age, and race is known to be automatic and primordial, categorizing stimuli into more specific social subgroups (e.g., punks or businesswomen) is much more informative and cognitively efficient. With our work, we show that social stimuli are more likely to be grouped into subgroups with an intermediate degree of specificity than into broad, general categories or narrow, highly specific categories. Furthermore, we show that category membership at the intermediate subgroup level predicts social judgments more efficiently than category membership at a more general or more specific level.

P63 Keywords: Social categorization, Social judgment, Subgroups

Communication With a Trustworthy Inappropriate Audience: When Anti-Tuning To a Racist Ingroup Member Still Means Believing

Sabrina Pierucci and Olivier Klein

Unité de Psychologie Sociale, ULB

Two studies investigated the “Saying-is-Believing” (SIB) effect (Higgins & Rholes, 1978) within an intergroup context. SIB refers to the influence of an audience on communicators’ memory: communicators not only tune their messages to suit the audience’s attitude towards a target person, but later show an audience-congruent memory bias. *Epistemic* and *relational* needs are thought to be responsible for communicators’ sharing reality (i.e.; expressing SIB) with the audience (Echterhoff, Higgins & Levine, 2009). Study 1 extended the SIB for Belgians communicating about an outgroup target (i.e.; a Northern African) with an ingroup audience. Study 2 tested SIB when participants communicated with a *racist ingroup audience* (i.e.; an *unsuitable relational partner* but *trustworthy* since holding culturally shared beliefs). Participants showed the audience-congruent memory bias without overtly tuning their message to the audience. Results are discussed in terms of subtle conformity despite blatant rejection to ingroup members relying on stereotypes (Castelli, Vanzetto, Sherman & Arcuri, 2001).

P64 Keywords: Shared reality; Communication; Memory.

The role of need for closure in essentialist entitativity beliefs and prejudice: An epistemic needs approach to racial categorisation

Arne Roets and Alain Van Hiel

Department of Developmental, Personality and Social Psychology, UGent

The present research investigates how people's general epistemic motives may inspire essentialist beliefs about racial groups and racism. In three studies, we focus particularly on essentialist entitativity (EE, referring to beliefs about the uniformity, informativeness, and inherent core of racial groups), probing into its relationships with epistemic Need for Closure (NFC) and prejudice. In Study 1, we develop an EE scale, empirically distinguish it from the naturalness component of essentialism and non-essentialist entitativity beliefs, and establish its predictive utility for explaining racial prejudice. Study 2 provides experimental evidence for the causal effect of NFC on EE beliefs. Study 3 demonstrates in three different samples that EE beliefs mediate the relationship between dispositional NFC and racial prejudice. It is argued that EE beliefs about racial groups are an expression of motivated social cognition, serving people's seizing needs for quick and easy social judgment.

P65 Keywords: Motivated cognition; Essentialism; Prejudice

A space just for us: The potential for group polarization on the Internet and its effects on the willingness to interact with an outgroup

Sandy Schumann¹, Olivier Klein¹, & Karen Douglas²

¹ Unité de Psychologie Sociale, ULB

² University of Kent at Canterbury

In the early days of the Internet it was postulated that through computer-mediated communication (CMC) the fragmentation of society would be overcome, allowing everyone to interact with each other. Unfortunately, when looking at online information exchange, the Internet is defined by enclaves of like-minded users. In Study 1, a qualitative content analysis of 10 online discussion groups, we extended these insights and showed that despite the groups being strongly homogenous, outgroup members are active. However, their comments and responses of ingroup members are characterized by negative evaluations of one another and efforts of the ingroup to reduce the number of outgroup members, to restore a homogenous group. Such homogenous discussion groups provide key conditions for group polarization, namely an attitude change to a more extreme position after interacting with like-minded others. Referent informational influence theory states that this might be due to a shift of the ingroup norm away from an outgroup norm. However, little is known about the effect of group polarization, in particular on intergroup relations. Based on the findings of Study 1, we assessed in Study 2 ($N = 65$) whether group polarization reduces the willingness to interact with an outgroup. As hypothesized, group polarization in CMC discussion groups predicted a reduction of the willingness to interact with an outgroup. Results further indicated that lower perceived similarity with the outgroup mediates this relationship. Implications for the group polarization framework and the Internet as a space for intergroup dialogue are discussed.

P66 Keywords: Group polarization; Intergroup contact, Computer-mediated communication

When motivation backfires: An interaction analysis of motivation and cognitive capacity on information relevance perception and social judgment

Arne Roets¹, Alain Van Hiel¹ & Arie W. Kruglanski²

¹ Department of Developmental, Personality and Social Psychology, UGent

² University of Maryland, USA

Motivation and cognitive capacity are central variables in both classic and recent models of judgment and persuasion. However, the exact nature of their interplay is unclear. Two experimental studies were conducted to address this issue. Study 1 demonstrated that only when both motivation and cognitive capacity were either high or low, judgment was differently affected by information with high versus low relevance. In Study 2, we assessed the explaining mechanisms for the interaction effect showing that perceived relevance but not information sampling quantity was the proximal determinant for the information's judgmental impact. Matching levels of motivation and cognitive capacity caused information with high potential relevance to be perceived as more relevant, and increased judgmental change accordingly (full mediation). In the discussion we focus on how high motivation can help but also hamper information-based judgment, depending on the decision-maker's cognitive capacity.

P67 Keywords: Motivation; Cognitive capacity; Judgment

Sight unseen: the role of perceived trustworthiness in mimetic desires

Evelyne Treinen and Olivier Corneille

Center for the Study of Social Behavior, UCL

Several recent studies (Bayliss, Frischen, Fenske, & Tipper, 2007; Bayliss, Paul, Cannon, & Tipper, 2006; Corneille, Mauduit, Strick, & Holland, 2009) showed that stimuli are evaluated more favorably when they are perceived to be objects of attention in others. Except for emotional expression, little is known about how target characteristics moderate this mimetic desire effect. The present research examined the role of target trustworthiness in this effect. Fifty-five psychology students ($M_{age} = 19.55$, $SD = .90$) saw associations of video excerpts of a three-dimensional trustworthy and an untrustworthy face (Oosterhof & Todorov, 2008) associated with 4 neutral art paintings on a computer screen. The two faces turned their attention towards one of the paintings and away from another one, respectively. After exposure, pictures were evaluated. Results revealed that participants preferred looked-at-paintings when they were associated with a trustworthy ($M = 6.38$, $SD = 1.87$) rather than an untrustworthy face ($M = 4.60$, $SD = 2.02$), $t(55) = 4.47$, $p < .001$. In sharp contrast, looked-away-paintings were liked better when associated with an untrustworthy ($M = 6.31$, $SD = 1.97$) rather than a trustworthy face ($M = 4.75$, $SD = 2.36$), $t(55) = 3.14$, $p < .004$. Implications for associative learning processes are discussed.

P68 Keywords: Joint attention; Evaluative learning; Trustworthiness

Detecting cheaters without thinking: testing the automaticity of the cheater detection module

Jens Van Lier¹, Russ Revlin², and Wim De Neys³

¹ KUL

² University of California- Santa Barbara, US

³ CNRS, University of Toulouse, France

Cosmides and Tooby (1992) have proposed that our brain is composed of evolved mechanisms. One extensively studied mechanism is the Cheater Detection Module. This module would make people very good at detecting cheaters in a social exchange. A vast amount of research has illustrated performance facilitation on social contract selection tasks. This facilitation is attributed to the alleged automatic and isolated operation of the module (i.e. independent of general cognitive capacity). This study, using the selection task, tests the critical automaticity assumption in three experiments. Experiment 1 and 2 established that performance on social contract problems does not depend on age or cognitive capacity. Experiment 3 experimentally showed that burdening cognitive resources with a secondary task had no impact on performance on the social contract problem. Overall, findings validate the automatic and effortless nature of social exchange reasoning.

P69 Keywords: Reasoning; Evolutionary Psychology; Cheater detection

Narrowing down to open up for others' concerns: Empathic concern can be enhanced by inducing detailed processing

Karl-Andrew Wolpin¹, Olivier Corneille¹, Vincent Y. Yzerbyt¹, and Jens Förster²

¹ Center for the Study of Social Behavior, UCL

² University of Amsterdam, the Netherlands

Empathy forms the basis of social functioning. Empathic concern consists of experiencing other-oriented feelings of warmth and compassion. This entails going through specific emotional experiences that are different from those felt by the others. One may for example feel pity, but not rage, when seeing someone being treated unfairly (Davis, 1983). We predicted that undergoing these concrete emotional states would be facilitated when people engage in a more detailed and concrete form of processing, since it has been shown that this processing mode supports differentiation (Förster, 2009). This hypothesis was examined by inducing contextual changes at the perceptual, motivational, and social level known to facilitate a detailed form of processing (Förster & Dannenberg, 2010). Experiment 1 induced local, global, or both (control) perceptual scopes with the global-local processing task (Navon, 1977). Experiment 2 induced a prevention or promotion motivational state using the mouse-in-the-maze task (Friedman & Förster, 2001). Low or high power was induced either implicitly with a word-completion task (Schmidt Mast et al., 2009; Experiment 3) or explicitly via recall of situations (Galinsky et al., 2006; Experiment 4). In line with expectations, empathic concerns (Davis, 1980) were enhanced in contexts promoting a detailed processing style (local perceptual scope, prevention motivation, low power) rather than a holistic processing style (global perceptual scope, promotion motivation, high power). Simple contextual changes thus influence empathy beyond individual differences and pro-social behavior in interpersonal and intergroup contexts may be facilitated when people are brought to focus on the tree rather than the forest.

P70 Keywords: Empathy, Processing styles, Power, Regulatory focus,

Reactive Attachment Disorder and socio-emotional development in childhood : clinical review.

Céline Wertz¹, Jean-Marie Gauthier², Adélaïde Blavier¹

¹ULg, Centre d'Expertise en Psychotraumatisme et Psychologie Légale.

²ULg, Service de Psychologie Clinique de l'Enfant et de l'Adolescent.

The quality of interactions experienced with primary attachment figures influences the development of emotional skills. On the other hand, we know how emotions fill a critical adaptive role for the social adjustment, in that they assume both a communicative function and an informative value. In this research, we were particularly interested in how children's patterns of attachment were expressed in terms of emotional regulation abilities. According to Laible & Thompson's observations (1998), we tested the following hypothesis : insecure attachment representations are associated with a poverty of skills in decoding emotional signals. They especially would affect the perception of negative emotional expressions. We tested this hypothesis by the meeting of five children of primary school age (5 to 8 years old) with a reactive attachment disorder and through the establishment of two methodological tools. At first, the Attachment Story Completion Task (Bretherton et al., 1990) allowed us to identify attachment representations for each child. Secondly, inspired by Pollak & al.'s study, we developed a recognition task of facial emotional expressions. We observed in these children low average rates of identification of basic and primary negative emotions. Especially, the accuracy of judgments was not only a function of emotion's valence, but was also dependant of the child's attachment pattern. Finally, this research confirmed the observations, already showed in previous studies, that interpersonal difficulties presented by these children could be explained specifically by their inefficiency in interpreting social cues surrounding emotional events (Crick & Dodge, 1994).

P71 Keywords : Reactive Attachment Disorder, Emotional regulation, Social skills.

Development of conflict detection during thinking in elementary school.

Vicky Feremans¹ & Wim De Neys²

¹Lab Experimentele Psychologie, K.U.Leuven

²CNRS, Université de Toulouse)

Human reasoning is often biased by salient heuristics. It is assumed that there are two different cognitive systems underlying human reasoning: the heuristic system and analytic system. Most of the time the systems generate the same response. However, when the two systems generate a different solution, there is a conflict and the default heuristic response will need to be inhibited. Research shows that adults and adolescents can detect this conflict: They have the feeling that their answer is not entirely correct after solving problems in which the two systems cue a conflicting response. This study tries to verify the existence of conflict detection during thinking in younger children at the elementary school age (third and sixth grade). Participants were asked to solve seven simplified visual reasoning tasks. In half of the problems cued heuristic and analytic responses conflicted (incongruent problems), in the other half both systems cued the same response (congruent problems). As in previous work, participants were asked to indicate their response confidence on a visual scale to measure conflict sensitivity. Successful conflict detection should result in lower confidence ratings after solving incongruent than congruent problems. Results show that children of the sixth grade, just like adults and adolescents, are indeed less confident after solving incongruent problems. However, third graders did not show this effect yet. Results indicate that at least by the end of elementary school, reasoning bias can no longer be attributed to lax conflict detection.

P72 **Keywords:** reasoning, conflict monitoring, preadolescents

Affective-motivational factors predicting freshmen's study time investment

Sarah Doumen, Chris Masui, and Jan Broeckmans

Hasselt University, Faculty of Business Economics, Discipline group Behaviour, Communication & Linguistics

Students significantly differ in the amount of time devoted to studying. Female students have been shown to work harder (Brint & Cantwell, 2010), whereas students with higher scores on general cognitive ability and prior learning tests invest less study time (Plant, Ericsson, Hill, & Asberg, 2005). But what about variables with a strong affective-motivational component? The current study aimed to examine whether study time is related to self-efficacy, learning goal orientation (Dweck, 1999), and different aspects of action-orientedness (disengaging from a task rather than being preoccupied with failure and setbacks; easily initiating work on a task rather than hesitating to start working; being persistent until completion of the task rather than being easily distracted; Diefendorff, Hall, Lord, & Streat, 2000; Kuhl, 1994). 339 first-year students of the Faculty of Business Economics of Hasselt University (Belgium) participated. Students recorded the study time for a particular course at least weekly for the entire duration of the term. Affective-motivational factors regarding the course were measured by a student questionnaire. Results showed that easily taking initiative to study and being persistent are associated with more time investment, whereas more disengagement from the course and a higher course-related self-efficacy are related to less time investment (after controlling for gender and intelligence test scores). Learning goal orientation was unrelated to study time

P73 **Keywords:** study time, higher education, affective-motivational factors

Author Index

Aarts, K.	72	
Aelterman, N.	37	
Aerts, A.	83	
Alarcon-Henriquez, A.	16	
Alonso Prieto, E.	108	
Andres, M.	48	
Asbrock, F.	16	
Atas, A.	34	120
Attout, L.	89	
Azzi, A.	16	
Baert, S.	76	86
Baetens, K.	104	
Baeyens, D.	81	82
Balikhjian, A.	119	
Balon, S.	123	
Bastiaansen, L.	56	
Battistelli, A.	121	
Bayard, C.	90	
Bayot, M.	112	
Baysu, G.	43	
Bechara, A.	92	
Beckers, T.	79	
Beckwé, M.	90	
Beerten, J.	113	
Belopolsky, A.	45	
Bénony, H.	118	
Bernard, P.	123	
Bertels, J.	101	
Bertrand, H.	117	
Beyens, U.	99	
Bijttebier, P.	32	53
Billon, A.	92	
Binamé, F.	91	
Bittner, M.	119	
Blanco, F.	33	
Blavier, A.	113	114 116 129
Bogaard, G.	28	
Bogaerts, L.	61	
Brants, M.	46	
Brass, M.	48	
Brédart, A.	50	
Breugelmans, S.M.	60	
Brevers, D.	92	
Brintazzoli, G.	120	
Brison, C.	112	115
Broekaert, E.	32	
Broeckmans, J.	130	
Brown, R.	43	
Brown, A.D.	60	
Brybaert, M.	82	
Burny, E.	12	
Busigny, T.	107	
Campanella, S.	102	105 106
Casini, A.	84	
Catale, C.	91	109
Celestin, L.-P.	76	
Celestin-Westreich, S.	76	
Ceulemans, A.	12	
Chang, B.	22	
Charlier, Y.	91	
Christ, O.	16	41 42
Claes, L.	26	
Claes, S.	26	
Clays, E.	84	
Cleeremans, A.	34	77 92 93 99 120
Cluydts, R.	75	
Cohen de Lara, A.	118	
Colette, F.	91	
Colin, C.	90	
Colins, O.	32	
Collette, F.	20	
Coman, A.	60	
Content, A.	94	
Coomans, D.	100	
Cora-Lise, P.	111	
Corcos, M.	118	
Corneille, O.	17	113 127 128
Courtois, A.	115	
Courtois, M.	124	
Coxon, J.	19	
Crombez, G.	28	29
Cuny, C.	120	
Cynthia, M.	58	
D'Amore, S.	116	
D'Argembeau, A.	20	47
D'Orio, V.	121	
D'Ostilio, K.	20	
Dal Santo, L.	121	
De Baene, W.	48	
De Bolle, M.	30	31 32 42 57
De Brauwer, J.	81	83
De Caluwé, E.	57	
De Clercq, B.	32	55 57
De Coster, L.	115	
De Fruyt, F.	32	55 56
De Gheest, F.	115	118
De Houwer, J.	28	33 78 79 85
de Kernier, N.	118	
De Lissnyder, E.	22	23 90
De Maeyer, S.	36	
De Meyer, J.	37	
De Naeghel, J.	36	

De Neys, W.	128					
De Raedt, R.	23	71	124			
De Smedt, B.	11	14	40			
De Tiège, X.	95					
De Visscher, A.	40					
Debey, E.	29					
Debrauwere, L.	116					
Decaestecker, C.	92					
Decuyper, M.	30	32				
Defays, A.	92					
Defever, E.	39					
Dejonckheere, P.	109					
Delespaux, E.	51					
Deliens, G.	93					
Delle-Vigne, D.	102					
Delroisse, S.	124					
Delvaux, E.	68					
Delvaux, N.	115					
Delvenne, V.	118					
Demeyer, I.	124					
Demoulin, S.	69					
De Neys, W.	130					
Deroost, N.	90	96	100			
Desmarez, P.	122					
Desmet, M.	25					
Desoete, A.	12	83				
Destrebecqz, A.	93	101	111			
Detemmerman, D.	115					
Devue, C.	45					
Dewolf, T.	11					
Dhont, K.	42	75				
Di Schiena, R.	22					
Di Vincenzo, T.	47					
Dieussaert, K.	98					
Dolbeault, S.	50					
Domken, M.-A.	117					
Donche, V.	36					
Dormal, V.	103					
Douglas, K.	126					
Doumen S	130					
Douilliez, C.	116					
Doumen, S.	110					
Drieu, D.	118					
Duckitt, J.	16					
Duyck, W.	61	62	65			
Emmanuelli, M.	118					
Englebert, J.	114					
Etienne, A.-M.	114					
Fagniard, S.	94					
Fasse, L.	50					
Feremans, V.	130					
Fias, W.	14	15	18	20	71	
Fisch, S.-A.	106					
Flahault, C.	50					
Flannigan, N.	46					
Föster, J.	128					
Foustana, A.	62					
Franco, A.	93	101				
Fu, Q.	99					
Gaillar, V.	66					
Gaillard, V.	94					
Galer, S.	95					
Gast, A.	33	78	79			
Gaublomme, A.	94					
Gauthier, J.-M.	129					
Gebuis, T.	98					
George, M.	89					
Geudens, A.	81	83				
Geurten, M.	102					
Gevers, W.	13	14	120			
Ghesquièrre, P.	11	40				
Ghijssens, R.	25					
Gillet, A.	121					
Ginsburg, V.	14					
Göbel, S.M.	39					
Godin, I.	84					
Goffaux, V.	44	45				
Grandjean, J.	20					
Grynberg, D.	113					
Guillaume, M.	94					
Haerens, L.	37					
Hale, W.W.	31					
Hamelinck, L.	26					
Hardin, M.	19					
Hartsuiker, R.	62					
Heeren, A.	72	116				
Hellemans, C.	122					
Herman, G.	124					
Hirst, W.	60					
Hoffmann, D.	95					
Homblé, K.	96					
Hooghe, A.	51					
Hoorens, V.	59					
Hoppenbrouwers, K.	12					
Hosein, A.	107					
Houyoux, E.	96					
Huet, M.-P.	120					
Imbo, I.	13	15				
Ivaldi, J.	54					
Jacquemin, S.	109					
Jacques, C.	45					
Janssens, L.	63					
Jemel, B.	107					
Joassin, F.	106					
Kanga Kalemba-Vita, J.	119					
Kerckhofs, E.	100					
Kittel, F.	84					
Klein, O.	67	68	85	123	125	126

Klimstra, T.A.	31									Moll, K.	39
Koeck, S.	53									Mourad, H.	117
Koppel, J.	60									Muehlenkamp, J.	26
Kornreich, C.	92	102	105							Mueller, S.	19
Koster, E.	22	23	71							Mussolin, C.	95 110
Kreusch, F.	103									Noël, M.-P.	40
Kruglanski, A.W.	127									Noël, X.	92 105
Laguesse, R.	97									Notebaert, W.	89
Laloyaux, C.	92									Nys, J.	94
Laloyaux, J.	117									Nyssen, A.S.	121
Lambotte, I.	115									Oldenburg, J.F.E.	20
Lammers, J.	17									Olivier, K.	58
Lannoy, P.	122									Olszowy, A.	94
Larøi, F.	117									Onghena, P.	62
Lebrun, T.	94									Onraedt, T.	22
Leclercq, A.-L.	66									Onraet, E.	75
Lefèvre, P.	107									Op de Beeck, H.P.	46
Lejeune, C.	91	104								Ortega-Castro, N.	34
Lejeune, C.	109									Page, M.P.A.	65
Leybaert, J.	90									Parizel, P.	75
Leys, C.	123									Pattyn, S.	75 125
Licata, L.	16	68	68							Peigneux, P.	47 93 95 96
Lievens, L.	72									Pellegrini, N.	117
Liu, J.	87									Peschard, V.	71 116
Loncke, M.	61	83								Pesenti, M.	103
Lowyck, B.	25									Peters, G.	11
Luminet, O.	68	113								Petit, G.	105
Luwel, K.	62									Phalet, K.	43
Ma, N.	104									Pham-Scottez, A.	118
Macrae, C.N.	46									Philippot, P.	22 71 72 106 116
Magalhaes de Saldanha da Gama, P.	77									Pierucci, S.	125
Majerus, S.	47	64	65	66	89					Pillon, A.	48
Maquet, P.	20									Pipijn, K.	97
Marchiori, D.	85	123								Pohl, S.	119 121 122
Mariage, A.	118									Poncelet, M.	65
Maris, S.	59									Porter, L.	54
Martens, H.	26									Portzky, G.	26
Martinez Perez, T.	65									Pourtois, G.	72
Mary, A.	93									Previtali, P.	14
Masson, N.	103									Quadflieg, S.	46
Masui, C.	130									Quertemont, E.	103
Matute, H.	33									Raaijmakers, Q.A.W.	31
Maurage, P.	105									Raes, A.K.	71
Meersschaert, E.	83									Raes, A.	37
Meeus, W.H.J.	31									Raes, F.	22
Meijer, E.	28									Ratliff, K.A.	80
Melis, S.	54									Reicher, S.	8 67
Merbah, S.	109									Rettew, D.C.	57
Merckelbach, H.	28									Revlin, R.	128
Mercy, A.	68									Reynvoet, B.	38 39 98
Mesquita, B.	43	68								Rimé, B.	67 68 123
Meulemans, T.	91	102	104	109						Roets, A.	42 126 127
Michel, C.	117									Rosseel, Y.	125
Moens, T.	29									Rossi, G.	54 56

Rosignol, M.	70	71	106	van Bochove, M.E.	89					
Rossion, B.	46	97	107	108	Van Bogaert, P.	47	95			
Safin, S.	92			Van Broeck, N.	112	115				
Salmon, E.	20			Van Camp, I.	24	25	77			
San Anton, E.	93	101		Van Damme, I.	99					
Santens, S.	15			Van Damme, S.	71					
Sasanguie, D.	39			Van de Keere, K.	109					
Schaeken, W.	63	97	98	Van den Berghe, L.	37					
Schellens, T.	10	35	37	Van den Bulke, D.	118					
Schiltz, C.	45	95	110	Van den Bussche, E.	120					
Schmidt, J.R.	85			Van der Cruyssen, L.	104					
Schmitz, R.	93	95		Van der Hagen, L.	89					
Schmitz, X.	104			Van der Kaa, M.-A.	89					
Schumann, S.	126			Van der Linden, M.	117					
Sels, J.	110			Van der Linden, N.	68					
Serruys, O.	54			Van Dijck, J.-P.	14					
Seurinck, R.	20			van Dooren, W.	11					
Sevenants, A.	98			Van Dyck, L.	82					
Severens, E.	75			Van Gucht, D.	79					
Seynaeve, L.	99			Van Hecke, W.	75					
Sibley, C.	16			van Heeringen, C.	26					
Simon, M.	94			Van Hiel, A.	41	42	75	125	126	127
Smets, K.	98			Van Hoeck, N.	74	104				
Smith, C.T.	80			Van Keer, H.	35	36				
Snowling, M.J.	39			Van Leeuwen, K.	12					
Soetens, B.	53			Van Lier, J.	128					
Soetens, E.	96	100	120	Van Overwalle, F.	73	74	75	104		
Speranza, M.	118			Vanbeselaere, N.	43					
Stassart, C.	114			Vanbinst, K.	40					
Stawarczyk, D.	47			Vandekerckhove, M.	74	75				
Stengers, I.	122			Vandenbossche, J.	100					
Stone, C.B.	60			Vandereycken, W.	26					
Suchotzki, K.	28			Vanderhasselt, M.-A.	21	23				
Sultan, S.	50			Vandewaetere, M.	39					
Szmalec, A.	61	65		Vannuscorps, G.	48					
Tackett, J.	31			Vansteenkiste, M.	36	37				
Teixeira, C.P.	69			Verbanck, P.	92	102	105			
Theeuwes, J.	45			Verbruggen, F.	20					
Thiltges, E.	116			Vercruysse, S.	100					
Thomas, D.	77			Verguts, T.	15	89				
Tilmant, A.-S.	90			Verhaeghe, P.	24					
Toma, C.	17			Vermeiren, A.	34	99				
Torbeyns, J.	11			Vermeiren, R.	32					
Treinen, E.	127			Vermeulen, N.	112	113				
Tungisa Kapela, D.	119			Vermote, R.	25					
Turk, D.J.	46			Verschaffel, L.	11	62				
Urbain, C.	47			Verschuere, B.	27	28	29			
Uzieblo, K.	52	53		Verschueren, K.	110					
Vadillo, M.A.	33	34		Vervecken, N.	104					
Vaes, J.	123			Vrij, A.	28					
Valcke, M.	10	12		Waegeman, A.	75					
Van Acker, K.	43			Wagemans, J.	46					
Van Assche, E.	62			Wagner, U.	42					
Van Belle, G.	107			Waiter, G.D.	46					

Warquier, L.	85
Warzee, N.	92
Wauthia, E.	94
Weiss, R.	75
Welten, S.C.M.	60
Wertz, C.	129
Whitmer, A.	22
Wig, G.S.	46
Wille, B.	56
Winter, J.	52 54
Wolfin, K.-A.	128
Wouters, S.	110
Yzerbyt, V.	17 69 128
Zanon, R.	79
Zech, E.	49 50 51 112 115
Zeelenberg, M.	60

NOTES

NOTES

NOTES

NOTES

NOTES