Poster #

Flemish general practitioners currently do not advise electronic cigarettes for smoking cessation, but report a need for more evidence based information

Karolien Adriaens (1), Fien De Waele (1), Dinska Van Gucht (1,2) and Frank Baeyens (1)

(1) KU Leuven; (2) Thomas More University of Applied Sciences

Electronic cigarettes (e-cigs) can help smokers to quit smoking. Unfortunately, perceptions among health professionals about the health effects, its efficacy as a smoking cessation aid, and the legislation on e-cigs have deteriorated and are not in accordance with the currently available evidence. To maximize the potential of e-cigs as a smoking cessation aid, it is important that health professionals acquire knowledge about these devices and their potential. We conducted a cross-sectional survey among Flemish general practitioners (GPs, n = 121). The main aims were 1) identifying the current perceptions on e-cigs among Flemish GPs, and 2) investigating if GPs report a need for more evidence-based information. Flemish GPs were on average 39 years old, female (57%), and had been practicing their profession for around 13 years. Only 5% of GPs was currently smoking. Flemish GPs were neither agreeing nor disagreeing on statements questioning their perceptions of the absolute risk, the relative risk of e-cigs compared to cigarettes, the dependency on e-cigs, e-cigs as a smoking cessation aid, the renormalization of smoking, and the media-attention of e-cigs. They did report a clear opinion that the legislation on e-cigs should be more strict. Only 19% of GPs advised e-cigs to their smoking patients. GPs (89%) prefer to receive information via an online course, a brochure or workshop. Flemish GPs do not advice e-cigs for smoking cessation, however, they do acknowledge a need for more evidence-based information. Opportunities lie ahead for study programmes to inform future health professions about e-cigs and their potential.
Hemispatial neglect is a complex post-stroke disorder, characterized by the difficulty to respond to stimuli presented in contralesional space. It is explained as a disorder of spatial attention, but there is also evidence of non-spatial attention impairments (Vallar, 1998). In clinical practice, the evaluation of hemispatial neglect is frequently performed using paper-and-pencil tests, with cancellation, line-bisection, copying and drawing / copying tasks (Gauthier et al., 1989; Friedman et al, 1990; Marshall et al., 1993). Yet, these conventional tests have been criticized for the limited ecological validity (Azouvi, 2017) and for the lack of theoretical modeling of the patient’s actual performance (Appelros et al, 2004). We designed a computerized serious game task to evaluate hemispatial neglect. We employed feature and conjunction visual search to assess ipsi- and contralesional spatial target detection, measuring omission and reaction time. Furthermore, manipulation of distractors allowed measures of non-spatial attention. The purpose of this presentation is to describe the task and the theoretical model that we have based our design on. We will also propose the methodology of validation and the contribution this test will make to neuropsychology assessment of hemispatial neglect.
Using fast periodic visual stimulation to index the brain response to newly learned words

Céline Alameda (1), Anezka Smejkalova (1) and Fabienne Chetail (1)

(1) ULB

Recent studies showed that steady state visually evoked potentials (SSVEP) can be used to investigate the automatic brain response to words represented in the lexical memory. In the present study, we used SSVEPs to evaluate written word learning. On the first day, the participants were asked to read a book with pseudowords embedded in informative contexts and were asked to memorize them. On the second day, their electroencephalography (EEG) response to fast periodic visual stimulation was measured. In the first SSVEP stimulation, the participants were presented with a flow of pseudowords occurring at $F = 6.25$ Hz (baseline frequency). These items were interspersed with pseudowords learned on the first day, at $F' = F/5$ (1.25 Hz, oddball frequency). Spectral analysis showed a significant signal-to-noise ratio (SNR) in the left occipitotemporal area, at $F'$ and its harmonics. The SNR values were similar to those obtained in a control experiment, in which existing words were contrasted with unknown pseudowords. In the second SSVEP stimulation, the newly learned pseudowords were interspersed with existing words (with the same parameters as in stimulation 1). In this case, the spectral analysis showed also a significant SNR in the left occipitotemporal area, at $F'$ and its harmonics. The results suggest that visual discrimination of newly learned words among both words and pseudowords was very quickly achieved. This can be interpreted as an evidence for partial integration of the newly learned words into the orthographic lexicon.
What drives leaders to be moral? An investigation of the explicit and implicit motives of servant, ethical, authentic, and humble leaders

Justine Amory (1), Bart Wille (1) and Malte Runge (1)

Despite a surge in interest in moral leadership over the past two decades, it is still unclear what actually drives leaders to behave morally. The lack of research on moral leadership antecedents can be explained by two factors: the absence of (1) a sound theoretical framework on moral leadership and of (2) a time-saving and reliable instrument to measure leaders’ inner drives or motives. Past research has indeed shown that leaders do not only differ based on their expressed personality (i.e., explicit motives) but also on what inherently motivates them (i.e., implicit motives): a high desire for power (control, impact, and influence on other people), affiliation (close and warm connections with others) or achievement (accomplishment, excellence and success). Using recent theoretical (Lemoine et al., 2019) and methodological (e.g., the motive self-categorization test; Runge & Lang, 2019) advances, this study aims at better understanding the factors underlying moral leadership behavior. Specifically, we use subordinate-supervisor dyads to examine the relationship between leaders’ implicit and explicit motives and their subordinate ratings on four moral leadership styles (i.e., ethical, servant, authentic, and humble leadership). In addition, we investigate whether implicit and explicit motives interact to predict moral leadership and whether they provide incremental validity over each other. Results will be available during the week of 25th of April, after the first data collection wave ends. Hypotheses were pre-registered in OSF and can be consulted via this link:

https://osf.io/sakq4/?view_only=e5d17d979cc74b6889a85624dc74ec62
Can we increase the critical thinking skills of adolescents with a low literacy level and a vulnerable socioeconomic profile? In order to experimentally investigate this question, we conducted a 3-months intervention with thirty adolescents attending the 4th year of high school in technical and vocational orientation. This also allowed us to scrutinize, through a longitudinal design, the relation between literacy level and critical thinking. All groups underwent pre-and post-intervention assessments. Literacy was estimated through the Performance in Reading Comprehension Test (IREP), the Written Language and Disorders Evaluation Battery (BELEC), and a reading habits survey. Critical thinking was estimated through the Cornell Critical Thinking Test Level X. When we compare the level of critical thinking of the participants in the intervention, we can see a significant difference between the pre-and post-test. We observed a significant improvement in the adolescent’s critical thinking scores. In this poster, in addition to presenting our results, we will also discuss the fundamental principles of our intervention, which mixed discussion methods (e.g., Community of Philosophical Inquiry) with workshops inspired by the social psychology inoculation theory. Therefore, through this study, we will discuss our results conducting workshops for the development of intellectual self-defense against fake news, conspiracy theories and misinformation with underprivileged adolescents.
Neuroinflammation as potential underlying mechanism of leukoencephalopathy in patients with breast cancer after chemotherapy: A multimodal 18F-DPA714-PET and MRI study

Emilie Bartsoen (1), Gwen Schroyen (1), Donatienne van Weehaeghe (1), Ann Smeets (1), Koen van Laere (1), Stefan Sunaert (1), Sabine Deprez* (1), Charlotte Sleurs* (1)
(*equal contribution)

(1) KU Leuven

The neural substrates of chemotherapy-induced cognitive impairment remain largely unknown. Therefore, we investigated the effect of multiagent chemotherapy in women with breast cancer on white matter lesion burden with increased neuroinflammation as a potential precursor. Their association with cognitive outcomes was also investigated. Breast cancer patients who did (n=19) and did not (n=16) receive chemotherapy and a cohort of healthy women (n=16) were assessed one month after ending chemotherapy/surgery. Data collection included neuropsychological tests and neuroimaging, consisting of an anatomical T1-weighted MPRAGE, T2-weighted FLAIR and dynamic PET with the 18-kDA translocator protein (TSPO) radioligand 18F-DPA714 (to visualize neuroinflammation) for a subset of 15 participants/group. One-way ANOVA analyses showed no significant differences between the three groups on total white matter lesion burden. However, significantly higher TSPO volume of distribution (VT, partial-volume corrected) was observed in white matter lesions (M=1.72, SD=.92) compared to normal-appearing white matter (M=1.42, SD=.60) in the chemotherapy group (paired t-tests). A similar trend was observed in the control groups. Subsequent one-way ANOVA analyses showed the chemotherapy group to score worse on delayed verbal memory (M=11.20, SD=3.05) and fine motor skills (M=77.40, SD=13.20). A linear multivariate regression predicting these scores across groups revealed lesion volume, but not lesion TSPO VT, as a significant predictor of delayed verbal memory. No significant associations were observed for fine motor skills. With this multimodal approach, we are the first to demonstrate in vivo, via TSPO 18F-DPA714-PET, that cerebral neuroinflammation associates with white matter lesions in chemotherapy-treated breast cancer patients.
French adaptation of the Brief Irritability Test: Factor structure, psychometric properties, and relationship with depressive symptoms

Nellia Bellaert (1), Wivine Blekic (1), Kendra G. Kandana Arachchige (1), Laurent Lefebvre (1) and Mandy Rossignol (1)

(1) UMons

The Brief Irritability Test (BiTe, Holtzman et al., 2015) is a brief, reliable, and valid self-report measure of irritability. Despite the growing interest to understand the underlying causes and consequences of irritability, this questionnaire has not been developed and validated for a French-speaking population yet. In the present study, 413 participants completed our French adaptation of the BitTe (i.e., TCI; Test Court d'Irritabilité) and measures of associated constructs (depression, anger, hostility, and aggression) and well-being (life satisfaction and social support). Descriptive, psychometric (i.e., Cronbach alpha and Spearman correlation coefficients), and factor analyses were conducted. An exploratory factor analysis in sample 1 (n = 209), yielded one single factor. The confirmatory factor analysis in sample 2 (n = 204) showed a reasonable fit of this single factor model explaining 55.5% of the variance and presenting a strong internal consistency (Cronbach's alpha = .80). Compared to the original English questionnaire, the TCI shares similar unidimensional factor organization and correlations with other constructs, although a gender bias was identified. Irritability was higher among respondents in the age range 17-25, compared to older adults. A hierarchical regression analysis showed that TCI scores significantly predict depressive symptoms when demographics were controlled for. In summary, the TCI presents good psychometric properties and could constitute a valuable tool to evaluate irritability in clinical and research contexts.
Virtual Reality for relaxation in a pediatric hospital setting: An interventional study with a mixed-methods design

Sylvie Bernaerts (1), Bert Bonroy (1), Jo Daems (1), Romy Sels (1), Dieter Struyf (1) and Wessel van de Veerdonk (1)

(1) Thomas More University of Applied Sciences, Belgium

Accumulating evidence supports Virtual Reality (VR) as a feasible and effective method to alleviate anxiety and pain in pediatric patients during specific medical procedures. However, adoption of VR in clinical practice is limited. To address implementation barriers, this intervention study with a mixed-methods design focuses on the feasibility, acceptability, tolerability and preliminary effectiveness of Relaxation-VR, a VR application aimed to provide relaxation, as used for anxiety, stress and pain reduction for children in hospital. Primary outcomes include intervention completion, technical issues, the pediatric Simulator Sickness Questionnaire (tolerability), and visual analogue scales (VAS) addressing ease of use, likeability (feasibility), and future use (acceptability). Secondary outcomes include pre-to-post-changes in the Self-Assessment Manikin, VAS and Faces Pain Rating Scale-Revised to measure happiness and stress, anxiety, and pain, respectively. We present preliminary data of 28 pediatric patients of this ongoing study. A minority of participants (7/28) quit the intervention prematurely for reasons including discomfort and disliking the application. The majority of participants (21/28) reported no technical issues. Ease of use, likeability and acceptability of the intervention were favorably scored and participants reported no adverse events and minimal VR sickness. Compared to baseline, participants reported significantly less anxiety and tension (stress) and significantly more happiness while using Relaxation-VR. There was no significant change in pain scores. These preliminary findings indicate that Relaxation-VR is acceptable, feasible and tolerable for a variety of pediatric patients and can reduce anxiety and stress, and increase happiness in pediatric patients with various medical conditions.
Do children with dyslexia present a deficit in their copying skills?

Elise Blampain (1) and Marie Van Reybroeck (1)

(1) UCLouvain

While copying skills are daily used at school, there is little evidence about whether dyslexic children have a specific deficit in copying, in addition to their spelling deficit. Therefore, the present study aimed to examine in detail copying skills of children with and without dyslexia. Nineteen French-speaking Grade 3 and 4 dyslexic children were compared to 19 chronological age matched children (CA children) and 19 spelling age matched children (SA children). Participants were asked to perform 40-word dictation and copying tasks on the same target words. For each word, spelling, handwriting and gaze lifts measures were taken into account. Control measures on vocabulary, nonverbal intelligence, handwriting and reading were administered. GLMM analyses showed that all children did fewer spelling errors in the copying than in the dictation task, but had poorer handwriting quality in the copying task. In the copying task, dyslexic children made more spelling errors and more gaze lifts. They also used different copying strategies compared to CA children. Dyslexic children behaved in a similar way to SA children. These findings suggest that dyslexic children do have impaired copying skills. A better understanding of these difficulties could open up new perspectives for therapy.
Parental burnout is a growing subject of research, but thus far this research has not examined whether the features of parental burnout fluctuate over time. Moreover, parenting and parental burnout are inextricable from their family context. Therefore, a critical next step involves examining how parental burnout features interact with the ever-changing family environment. To do so, we developed an 11-item experience sampling methodology (ESM) tool to measure self-reported parental burnout features (specifically emotional exhaustion, emotional distance, and feeling fed up), as well as partner relationship, children’s behavior, behavior toward children, social support, and perceived resources. To ensure items were clearly phrased and covered the entirety of their construct via statements applicable to most parents daily, we sought feedback from parents (from the general population) and parental burnout experts. We also conducted two preliminary rounds of ESM data collection, one over a one-week period (n= 5) and a second over a two-week period (n= 9). Participating parents found the ESM survey easy to answer and not burdensome. Their results indicated sufficient within-person variability for all ESM items, supporting that these three parental burnout features fluctuate over time. We collected the ESM data using formr, an open-source platform, and we provide open access to all materials (including a formr template, allowing free use of the assessment tool) and data: https://osf.io/s2yv5/. Finally, we discuss how assessing parental burnout over time can help usher parental burnout research and treatment forward.
Poster #

Quality and completeness of RCTs assessing cognitive memory interventions in children and adolescents: A meta-research protocol

Sacha Blause (1), Ezio Tirelli (1) and Sylvie Willems (1)

(1) ULiège

In order to best meet the needs of the patient, the Evidence-Based Practice (EBP) movement encourages health-care providers to incorporate high-quality scientific evidence into their practice (diagnosis refinement, intervention guide, patient progress monitoring). Randomized controlled trials (RCTs) provide much of this evidence. However, as suggested by meta-research studies, the lack of RCTs methodological quality in some health-related fields (bias and errors in the reports) can strongly limit the usefulness of the results. This represents a real ethical problem and reduces the likelihood of clinicians embracing EBP. The aim of this research is to analyze the methodological quality and the reporting completeness of recent RCTs that evaluate the efficacy of cognitive interventions aiming to attenuate memory deficits in children aged 0 to 18 years. At this end, we will firstly select a sample of RCTs published between 2015 and 2020 using the databases PsycINFO and Medline. We will analyze these articles in three phases. First, we will check whether the articles report all the information recommended by the CONSORT guideline. Second, we will assess possible methodological biases using the Version 2 of the Cochrane risk-of-bias tool for randomized trials (RoB2). Third, since the effect size and its clinical interpretation are essential for the understanding of a treatment efficacy in the clinician's daily practice, we will look at the extent to which, and how, that literature handles effects sizes, using a list of detailed criteria. The results could help researchers to adapt their work to the clinician needs.
Effectiveness of cognitive interventions to improve attention and executive function in children and adolescents with ADHD: A systematic review protocol

Sacha Blause (1), Ezio Tirelli (1) and Sylvie Willems (1).

(1) ULiège

Attention deficit hyperactivity disorder (ADHD) is the most common neurodevelopmental disorder in children. It notably comprises attentional and executive function disorders, leading to significant difficulties in school, psychosocial and daily life functioning. Problematically, the effectiveness of pharmacological treatments in reducing ADHD symptoms does not tend to last long and does not generalize to school performance. Furthermore, this type of medication can cause harmful side effects. Consequently, there is a strong demand for non-pharmacological treatments, in particular cognitive interventions. In recent years, many randomized controlled trials (RCTs) have evaluated the effectiveness of such interventions. To our knowledge, there is no systematic review on the results of studies focusing exclusively on cognitive treatments of attentional and executive skills in ADHD children. It is the goal of this study to conduct such a systematic review, in which we will collect, critically appraise and synthesize existing RCTs of cognitive interventions aiming at improving attention and executive function in children aged 6 to 18 years with ADHD. At this end, we will select relevant articles from four specialized databases (PsycINFO, Medline, Scopus and CENTRAL). Two researchers will perform this selection independently and in two phases. The first phase of the selection will relate to the title and the abstract of each article and the second phase to the main text. We will use the Version 2 of the Cochrane risk-of-bias tool for randomized trials (RoB2) to assess the presence of potential biases in every selected article. The review will conclude with a synthesis.
Application of EBP is recommended in health care in Belgium. Thus, psychologists, as well as other professionals, are encouraged to consider several types of relevant evidence (research, clinician’s expertise, patient’s preferences and environmental context) when making clinical decisions. Nevertheless, EBP use by practitioners can be questioned. The purpose of this study was to explore French-speaking Belgian psychologists’ EBP awareness and information behaviors as well as the information sources they use in their clinical decision making. An online survey in French was designed to assess their knowledge and practice (50 multiple-choice questions). It was disseminated for twelve weeks via social network. The survey was fully completed by 110 Belgian psychologists (clinical psychologists: 34; psychotherapists: 56; neuropsychologists: 19; other: 5). Only 72% of the respondents had already heard about EBP and 45% correctly defined this concept. Also, 27% defined EBP as the simple use of scientific evidence, without mentioning other types of evidence. Only 65% considered patient treatment preferences as one component of EBP process. In terms of the sources of information they reported using in their clinical decision, patient difficulties (94%) and clinical experience (92%) are more cited than research data (40%). Several barriers to the integration of evidence from research have been highlighted such as lack of resources (64%), lack of knowledge (59%) or know-how (54%). The survey data indicate that there is a need for more training for clinicians to improve their understanding of the EBP.
Are angry faces found more quickly within trauma-survivors with and without PTSD? An eye-tracking study.

W. Blekic (1), E. Wauthia (1), K. Kandana Arachchige (1), M. Vandenbol (1), L. Lefebvre (1) and M. Rossignol (1)

(1) UMons

Eye-tracking-based attentional research tend to highlight a sustained attention to emotional information in posttraumatic stress disorder (PTSD). However, most of this research employed controversial tasks (such as the dot-probe) and only negatively-valenced stimuli, which tend to orient the results. Furthermore, those experiments were performed on samples that did not include both trauma-exposed healthy participants and non-trauma-exposed participants. Here, using an established eye-tracking paradigm, we explore attention processes to neutral, positive and negative cues. PTSD patients (n=15, still collecting), trauma-exposed healthy controls (TEHC; n=37), and healthy controls (HC; n = 30) performed a Face in the Crowd paradigm in which 81 matrices were presented. Each matrix comprised nine different identities presenting either the same emotion (happy, neutral, angry), or in which one identity presented a different emotion (i.e. the intruder). The participants were required to identify as quickly as they can the intruder. One-third of the matrices (i.e., 27) were target-absent trials composed of only one type of emotional expression (i.e., nine trials each of matrices that were all neutral, all happy or all angry faces). Based on both reaction times to identify the intruder and attentional indexes derived from gaze patterns, we expect a differential attentional pattern in the three groups. While an adaptative rapid detection of threat is awaited in HC, we predicted an avoidance of threat in the TEHC group and a sustained attention toward every emotion information in the PTSD group.
Poster #
(eligible for poster prize)

**Involvement of cardiac variability and interoception in emotional experience**

Alice Bodart (1), Marie Othon (1), Laurent Lefebvre (1) and Mandy Rossignol (1)

(1) UMons

Current models postulate that subjective emotional experience results, among others, from the perception of body changes associated with emotional appraisal (Lane, 2000). This perception is based on both physiological reactivity and interoception, corresponding to the ability to detect internal bodily sensation. However, the links between physiological reactivity and interoceptive accuracy still unclear. This study aims to investigate this relationship by measuring heart rate variability (HRV) as an index for physiological reactivity and heartbeat detection for interoceptive accuracy. On the one hand, the HRV refers to the variation between heartbeats and is known to reflect emotional regulation abilities. On the other hand, cardiac interoceptive accuracy plays a major mediator role between the physiological emotional response and its subjective awareness. This study aims to disentangle the role of the HRV and interoception accuracy in the emotional experience. This study examines physiological reactivity and subjective emotional responses while watching emotional films, and the interoceptive accuracy assessed with a heartbeat-detection task. 20 men took part in the experiment. The experimental task consisted to appraise five emotional films of tenderness, anger, sadness and happiness. The HRV measurement started 5 minutes before the start of the films. The interoceptive accuracy was measured before the films. After each film, participants had to provide an emotional assessment by determining the type and intensity of emotions felt during the film. Data have been collected and analyses are currently in progress. Our results would allow determining the involvement of HRV and interoceptive awareness in emotional experience.
The COVID-19 pandemic impacted our personal and professional lives. And so, too, were we confronted with significant challenges in the context of our research project on the effects of mindfulness among youngsters in secondary schools. However, we decided to continue our project under slightly different circumstances. In this talk we will first illustrate the current progress of the study and the way challenges were dealt with. Second, as data collection started before the (first) COVID-19 lockdown was enforced in Belgium (n = 105) and continued during lockdown and thereafter (n = 87), the opportunity arose to investigate whether the impact of the pandemic is reflected in our baseline data. Compared to the pre-lockdown subsample, we expected the post-lockdown subsample to show higher levels of depressive symptoms, anxiety, stress, and anhedonia, and higher levels of the use of two dysfunctional emotion regulation strategies (i.e. repetitive negative thinking (RNT) and dampening-downplaying positive emotions). Finally, merging both subsamples provided us with sufficient power to examine the unique contribution of RNT and dampening in predicting levels of depressive symptomatology and anhedonia. We expected dampening to uniquely explain variance in both outcome variables, above and beyond RNT. This would imply interventions should simultaneously target both forms of dysfunctional emotion regulation.

OSF preregistration: https://osf.io/k5cuf/
Attentional bias towards alcohol-related stimuli is a core characteristic of alcohol use disorders (AUD), and is directly linked to clinical variables (e.g., alcohol consumption, relapse). Nevertheless, the extent of this bias in subclinical populations remains poorly documented. This is particularly true for binge drinking, an alcohol consumption pattern highly prevalent in youth, characterized by an alternation between excessive intakes and withdrawal periods. We used eye tracking measures to: (a) measure the attentional bias in binge drinking, (b) determine its time course, by dissociating early/late processing stages, (c) clarify its specificity for alcohol-related stimuli, compared with other appetitive stimulations (i.e., high calorie food), and (d) explore its modulation by craving intensity. Forty-two binge drinkers and 43 matched controls performed a visual probe task, requiring to process visual targets preceded by pairs of pictures, with three conditions (alcohol vs. soft drink, alcohol vs. high calorie food, high calorie food vs. low calorie food). No group difference was observed for early processing (i.e., first area of interest visited). Dwell times highlighted a bias towards soft drinks and healthy food among controls, without any global bias towards alcohol in binge drinkers. Centrally, a comparison of binge drinkers with low versus high current craving intensity indicated that binge drinking was associated with a bias towards alcohol and high calorie food only in the presence of high craving towards these stimuli. Overall, the attentional bias towards alcohol is only found in binge drinkers in the presence of high craving, and is generalized to other appetitive cues.
Predictive factors and early detection of Developmental Language Disorder: A systematic review

Camille Bonnet (1), Astrid Warny (1) and Jolijn Vanderauwera (1)

(1) UCLouvain

Early detection of oral language disorders is essential to ensure the implementation of early and effective intervention programs. However, knowledge is scarce on the early markers contributing to the emergence of Developmental Language Disorders (DLD), a developmental disorder characterized by long standing expressive and/or receptive language deficits along with a significant functional impairment in everyday life and occurring in the absence of a known biomedical etiology. In addition, suitable tools for early identification of children at risk for DLD remain fundamentally limited. The objective of this systematic review was two-fold: (1) provide an overview of peer-reviewed studies investigating early markers, risk, and predictive factors of oral language disorders, and (2) assess the potential of automated vocal analysis using the Language ENvironment Analysis (LENA) technology in a context of early detection of children at risk for DLD. From two independent literature searches using six electronic databases, a total of 1529 and 520 articles for objectives 1 and 2, respectively, were initially included based on our key search terms. Results are presented based on a qualitative thematic synthesis that summarizes the variety of contributing factors leading to the development of DLD and describes the relation between LENA-acquired measures and later language outcomes. Although the potential of the LENA technology for identifying children at risk for DLD remains to be investigated, the present review indicates that it provides a promising tool for improving early detection of DLD, especially considering that language-related variables appear to be the most well-established predictors of DLD.
From behavioral problems of children to relationship problems with children: The effects of LLInC – study design

Liedewij Borremans (1) and Jantine Spilt (1)

(1) KU Leuven

As the quality of the teacher-child relationship is related to different aspects of children’s development and teacher wellbeing, it is important to foster positive relationships. Attachment theory suggests that teachers internalize their experiences with a specific student in mental representations, which are automatically activated in daily interactions with the student and guide the teacher’s emotions and behavior. This can lead to a negative vicious circle were the reactions of the teacher and the problem behavior of the student strengthen each other. In these cases, intervention may be needed. Leerkracht Leerling Interactie Coaching (LLInC, or Teacher Student Interaction Coaching; Koomen & Spilt, 2010-2017) is an intervention targeting teachers’ mental representations, using relationship-focused reflection. The goal of LLInC is to help teachers attain mental representations of the relationship that are positive, flexible and differentiated, through a guided reflective process. Previous research supports the idea that relationship-focused reflection, and LLInC in particular, can foster positive relationship perceptions in teachers. Our study will be the first to examine the effects of LLInC in real-life conditions. We trained school consultants (N=17) as LLInC-coaches. These coaches will select a teacher in their workplace based on an identified need for relationship-focused reflection. Using a multiple baseline design, we will measure teachers’ emotions, relationship perceptions, self-efficacy beliefs and attributions before and following the intervention[*]. Data will be analyzed at the single-subject level using visual analyses. Median-level differences between pre- and post-intervention phases will be calculated and trend lines within phases will be compared. Additionally, we will compute Tau-U values. [*]Due to the COVID-19 situation, data collection was postponed. We will not be able to present any results. The poster will be focused on the study design and planned analyses.
Can critical thinking and source memory be improved in adolescents with low literacy level?

Habiba Bouali (1), Régine Kolinsky (1,2) and Olivier Klein (1)

(1) ULB; (2) FRS-FNRS

Nowadays, there is a large amount of information that is easily accessible due to the free circulation of information through the Internet, and it becomes more and more difficult to distinguish between real and fake information. To distinguish between them and thus to support critical thinking (henceforth, CT), we can rely on source memory (henceforth, SM) to identify and recognize the source of the information. We can then wonder whether SM skills impact CT skills. To answer this question, we examined if CT and SM can be improved with a CT training based on the inoculation technique and whether these capacities are influenced by the material used during the training. We made pre- and post-intervention assessments to measure SM and CT skills and conducted the CT training between these two test phases on 43 adolescents attending the third- or fourth-year courses for technical and vocational studies. Students were assigned to three training groups: (1) written group (n=20); (2) oral group (n=17); and (3) control group (n=6). Results from a repeated measures ANOVA showed (1) a significant improvement in performance from pre-test to post-test for both the SM task and the CT task; (2) no significant difference between the training groups. In addition, a correlation analysis showed that SM performance is associated with CT performance on the pre-test. However, no correlation was found between the pre-test and post-test gain for SM and CT. These preliminary data indicate that there is an improvement in SM and CT after our training. However, as there is no difference between the groups, we cannot be sure that this improvement is indeed due to our training rather than to repeated testing per se.
Temperament based personality types in community-dwelling older adults: A latent profile analysis

Xenia Brancart (1), Gina Rossi (1), Eva Dierckx (1,3), Indra De Vos (1) and Rudi De Raedt (2)

(1) VUB; (2) Ugent; (3) Alexianen Zorggroep Tienen

Three personality types have been replicated across ages, cultures, clinical problems and clustering methods: a resilient, undercontrolled and overcontrolled type (RUO). These types are typically defined in terms of Big Five personality traits. Recently there is growing interest in and importance of biopsychosocial transdiagnostic factors underlying personality types, such as (reactive) temperament and regulatory processes. Temperamental reactivity can be understood in terms of Behavioral Inhibition (BIS) and Behavioral Activation Systems (BAS) and a fundamental basis of self-regulation is effortful control (EC). The occurrence of temperament based RUO types has been confirmed in both adolescents and younger adults diagnosed with eating and substance use disorders, but not yet in older adults with or without a mental disorder. It is unclear whether these types are consistent across the life span. Therefore, based on a person-centered approach, the current study investigates whether RUO types can be replicated based on the aforementioned reactive (BIS/BAS) and regulative (EC) factors. Two self-report questionnaires, namely ATQ-EC Scale (Evans & Rothbart, 2007; Dutch version, Hartman & Majdandžić, 2001) and BIS/BAS-scales (Franken, Muris, Rassin, 2005), were administered in 449 community-dwelling, Dutch-speaking older adults (M = 69.69; SD = 7.23). A probability-based latent profile analysis yielded two distinct personality profiles which we tentatively called a resilient (n = 167) and overcontrolled/inhibited type (n = 241). In comparison to the resilient type, the overcontrolled/inhibited type scored lower on EC and higher on BIS. We could not corroborate an undercontrolled type (profiles scored equally on BAS). Further validation of these types in terms of personality traits and clinical symptomatology is recommended.
The development of a Context Aware Personalisation System (CAPS) for promoting physical activity in adults

Maya Braun (1), Stéphanie Carlier (1), Femke De Backere (1,2), Annick De Paepe (1) and Geert Crombez (1)

(1) UGent; (2) imec

While most adults know the benefits of physical activity and intend to lead an active lifestyle, many fail in translation that into actual behavior. Mobile health applications may help in overcoming that gap, and provide opportunities to personalize and contextualize interventions. Here, we develop such an m-Health intervention by integrating theory with expert knowledge and user input in an interactive system. The application will be based on an ontology, which combines knowledge from various sources into a computer-readable system. Users will be required to set activity goals and create concrete plans to achieve them. They receive personalized guidance throughout this process based on their own profile and context. This guidance takes the form of personalized suggestions, which are generated using a decision support system and reinforcement learning algorithms. The application will be validated quantitatively concerning its effect on plan adherence and physical activity levels, and qualitatively concerning user experience, including feasibility and acceptability of the intervention. Expected results: We expect users to achieve higher levels of physical activity when receiving personalized guidance in comparison with standard guidance. We also expect the user experience to be more positive, including higher feasibility and acceptability. We are currently in the process of ontology development, and aim to finish this step by the beginning of 2022. Personalized and contextualized mHealth interventions have the potential to bridge the intention-behavior gap, and to tailor interventions to what works for whom under which circumstances.
Poster #
(eligible for poster prize)

Mental arithmetic relies on the oculomotor system to alleviate cognitive load

Laurence Bremer (1), Michael Andres (1) and Samuel Salvaggio (1)

(1) UCLouvain

A dominant idea in cognitive psychology is that internally generated images provide a support to abstract mental activities. Several studies showed, for instance, that numbers are represented in ascending order along a left-to-right oriented continuum, so that subtraction or addition generates a shift in eye position to the left or right of this continuum. In an attempt to specify the role of the oculomotor system in arithmetic problem solving, we tested the hypothesis that eye movements occur to discharge the cognitive system in effortful conditions. Participants were informed that they would have to solve aurally presented problems whose result ranged from 11 to 78. We created two separate lists of problems: (i) a low cost condition where the presentation of the double-digit operand first (21+7) made the result highly predictable and (ii) a high cost condition where the presentation of the single digit first (6+41) made the result less predictable in the initial stage and imposed further effort to narrow down the response range. An eye-tracking camera was used to measure the amplitude and time course of the eye drift associated with calculation. Results showed that, compared to a control condition, the eye position drifted rightward after participants heard the second operand in the high cost condition only. The difference between low and high cost conditions was also reflected in response times. These findings suggest that the oculomotor system is involved in the spatial coding of numbers on a mental continuum to alleviate the cognitive load during arithmetic problem solving.
Workplace ostracism and organizational dehumanization

Noémie Brison (1) and Gaëtane Caesens (1)

(1) UCLouvain

Scholars have recently started to examine the dark side of the employee-organization relationship through the concept of organizational dehumanization (i.e., employees’ perceptions of being objectified by their organization, denied personal subjectivity, and made to feel like a tool or instrument for the organization’s ends; Bell & Khoury, 2011; Caesens et al., 2017). Since organizational dehumanization has been found to lead to negative consequences for both employees and organizations, it is of primary importance to advance theory regarding its predictors (e.g., Stinglhamber et al., 2021). Furthermore, although past research in social psychology has highlighted that being ostracized leads people to feel dehumanized (Bastian & Halsam, 2010), this relationship has never been explored in work settings. Responding to those calls, this research focuses on the impact of workplace ostracism (i.e., the extent to which an individual perceives that he or she is ignored or excluded by others at work; Ferris et al., 2008) on organizational dehumanization perceptions and their outcomes. First, a preregistered experimental study manipulating workplace ostracism provides preliminary evidence of the mediating role of organizational dehumanization in the relationship between workplace ostracism and deleterious consequences for both employees and organizations. In line with our predictions, linear regressions and bootstrap analyses show that workplace ostracism increases organizational dehumanization perceptions, which in turn lead to decreased employees’ job satisfaction, loyalty toward the organization, and increased turnover intentions. A second cross-sectional field study replicates these findings using SEM. Implications for organizations and promising directions for future research are discussed.
A value accumulation account of impulsive food choices

Eike Buabang (1*), Massimo Köster (1*), Tina Ivancir (1) and Agnes Moors (1)
(*joint first author)

(1) KU Leuven

People sometimes engage in impulsive behavior that is inconsistent with explicit goals, such as consuming unhealthy food despite the goal to follow a healthy diet. We studied if this behavior can be explained by the value accumulation account. Accordingly choices are based on a dynamic integration process in which the values of multiple outcomes are considered sequentially. In food choices, two goals that are typically considered are a taste and a health goal. Applying the value accumulation account to food choices suggests that the value of food items accumulates with the sequential consideration of these goals. From this perspective, it is important to consider the order in which each goal is taken into account, which is likely to depend on the salience and values of the outcomes. If the value accumulation is stopped early (e.g., due to time pressure), the choice may only be based on the goal that was considered first, and could thus differ compared to a choice that is based on the consideration of both goals. To investigate this, we conducted a study in which participants were asked to choose between healthy and tasty food items in a computer-based task. We made taste or health goals salient via a priming procedure, and manipulated decision time by imposing time pressure vs. no time pressure. The results from this study are partially in line with the value accumulation account. We show that food choices may not be in line with self-reported goals due to differences in onset of goal consideration.
Evaluation is one of the core activities of clinical psychologists. However, according to Wright et al., (2019) psychologists tend to devote less and less therapeutic time to evaluation in profit of clinical judgment (44% in 1959 vs. 15% today). Yet, using only clinical judgment exposes the therapist to cognitive biases that can be harmful to patients. For example, clinicians tend to formulate a diagnostic hypothesis during the first minutes of therapy and then, only searching data confirming that diagnosis (Jenkins & Youngstrom, 2016). Those biases lead to favor some diagnoses, minimize the presence of comorbidity, and overestimate the therapeutic efficacy (Lilienfeld et al., 2014 ; Lilienfeld, 2007). Using an evidence-based assessment method (EBA; Youngstrom et al., 2017) prevents cognitive bias errors, but remains rarely implemented by clinicians. Using both surveys and qualitative interviews, we have identified several barriers reported by clinicians to using EBA, among which lack of time, difficulty to select relevant research documents, and difficulty to evaluate the scientific quality of the information. We aim to address these barriers by proposing a guide to select the appropriate evaluation tool and interpret its associated psychometric properties. Four major evaluation objectives have been identified (i.e., explore, screen, diagnose and evaluate treatment efficacy). Based on these objectives, we have determined which psychometric factors are essential, important, and secondary. This more parsimonious system lifts several barriers and might facilitate and encourage the application of EBA by clinicians.
The influence of sign language on the association between numbers and space

Margot Buyle (1), Valentina Vencato (1) and Virginie Crollen (1)

(1) UCLouvain

Hearing individuals in Western populations tend to represent numbers along a left-to-right oriented mental number line (MNL). This strong association between numbers and space is often reflected as the SNARC (Spatial Numerical Association of Response Codes) effect, which implies that small/large numbers elicit faster left/right-sided responses. Since the SNARC effect is observed even when hearing individuals cross their hands, numbers are assumed to be mapped onto an external frame of reference. While the direction of the MNL has often been attributed to the direction of reading and writing habits, some studies have suggested that finger counting habits can also determine the direction of the MNL. Interestingly, in deaf signers, the linguistic counting system is presented in a manual counting format. The particular way in which deaf individuals convey numbers on their fingers may thus lead to a number representation that differs from the one of hearing individuals. To investigate this question, deaf, hearing signer and hearing control adults were asked to perform a comparison task to 5 with the hands uncrossed or crossed over the body midline. Results demonstrated the presence of a typical SNARC effect in every group of participants and in both hand postures. The use of sign language does therefore not seem to change the nature of the external coordinate system in which numbers and space are mapped.
From lively playgrounds to busy classrooms, children communication usually happens in noisy settings. Perceiving speech in noisy is a complex task that requires an adequate combination of sensory perception and cognitive processing. In spite of their functionally mature auditory system, school-age children’s perception of speech in noise remains poorer than adults’. The main aim of this study was to better understand the mechanisms underlying this protracted auditory development. In particular, we focused on auditory selective attention and its relationship with speech perception in noise throughout development. Participants were included in one of three groups based on their age: 8-11 years (n = 31); 12-15 years (n = 38); 16-19 years (n = 26). Participants were presented a selective attention task as well as several speech perception tasks (in quiet and in noise). Results of the selective attention task revealed a significant developmental effect: the youngest children were consistently poorer than both groups of older children. Although all three age groups performed similarly at perceiving speech in quiet, the youngest group was significantly poorer than both groups of older children in noisy conditions. Interestingly, across all children, there was a significant relationship between stream segregation and speech perception in noise. This is in line with previous studies showing that auditory scene analysis relies on selective auditory attention, an ability that develops until late childhood.
The investigation of attachment figures’ safety properties and their potential in improving anxiety-related safety learning impairments

Eline Camerman (1), Sara Scheveneels (1) and Guy Bosmans (1)

(1) KU Leuven

The presence of attachment figures has been shown to provide individuals with a sense of safety and security. Findings indicate for instance their ability in reducing pain, stress reactivity, and neural threat responses. Despite clear indications for attachment-induced safety, only a limited number of studies have examined attachment figures’ potential in providing safety during fear conditioning. Additionally, in anxious individuals who typically show impaired safety learning during fear conditioning, the presence of an attachment figure may be able to improve these learning impairments – although, to our knowledge, this has never been investigated. To address these gaps, this study examined whether attachment figures are more easily associated with safety than control stimuli, and whether attachment figures can improve anxiety-related safety learning impairments. In a within-subject design, an online fear conditioning paradigm was used in which an attachment figure and two control stimuli (i.e., a stranger and a neutral object) served as safety cues. US expectancy ratings and distress ratings were measured as the indicators of safety learning. As the data is still being processed, the results will be presented at the annual BAPS meeting.
Extrapersonal space close to the body: A reduced attentional asymmetry next to the feet

Sarah Carneiro Pereira (1), Gilles Vannuscorps (1) and Nicolas Masson (1,2)

(1) UCLouvain; (2) University of Luxembourg, Luxembourg.

Previous studies showed that the small leftwards attentional bias (i.e., pseudoneglect), in spatial judgments of lines, is maximal when the stimuli is close of our body (i.e., peripersonal space) and decreases when the stimuli is far (i.e., extrapersonal space). Whether the extra or peripersonal space is defined by the distance between our body and the stimuli or our ability to grab it with our hands is unknown. We measured pseudoneglect in healthy participants with a landmark task in which participants decided which of the two segments of a transected line was the largest. Stimuli were displayed at three locations that varied as a function of distance between body and hands: Next to the body and hands (Close/Close); Far from the body and hands (Far/Far); Next to the body (close to the feet) and far from hands (Close/Far). The distance between the eyes and the stimuli was identical in the Far/Far and Close/Far locations. This allowed us to investigate whether a location close to the body but unreachable by the hands would elicit an attentional bias similar to the one observed in peripersonal or extrapersonal space. The results showed an overall leftward bias for each location. However, pseudoneglect was larger in Close/Close than in the other two locations. Our results suggest that the pseudoneglect does not varies as a function of the distance between the body and the stimuli. Instead, it suggests that the peripersonal and extrapersonal space should be defined as areas that are reachable or unreachable by our hands.
Predictive value of extinction, avoidance and generalization for subclinical anxiety and stress symptoms

Naomi Carpentier (1), Sara Scheveneels (1) and Dirk Hermans (1)

(1) KU Leuven

Learning processes like extinction, avoidance and generalization (EAG) play an important part in the development and maintenance of anxiety disorders. In this study, we investigated whether individual differences in these three processes are predictive for (subclinical) anxiety and stress symptoms in a stressful period in participants’ lives. It is hypothesized that impaired extinction, excessive avoidance and overgeneralization predict higher anxiety and stress at follow-up. A sample of 209 first-year psychology students participated in this study. On three consecutive days, they underwent an online fear conditioning task targeting each of the respective EAG-processes. Anxiety and stress symptoms were assessed at baseline before the conditioning tasks (T1), after receiving their first exam results at university (T2) and one month later (T3). Regression analyses will be used to test the predictive value of the EAG measures on anxiety and stress at baseline (T1), T2 and T3. These analyses will be repeated for two subsamples: students who have failed on one or more exams, and students who were disappointed by these (unsatisfactory) results. While the study is currently still ongoing, results will be presented at the BAPS meeting.
Both in- and outside of academia, women remain underrepresented in the labour markets’ top positions. Much research has focused on the causal influence of gender bias on social phenomena, such as the glass ceiling effect. The systematic impact of the social environment (e.g., few female professors) on gender bias in behaviour, however, has rarely been examined. In an initial study we tested the relation between students’ exposure to female professors and gender bias in their behaviour. Specifically, we examined whether the proportion of male to female professors in students’ university majors relates to gender bias in (a) professor evaluations, (b) perception of “professor” as a male or female profession, and (c) automatic and self-reported associations between the profession of professor and gender. The results of this initial study suggest that social context as determined by the ratio of female to male professors might not play a very strong role in gender bias. However, the absence of strong effects in this initial study does not necessarily imply that there are no effects of the percentage of female professors on gender bias. The study had several limitations and further research is necessary to test this relationship.
Do robots capture our attention as much as humans?

Begüm Cerrahoğlu (2), Selin Yılmaz (2), İlayda Güneysu (2) and Burcu A. Ürgen (1,2)

(1) Aysel Sabuncu Brain Research Center & National Magnetic Resonance Research Center (UMRAM); (2) Bilkent University, Psychology Department, Ankara, Turkey

Attention is an important mechanism for solving tasks, but our environment can distract us via irrelevant information. As robots increasingly become part of our lives, one important question is whether they could distract us as much as humans do, and if so to what extent. To address this question, we conducted two experiments in which subjects were engaged in a central letter detection task. In experiment 1 we used human, robot, and android static images as distractors, in experiment 2, same agents were presented in dynamic mode. The results revealed that robots and humanoid robots were equally distracting as humans, shown by the lack of difference in accuracy rates, and reaction times for the three agents. Moreover, participants were significantly more accurate and had higher reaction times when the task was hard compared to easy task. The distractor presence led to lower accuracy rates and higher reaction times, this effect was also present when the distractor was presented in dynamic mode compared to static mode. Urgen et. al (2020)’s study which used the same task’s static mode with prior knowledge of agents’ identities, revealed a significant interaction effect between task difficulty and human-likeness of agents. Distraction by the robot was more prevalent in the hard task while human agent distracted the most in the easy task. However, in the present study with no prior information, no interaction was found. One possible interpretation is the participants’ inability to recognize the different identities of distractors when they were not informed priorly.
Impact of Virtual Reality on stress level and sense of competence in ambulance workers

Sourour Chaabane (1), Anne-Marie Etienne (1) and Aurélie Wagener (1)

(1) ULiège

Virtual reality (VR) exposure is one of the tools used in clinical psychology to treat anxiety disorders. It is also used to enhance the resilience of soldiers by confronting them with virtual combat environments. Increasing their resilience could strengthen them against the negative consequences of trauma exposure or the suffering experienced by people they rescued. Most studies focused on military and emergency medical personnel but none has so far investigated ambulance workers’ experience (AW) while they are daily confronted with traumatic situations. The current study aims to assess the impact of a single VR exposure session on AW’ competence and stress. Forty participants were randomly assigned to either a VR immersion (experimental group, N=20) or an audio immersion (control group, N=20) of a shooting attack situation. The main hypotheses were that VR would lead to a decrease of anxiety, as measured by Visual Analogue Scales, as well as an increase in the sense of competence compared to the control situation. The results showed a significant reduction in the fear VAS measure in both groups. Besides, results revealed an increase of the sense of competence after the VR immersion, and a reduction of the tension VAS measure in the control group, even if these differences didn’t reach statistical significance’s level (p=0.06). Although our hypotheses were only partially confirmed, since beneficial effects of either VR and the audio description on stress were observed, findings suggested that VR exposure could be a useful way to increase the resilience of the AW.
Fatigue is the most invaliding symptom in 65% of patients with multiple sclerosis (MS) [1]. However, few data are available on the effect of mental fatigue on their cognitive efficiency. This study aimed to determine if mental fatigue alters performance according to task difficulty in MS patients. Eleven early MS patients (disease duration <5 y) and eleven matched healthy controls (HC) performed a working memory task (N-back) in a situation of high or low mental fatigue (experimental induction of the fatigue state). Repeated measures ANOVA (p<0.05) were conducted to determine the effects of fatigue (high vs. low), difficulty (1 to 3-back) and group (MS, HC) on hit rates (HR), decision criterion and sensitivity index (d’). Analysis of HR showed effects of group (F(1,20)=7.39, p<.05), difficulty (F(2,40)=33.86, p<0.001) and a difficulty*group interaction (F(2,40)=3.78, p<.05), with lower performance in MS, particularly in the most demanding condition. Decision criterion analysis only showed more conservative answers in MS patients (F(1,20)=7.10, p<.05). For d’, effects of group (F(1,20)=5.27, p<.05) and difficulty (F(2,40)=47.83, p<.001) were observed, with a smaller sensitivity index as difficulty increased and in the MS group. MS patients showed lower performance and were more conservative than HC, especially as the difficulty of the task increased. This suggests difficulty for allocation of attentional resources in MS. By contrast, we did not show fatigue-related effects on task performance in MS.
Hierarchical Task Representations in the Anterior Cingulate Cortex

Thomas R. Colin (1), Iris Ikink (1) and Clay B. Holroyd (1)

(1) UGent

The function of the anterior cingulate cortex (ACC) remains mysterious. Univariate functional magnetic resonance imaging (fMRI) analyses fail to discriminate between dominant theories, which predict similar univariate responses: the ACC is sensitive to errors, conflict, difficulty, rewards and punishments, and shows activation during many sequential decision making tasks. Here we use multivariate fMRI and computational modelling to investigate the hypothesis that ACC implements distributed representations of hierarchically-organized task sequences. First we develop a family of artificial recurrent neural network (RNN) models of the ACC, training those models on a hierarchical sequence task (i.e., making coffee or tea according to a pre-specified set of rules). Second, we use representational similarity analysis to compare the activity patterns of these RNN models to those exhibited in the ACC of participants performing the same task while undergoing MRI. Among the models tested are a replication of an earlier study validating the approach, and extensions of that model, including (1) adding goal units and (2) inducing an “abstraction gradient” in the hidden layer of the network. Results are consistent with the hypothesis that the ACC contributes to hierarchical reinforcement learning.
Cross-talk integration of subjective experiences

Gaia Corlazzoli (1,2), Kobe Desender (2) and Wim Gevers (1)

(1) ULB; (2) KU Leuven

Whenever we perform a difficult task, this is accompanied by multiple subjective experiences. If and how these experiences are associated with the objective difficulty of the task is still under discussion. In the current study, we investigated how task difficulty influences subjective reports of both confidence and effort. To do so, a random dot motion task (RDM) was combined with a colour attribution task. Task difficulty was manipulated by varying coherence in the RDM task and by varying colours in the colour attribution task. Participants reported their subjective confidence about their performance on the RDM task and their experience of effort on the colour attribution task. Confidence levels closely tracked RDM coherence revealing lower confidence with increasing difficulty. The subjective report of effort increased predictably with the colour manipulation in the colour attribution task. Interestingly, even though both tasks were presented as separate entities to the participants, subjective appraisals contaminated each other. The tasks required different dimension evaluation (i.e. movement and colour) and different responses at different times. Nevertheless, confidence levels varied with RDM difficulty but also depended on accuracy in the colour attribution task. Based on the current results, we hypothesize that the subjective experiences of confidence and effort are naturally combined into a single value. For this reason, even when circumstances are created as such to separate them as much as possible, they tend to influence each other.
Comorbidity and cognitive overlap between developmental dyslexia and congenital amusia in children

Manon Couvignou (1) and Régine Kolinsky (1,2)

(1) ULB; (2) Fonds de la Recherche Scientifique-FNRS.

Developmental dyslexia and congenital amusia are two specific neurodevelopmental disorders that affect reading and music perception, respectively. Similarities at perceptual, cognitive, and anatomical levels raise the possibility that a common factor is at play in their emergence, albeit in different domains. However, little consideration has been given to what extent they can co-occur. A first adult study suggested a 30% amusia rate in dyslexia and a 25% dyslexia rate in amusia (Couvignou et al., Cognitive Neuropsychology 2019). We present newly acquired data from 38 dyslexic and 38 typically developing children. These were assessed with literacy and phonological tests, as well as with three musical tests: the Montreal Battery of Evaluation of Musical Abilities, a pitch and time change detection task, and a singing task. Overall, about 34% of the dyslexic children were musically impaired, a proportion that is significantly higher than both the estimated 1.5-4% prevalence of congenital amusia in the general population and the rate of 5% observed within the control group. They were mostly affected in the pitch dimension, both in terms of perception and production. Correlations and prediction links were found between pitch processing skills and language measures after partialing out confounding factors. These findings are discussed with regard to cognitive and neural explanatory hypotheses of a comorbidity between dyslexia and amusia.
Word learning difficulties are often part of the deficits presented by children with Developmental Language Disorder (DLD). On one hand, this learning process is known to be inference-based and constrained among others by categorization, helping the extension of new words to unfamiliar entities. On the other hand, Bayesian models of word learning offer an approach combining these processes into an integrated framework, such as the inductive inference process recruits prior knowledge and principles of statistical learning (detection of regularities). Our study aimed at (1) defining if children with DLD can draw inductive inferences in a word-learning context using categorization; (2) defining if the task is easier when prior knowledge is available vs not available. 13 children with DLD (between 7;0 and 9;2) and 15 age-matched controls were exposed to a word-learning task in which they faced with exemplars of objects associated with pseudo-words. Objects belonged to three categories spreading across three hierarchical levels. For each item, children chose among a set of test objects from the same categories which one could be labelled the same. Our design included two parts, one with familiar categories and one with unfamiliar ones. Results replicated a previous study conducted on older school-aged children only on familiar categories, showing no differences in word extension between children with and without DLD in this condition. On the contrary, differences tended to emerge between both groups on unfamiliar categories, suggesting difficulty in category-based inference when no prior knowledge is available for children with DLD.
A prospective study on body image in children: The role of media influence

Jolien De Coen (1), Lien Goossens (1) and Sandra Verbeken (1)

(1) UGent

Body image problems are reported during middle childhood and are associated with exposure to appearance-focused media. This longitudinal study investigated the extent to which three media influence components, Awareness, Pressure, and Internalization of media ideals, predict body image and eating problems in children and whether gender moderates this effect. A total sample of N = 688 participants (46% girls, aged 8-11 at T1) was studied. Self-report questionnaires were administered on the media influence components, body image and eating problems at T1 and T2 (1 year later). After controlling for age, adjusted body mass index and baseline levels of body image and eating problems, results show that media influence components significantly predicted Restraint and Concerns about Eating, Weight, and Shape one year later. Awareness, however, uniquely predicted increases in Eating Concerns in boys, while Pressure predicted increases in Concerns on Eating, Weight, and Shape in girls only. The current results indicate that media influences, some of which may be gender-specific risk factors, predict subsequent body image concerns of girls and boys during middle childhood. Thus, both boys and girls should be addressed in future research and prevention programs.
Virtual reality (VR) is an upcoming technology in the educational field. It allows to immerse users in virtual environments which are difficult, dangerous or impractical to recreate and as such still allow them a ‘hands-on’ experience. Little is however currently known concerning the effectiveness of such technology as a means to enhance learning. In a pilot study, the potential of animated immersive VR was therefore assessed for the training of mixed palletizing abilities. 23 participants completed an immersive VR intervention in which they learned to quickly and accurately stack boxes on palettes. The procedure involved a tutorial, pretest, training phase and posttest. Main outcomes measures focused on the speed and accuracy in which tasks were completed. Additional questionnaires focused on both user and learning experience. Following the training, participants made significantly less errors, and became significantly faster. No influence of user experience on performance was found. Perceived learning was furthermore unrelated to the actual performance as measured by speed, nor accuracy, indicating the importance of objective measurements. In conclusion, this pilot study demonstrates that learning on mixed palletizing can take place in a virtual environment. Future research should replicate these results in a larger sample, while also exploring if and to what extent this learning can be transferred to real-life settings.
Sharing responsibility between patients and medical staff when important decisions about cancer treatment need to be made has received increased attention during the last decennia and has been related to positive health-related outcomes. However, structural barriers within the hospital environment such as time constraints and the limited inclusion of psychosocial patient information can make it difficult to guarantee a truly patient-centered care. This study identifies need for medical information and shared decision making in cancer patients. Moreover, we also hypothesize that depending on the patient’s stress profile, they would prefer a different amount of medical information and shared decision making. A survey consisting of ten validated questionnaires about the patient’s personality, level of health literacy, patient activation, stress, cognitive functioning, emotional impact, life satisfaction and psychosocial factors was filled out by 497 cancer patients from Belgium, the Netherlands and France who received treatment in the last couple of years. We are currently in the process of analyzing the data. The model and patient-profiling based on the results of this study will serve as a backdrop when developing personalized patient decision aids at a later stage of the research project.
Cognitive control is a process we use every day in life: shopping for groceries, medication compliance, having a conversation, looking for a friend in a big crowd. Our cognitive system constantly needs to filter out irrelevant information, maintain what is relevant, and inhibit inappropriate or automatic responses to achieve our goals. Miyake et al. (2000) found three separable components of cognitive control in young adults: inhibition, updating and task switching. Based on this seminal paper, many researchers limit the focus of their study to one of these components of cognitive control, often indexed by only one experimental task. However, the construct validity of the tasks used to measure these specific components is often limited: multiple aspects of cognitive control are usually needed to perform these tasks successfully. For this reason, we will assess a wide set of cognitive control subcomponents using a test battery of 11 behavioral tasks, in line with Miyake et al. Using factor analytic techniques, we will assess the underlying factor structure of these tasks. In this way, a valid, uniform test battery can be developed for young healthy adults, that will be accessible for other researchers through OSF. Additionally, the results of this study will provide a useful starting point for future developmental and clinical studies.
Can humans take their attention off a face? An electrophysiological signature of top-down cognitive control in a context of visual attention

Lynn Delcon (1) and Adélaïde de Heering (1)

(1) ULB

On a daily basis, our sensory systems constantly process a huge amount of information. Attention directly plays on it and acts as a perceptual filter which goal is to enhance cortical activity associated to relevant information and suppress cortical activity associated to irrelevant distractions. To gain insight on this cognitive ability, we took advantage of the steady-state evoked potentials (SS-EP), a technique deriving from electrophysiology (EEG). Specifically, participants’ brain responses were measured while they viewed streams of images flickering at a rate of 6 Hz (6 images per second). Unknown to them, 2 visual categories also flickered at a predetermined frequency: faces every 5th item (f1 = 1.2 Hz) and birds every 4th item (f2 = 1.5 Hz). Depending on the block participants were involved in, they were either instructed to monitor a fixation cross superimposed to the images which flickered at a non-periodic rate (orthogonal task), or to focus on faces or birds. The results were threefold. First, they showed that instructions strongly modulate SS-EP peaks. Second, bird attendance made faces irrelevant which resulted in a suppression of the brain activity associated to faces. Third, faces tend to naturally engage participants’ attention more than birds. Overall, we demonstrated here that selective attention critically shapes brain responses by enhancing its neural responses to relevant stimuli and suppressing those to irrelevant stimuli.
Placement in foster care is a potentially traumatic event for children. Separating children from their home environment is a source of suffering. Although there is a growing interest in psychotrauma in children, the impact of a child’s placement on resilience and post-traumatic stress disorder is not yet clear. This study analyses the influence of the child’s intellectual abilities on resilience and psychological trauma in children placed in foster care. Participants were children placed in foster care (N=10) and children from the general population (N=30) aged 6 to 12 years old. Participants completed a thorough questionnaire on their history, took an intellectual quotient (IQ) test, and answered questionnaires about their resilience and post-traumatic stress symptoms. Despite the strong severity of the events experienced, our results suggest that foster children appear to be as likely as children from the general population to develop psychological trauma. In contrast, the impact of intellectual abilities is different for children placed in foster care and children from the general population. Verbal comprehension skills and cultural resilience emerged as important protective factors for children from the general population, but not for children in foster care. However, fluid reasoning and processing speed protect children in foster care from developing psychotrauma. Moreover, our study suggests that different factors, such as the number of placements and contact with the biological family, influence the severity of post-traumatic symptoms in children in foster care. According to our results, intellectual abilities are a relevant factor in the study of PTSD in children placed in foster care, but more research is needed to better understand the underlying mechanisms.
Cardiac activity is attributed to oneself or other independently of synchronicity of heartbeat biofeedback

Athena Demertzi (1,2), Paradeisios Alexandros Boulakis (1), Federico Raimondo (3,4,5), Sepehr Mortaheb (1) and Lionel Naccache (3,6)

(1) ULiège; (2) Fund for Scientific Research FNRS; (3) Hôpital Pitié-Salpêtrière, France; (4) Institute of Neuroscience and Medicine, Brain & Behaviour (INM-7), Research Centre Jülich, Germany; (5) Heinrich Heine University Düsseldorf, Germany; (6) INSERM, U1127, France

The synchronous presentation of interoceptive activity with an external object was shown to facilitate its attribution to oneself. Here we tested the reverse, i.e. whether one’s interoceptive signal can be attributed to an external source if presented in an asynchronous way. Seventeen healthy participants were scanned (3T MRI) while carrying electrocardiogram (ECG). During scanning, subjects were listening to sounds presented either in synchrony or out of synchrony to their ECG. After a sequence of sounds (30-50 beeps) participants had to judge whether this signal was generated from themselves (“Mine”) or by someone else (“Other”). We found same frequencies of Mine/ Other attributions across synchronicity conditions (GOF χ²=8.3, p=.93). Reaction times were neither mediated by synchronicity (F=1.42, p=.23) nor by Mine/Other attributions (F=.01, p=.98); rather, they were predicted by the accuracy in attributions (Sync-Mine, Asyc-Other; b=-1.31, [CI]=[-2.41,-0.22], p=.03, R²=0.14). The fMRI pointed to the activation of the salience network (insulae, mid-anterior cingulate cortex) and cerebellum during the attributions (conjunction Mine-Other, cluster-level FWE p< .05). The L cerebellum was further activated (cluster-level FWE p< .05) for the Syc-Async conjunction. When the L cerebellum was used as a seed in a psychophysiological interaction analysis, “Other” attributions showed increased functional connectivity between this region and then R insula (mean beta= 3.74), while for “Mine” attributions this connectivity was decreased (mean beta= -3.18). Our results show that interoceptive signals can be attributed to external sources with the salience network mediating this attribution, and provide empirical support to current theories on interoceptive subjectivity.
Impaired recognition memory in Alzheimer’s disease (AD) mainly rely on deficient recollection while familiarity is relatively preserved. Built on fluency cues (i.e. ease of processing), familiarity provides a sense of strength of a memory trace. In a word recognition task, false recognitions of unlearned words can be elicited by the prior masked presentation of the same word or semantically related primes. Structural links in semantic memory are impaired in AD following a hierarchical order with taxonomic links (within the same category, e.g. dog-cat) being more rapidly impaired than thematic links (concepts often co-occurrent, e.g. hairbrush). In our study, 17 early-stage AD patients and an age-matched control group performed a word recognition task in which the test word was preceded by a 33-ms prime perceptually (repetition) or semantically (taxonomic, thematic) related, or unrelated. Previous research using thematic and taxonomic priming in a naming task demonstrated a taxonomic hyperpriming in early-stage AD due to the impairment of distinctive attributes between concepts (bringing them conceptually closer). Our results did not show such hyperpriming effect, but showed a repetition and thematic priming effect on the production of false recognitions. This is consistent with the preservation of repetition and thematic links in early-stage AD, as priming effects on false recognitions only occurs if the prime-target link exists. While the lack of taxonomic priming effect still confirms the impairment of these links, such impairment does not translate into hyperpriming (here related to false recognitions) as it does in semantic recognition tasks.
Poster #

Using the mobileDNA application to go beyond subjective self-reports and to objectively study smartphone use

Floor Denecker (1) and Jessica Morton (1)

(1) UGent

Smartphone research still often relies on participants’ self-reports. However, it has been suggested that there is only little evidence for its validity. It seems more accurate to objectively log actual smartphone use, for example via the ‘mobileDNA’ application. This application can be used as a tool to examine the difference between these objective and subjective measures. In this research, 40 Flemish ‘digital natives’ (16 males, 14 females, mean age = 19.77, SD = 2.40) installed the application for two weeks and were once asked to estimate their average daily smartphone use in minutes. Both measures were compared to each other to examine the potential difference between both. The measures correlated only in a moderate way, $r = 0.75$, $p < 0.001$, and a significant difference of 50 minutes was found, $t(29) = 4.53$, $p = 0.001$. On average, people overestimated their smartphone use with 30 %, which is contrary to most studies and the popular belief suggesting an underestimation. Altogether, it seems necessary to further conduct research with objective parameters as self-report measures of average smartphone use seems not as valid as the average duration measured via the mobileDNA application. Examined on a larger sample size, mobileDNA data can potentially offer digital health and wellbeing research more reliable measures of participants’ actual smartphone use behaviour and particular smartphone patterns. These findings can be contextualized by adding surveys that examine subjective feelings or particular characteristics of smartphone users, potential consequences of extensive smartphone use.
What makes anti-bullying program effective? A research protocol

Charlie Devleeschouwer (1) and Benoît Galand (1)

(1) UCLouvain

Giving the serious short- and long-term consequences of school bullying on children’s health, several anti-bullying programs have been developed and evaluated all around the world. Even if some of them have been found effective to reduce bullying and victimization, almost no research has studied the underlying mechanisms that leads to this reduction. The aim of our project is to better understand how these anti-bullying programs work. Perceived norms, empathy, attitudes towards bullying, and self-efficacy are some of the most studied factors in association with bullying and defending behaviors. However, very few studies have tested if changes in those factors following the implementation of an anti-bullying could explain change in student social behaviors. In this poster, we present our research protocol that will be used to test our theoretical model. Concretely, we will follow the implementation of KiVa in the French-speaking part of Belgium with a longitudinal design. For each student, we will measure bullying, victimization and defending behavior, the level of empathy, attitudes towards bullying, self-efficacy to defend, and the perception of the norms created by peers and the teacher. Implications for prevention programs will be discussed.
Does exposition to novel scenes improve subsequent verbal memory?

Elisabeth Di Mino (1), Judith Schomaker (2) and Christine Bastin (1,3)

(1) ULiège; (2) Leiden University, The Netherlands

The current study tested the hypothesis that exposure to novel stimuli promotes performance in a subsequent word learning task, particularly by improving recall of superficially encoded words compared to deeply encoded words. Moreover, we considered relationship with novelty seeking and curiosity personality traits. Thirty-two young participants were exposed to familiar versus novel scenes for an indoor/outdoor judgment task before performing a memory test (deep versus shallow encoding of words, followed by recall and recognition memory tasks). The results showed that, contrary to predictions, the condition (familiarity versus novelty) did not have any significant effect on recall nor recognition scores. Even though deep encoding lead to better recall and recognition scores than shallow encoding, there was no significant interaction between condition and encoding type. This could be due to a global failure of the scene task to induce novelty detection as participants processed novel scenes as rapidly as familiar scenes. Nevertheless, correlations analyses indicated that participants who spent more time on novel than familiar scenes recalled more deeply encoded words. But participants who spent more time on novel than familiar scenes recognized less superficially encoded words after the novelty condition compared to the familiar condition. Personality traits did not correlate with any measure. The lack of a group-level novelty effect could be explained by the materials used. Indeed, the scenes presented might not have sufficiently stimulated the feeling of novelty.
Stress and Trauma within the Criminal Investigation Department: The particular case of the vice squad inspectors

Laetitia Di Piazza (1), Laura Jadot (1) and Adélaïde Blavier (1)

(1) ULiège

Police inspectors, by the nature of their work, constitute a population at high risk of exposure to potentially traumatic events. Whether they are organizational (working conditions, lack of manpower, etc.) or operational (elements specific to interventions), the risk factors are numerous and require police officers to implement coping strategies to deal with these daily demands. However, these strategies are not always adapted and may therefore lead to the development of post-traumatic stress disorder. Twenty-six police inspectors from the vice squad were surveyed using questionnaires and structured clinical interview to assess compassion fatigue, secondary traumatic stress and coping strategies. The majority of police inspectors generally engage in appropriate coping strategies in the course of their work. However, despite this adequate personal functioning when faced with these potentially traumatic work situations, 65% of the participants experienced secondary traumatic stress. This is observed by the presence of burnout, which is more intensely felt in contact with citizens, victims or perpetrators. It is essential to implement preventive interventions with this at-risk population. Indeed, the results show suffering and fatigue related to the working conditions of these vice squad inspectors. Future programmes should promote the establishment of a favourable environment and help reduce the occurrence of stress reactions in order to better prevent the development and maintenance of post-traumatic stress disorder in police officers.
Stress, defined as the body’s emotional and physical responses to a particular situation, is highly prevalent in children. According to UNICEF (2014), more than one in three children are emotionally distressed and have experienced significant anxiety and stress feelings that lead them to seek medical attention. It is therefore crucial to be particularly attentive to these warning signals of discomfort and to implement solutions that will enable them to better apprehend these stressful situations, to understand their physiological functioning and to better manage their emotions. The principle of heart rate variability biofeedback is based on the hypothesis that stimulation of the vagal system will lead to an improvement in the heart rate variability level and thus allow, through regular training, better emotional regulation and a significant reduction in stress levels. While this technique, in addition to being easily implemented and affordable, seems to provide many benefits to children, only few valid and well-controlled studies have so far investigated the effects of combining biofeedback and cardiac coherence exercises. Indeed, in a recent systematic review, only about ten articles could be identified. However, the analysis of these articles has enabled us to highlight the significant beneficial effects of heart rate variability biofeedback techniques, and particularly on children with anxiety disorders and/or hyperactivity and concentration problems. These results will be detailed and discussed, and the perspectives of using this technique specifically for children and adolescents will be considered.
Black people are a social category that is more rarely the sole focus of research in France (Ndiaye, 2008) and in the professional world (Amadieu, 2008). Black people are strongly discriminated against even when their high level of qualification is recognised (Martens et al., 2005). The chances of getting a job for a person with a black skin colour are 23% lower than for a Caucasian person (Amadieu & Roy, 2019). The darker the skin colour, the worse the discrimination (Hall, 2017). Black skin colour carries specific discrimination and stereotypes (Hamilton & Sealy-Harrington, 2017). This unequal treatment associated with gender varies according to the sector, so black women are over-represented in the personal assistance professions but under-represented in others, both situations being the result of discriminatory practices (Gatugu, 2017). In order to examine the singularity of discrimination against black women, this research evaluates the personality traits that are attributed to black, mixed-race and white women in Belgium. The hypothesis is that ethnic stereotypes have a differential valence between white and black women in Belgium. This study mainly used the "checklist method" as well as an archetypal black woman scale and the free association of traits.
Symbolic number ordering and its underlying strategies examined through self-reports

Natalia Dubinkina (1), Francesco Sella (2) and Bert Reynvoet (1)

(1) KU Leuven; (2) Loughborough University, UK

Symbolic number ordering has been related to arithmetic fluency; however, the nature of this relation remains unclear. Here we investigate whether the implementation of strategies can explain the relation between number ordering and arithmetic fluency. In the first study, participants (N=16) performed a symbolic number ordering task (i.e., “is a triplet of digits presented in the order or not?”) and verbally reported the strategy they used after each trial. The analysis of the verbal responses led to the identification of three main strategies: memory retrieval, triplet decomposition, and arithmetic operation. All the remaining strategies were grouped in the fourth category “other”. In the second study, participants were presented with a description of the four strategies. Afterwards, they (N=61) judged the order of triplets of digits as fast and as accurately as possible and, after each trial, they indicated the implemented strategy by selecting one of the four pre-determined strategies. Participants also completed a standardized test to assess their arithmetic fluency. Memory retrieval strategy was used more often for ordered trials than for non-ordered trials and more for consecutive than non-consecutive triplets. Reaction times on trials solved by memory retrieval were related to the participants’ arithmetic fluency score. For the first time, we provide evidence that the relation between symbolic number ordering and arithmetic fluency is related to faster execution of memory retrieval strategies.
Nowadays public speaking is a vital skill in many circumstances and in very different fields: sales representatives who present products to customers, managers who defend their project in front of stakeholders, candidates during a job interview, teachers in front of students, etc. However, social anxiety may impede oral presentation performances. Repeated training in front of an audience can help to better control the speaker’s emotions and skills, and improve speaking performances (Wallach et al., 2009). Given that training in front of a real audience can be logistically difficult to organize, virtual reality (VR) represents an alternative. Nevertheless, the emotional impact of the virtual audience on the speaker will depend on the emotional valence and arousal they attribute to the audience’s avatars. The goal of the present study is to assess the emotional valence and arousal attributed to the avatars of a new virtual audience, depending on the avatars’ attitude. Based on the methods from Chollet & Scherer (2017), 125 adults participated in this study. They rated the emotional valence and arousal of 8 avatars depending on their body posture, face’s expressions, or head movements using Likert scales. Results show that compared to body postures and facial expressions, head movements were more readily linked to the emotional valence attributed to the avatars by the participants. Furthermore, arousal seems to be directly linked with the avatar’s head movements and facial expressions. Full results from each parameter will be discussed.
The moderating role of maladaptive schemas in the relationship between trauma and psychopathology in patients with alcohol use disorder

Morag Facon (1), Gina Rossi (1) and Eva Dierckx (1,2)

(1) VUB; (2) Alexianen Zorggroep Tienen

Despite the high prevalence of traumatic experiences in patients diagnosed with alcohol use disorder (AUD), the relationship between trauma and AUD remains largely unclear. Patients with AUD and a co-morbid trauma-related disorder seem to show more impaired functioning and have a greater chance to relapse. Early maladaptive schemas (EMS), which are cognitive structures originating in childhood, are seen as precursors of psychological maladjustment and may serve as a moderator in the complex relationship between traumatic events and psychopathology. This research aims to enhance the understanding of the complex relationship between trauma, EMS and degree of psychopathology. Considering the existing gender differences in not only AUD symptoms but also in cognitive vulnerabilities, we will also look at differences between male and female patients with an AUD. 464 inpatients (M=325, F=139) diagnosed with AUD were recruited. Severity of psychopathology will be examined by the SCL-90, the presence and degree of maladaptive schemas by the YSQ-SF and the occurrence of traumatic experiences by the TEC. We expect that the severity of psychopathology in AUD patients is related to traumatic experiences, as well as to the presence of maladaptive schemas. Further we expect an interaction effect to occur, namely that in the case of more intense schemas, a more severe pathology will occur, indicating the moderating role of maladaptive schemas in the relationship between trauma and psychopathology in patients with AUD. Further, we will explore whether there are differences in these relationships in males compared to women.
Context effects in numerosity processing: the configuration of the numerosity comparison task affects the performance at the level of the single trials

Marta Fedele (1), Sigert Ariens (1) and Bert Reynvoet (1)

(1) KU Leuven

In the field of numerical cognition, the numerosity comparison task is considered the eligible method to assess non-symbolic numerical representations. The performance in this task is considered to be related to more complex numerical skills and mathematics, both in children and adults. Despite the prevalent assumption that numerosity comparison might be employed as a pure index of non-symbolic numerical representations, a growing body of research demonstrated that the global configuration of stimulus-related features, something we will refer to as contextual features, might influence the way numerosity is processed at the level of a single trial. Here, we present two studies aimed at exploring how context affects the performance at the level of the single numerosity comparison trial. The results of our first study show that the more complex the pattern of covariation is between numerical and non-numerical cues (e.g. total surface), the more participants will rely on numerical representations to solve the task. In a second study we found that participants’ ability to judge numerosity in the exact same trials differed when respectively more difficult or easier filler trials were included in the experiment. Our results suggests that contextual factors should be taken into account when interpreting the performance in a numerosity comparison task and its relation with mathematical achievement.
Symbolic behavior, relational information and feature transfer

Martin Finn (1) and Jan De Houwer (1)

(1) UGent

Symbolic behavior is a key feature of human cognition. Our capacity to effectively respond to the environment is expanded by symbols which communicate how stimuli and/or events are related. This is perhaps most obvious when we leverage relational information that enables us to respond to never before experienced events in terms of previously experienced events (e.g., deciding not to drink a something when told that it “tastes like [reader’s aversive stimulus of choice].”). However, leveraging relational information is a complicated affair, as highlighted by the observation that when stimuli are related not all features of stimuli transfer. This raises the issue of how relational information interacts with feature transfer, and the role symbols play in this interaction. To investigate this issue we conducted series of experiments designed to produce symbols which communicated specific relational information. We employed a paradigm based on car races. The paradigm had two components: i) a sample racecar screen which showed the performance of a sample racecar, and used experimentally engineered symbols to communicate how the performance of each real racecar would compare with that of the sample racecar, and ii) a car race screen showing the real racecars race. Two symbols were established as cues for the relations of same and different, and two symbols were established as cues for the stimulus features speed and direction. The results from these experiments demonstrate symbolic control over the selective transfer of stimulus features, and have implications for the study of relational information in complex settings.
Many people who have had a near-death experience (NDE) describe, as part of it, a disturbed sense of having a “distinct self”. However, no empirical studies have been conducted to explore the frequency or intensity of these effects. We surveyed a total of 100 NDE experiencers (i.e., Near-Death-Experience Content [NDE-C] scale total score ≥27/80). Eighty participants had their NDEs in a life-threatening situation and 20 had a NDE not related to a life-threatening situation. Participants completed the Ego-Dissolution Inventory (EDI) and the Ego-Inflation Inventory (EII) to assess the experience of ego-dissolution and -inflation potentially experienced during their NDE, respectively. They also completed the Nature-Relatedness Scale (NR-6) which measures the trait-like construct of one’s self-identification with nature. Based on prior hypotheses, ratings of specific items pertaining to out-of-body experiences and a sense of unity were taken from the NDE-C and used for correlational analyses. We found higher EDI total scores compared with EII total scores in our sample. Total scores of the NDE-C scale were positively correlated with EDI total scores and, although less strongly, the EII and NR-6 scores. EDI total scores were also positively correlated with the intensity of OBE and a sense of unity. This study suggests that the experience of dissolved ego-boundaries is a common feature of NDEs.
Implementing novel instructions is a complex and uniquely human cognitive ability, that requires the rapid and flexible conversion of symbolic content into a format that enables the execution of the instructed behavior. Preparing to implement novel instructions, as opposed to their simple maintenance, involves the activation of the instructed motor plans, and the binding of the action information to the specific context in which this should be executed. Recent evidence and prominent computational models suggest that this efficient re-configuration of the system critically relies on frontal theta oscillations in establishing top-down long-range synchronization between distant and task-relevant brain areas. In the present study, we compared the electrophysiological brain activity elicited by the maintenance of novel S-R mappings and the proactive preparation for their implementation. We replicated previous findings showing oscillatory features emerging specifically in response to the implementation demands. Crucially, preparing to implement novel S-Rs also induced a higher degree of connectivity in the theta frequency range between medial prefrontal and motor areas, as compared with simply memorizing the S-Rs. This finding supports our hypothesis that the behavior-guiding format is, at least partially, achieved by means of the modulation of connectivity patterns between relevant brain areas.
The validation study of the Spanish short version of the “Health Literacy Survey Questionnaire”

Lea Francia (1), Stefan Agrigoroaei (1), Elise Grimm (1) and Stephan Van den Broucke (1,2)

(1) UCLouvain; (2) KU Leuven

Health literacy (HL) is defined as one’s ability to find, understand and use health information. The examination of health literacy has practical implications including the understanding of health behaviours variability. The aim of this study is to validate a Spanish translation of a short version (12 items) of the “Health Literacy Survey Questionnaire” (HLS-Q, Pelikan, Ganahl, Van den Broucke & Sørensen, 2019) and to identify whether it can be used in both Peruvian and Spanish populations. A minimum of 400 adults (18+) of Peruvian and Spanish nationality will be recruited. The questionnaire will be composed of the HLS-Q, the Cancer Health Literacy Test, the Spanish Health Lifestyle Questionnaire, and the Social Desirability Scale. A forward-and-backward translation has already been completed. The consensual nature of the translation will be investigated through a qualitative study. Participants will be asked to provide comments regarding their understanding of the health literacy items. If major differences are detected, the questionnaire will be revised, and the process repeated. Quantitative analyses will be conducted to assess the psychometric properties of the instrument. A confirmatory factor analysis will check the unifactorial structure of the scale. We will also investigate the internal consistency and the convergent validity by computing Mcdonald’s Omega and correlation coefficients respectively. We expect a similar comprehension of items among Peruvian and Spanish samples, as well as a robust convergent validity. The validation of this instrument in the Spanish language will strengthen future research on health literacy in Spanish-speaking populations.
Towards the most Prägnant Gestalt: Contextual influences on simplification and complication tendencies

Liesse Frérart (1), Eline Van Geert (1) and Johan Wagemans (1)

(1) KU Leuven

The Law of Prägnanz states that each organizational process will always be as ‘good’ as the prevailing conditions allow. Good organization can be achieved by removing unnecessary details or weakening certain features (i.e., simplification) or by making certain features of a Gestalt stand out (i.e., complication). We investigated whether the importance of a feature for discrimination within a specific context, influences whether simplification or complication of that feature occurs. We hypothesize that a feature which is important for discrimination will be complicated and a feature which is not important for discrimination will be simplified. In an online experiment, participants were asked to reconstruct one out of four figures using basic shapes, such that someone else would be able to recognize it among the other figures. For each figure, two dimensions were defined, one of which contained more variability across the four presented figures than the other. In the close context, target and distractors differed only quantitatively on those dimensions, whilst the figures were qualitatively the same. In the far context, target and distractors were qualitatively different. The data are currently being analyzed. We expect that in the close context, the most variable dimension will be complicated, whilst the other one will be simplified. In the far context, we expect simplification of both dimensions. These results could demonstrate the contextual dependence of perceptual and cognitive organizational tendencies like simplification and complication, more specifically the relevance or irrelevance of certain stimulus features for discrimination within a specific task context.
Executive deficits and language performance in children with developmental language disorder: The impact of the executive load

Soléane Gander (1), Lucile Arnaud (1), Hugo Quémener (1), Alexandru Dumitrescu (1), Cécile Colin (1) and Charline Urbain (1)

(1) ULB

Accumulating evidences have highlighted reduced verbal and non-verbal executive functions (EF) performance in children with Developmental Language Disorder (DLD), suggesting that EF may be particularly at risk in this population. Yet, the involvement of executive deficits on language performance in children with DLD remains highly controversial. To specifically assess the impact of the executive load on language production skills in children, 12 DLD and 14 typically developing (TD) children (8-11 years) performed a semantic fluency task including two executive load conditions triggered by low or high levels of selection demands among competing alternatives. They also performed a set of non-verbal executive functions (i.e. working memory, inhibition and flexibility) tasks. Results revealed that, compared to TD children, DLD showed poorer performance in working memory ($p=.023$) and inhibition ($p=.002$). Regarding semantic fluency, a mixed ANOVA showed a significant main effect of Group (DLD<TD; $p<.001$) and Condition (low<high; $p<.001$) and a significant interaction effect (GroupXCondition; $p<.001$). Post hoc analyses revealed a significant difference in semantic fluency performance between the DLD and TD children in the high ($p<.001$) but not in the low ($p=.129$) load condition. In addition, in the high load condition, correlation analyses showed that semantic fluency difficulties were associated with lower inhibition performance ($\tau =-.30, p=.042$). Together, our results suggest that language performance of children with DLD may be affected by their executive weaknesses in a high executive load condition and highlight the importance of considering the executive load level of language tasks in the context of DLD assessment and care.
Evidence for preserved episodic-semantic verbal declarative learning abilities in children with developmental language disorder

Soléane Gander (1), Aurélie Van Maerck (1), Gaétane Deliens (1) and Charline Urbain (1)

(1) ULB

It has been suggested that declarative learning is preserved in developmental language disorder (DLD, Ullman & Pullman, 2015). Yet, this hypothesis has been challenged by studies reporting atypical lexico-semantic learning abilities in DLD (Bishop et Hsu, 2015; Lum et al., 2010). Here, we test the hypothesis that verbal declarative learning processes mainly relying on the hippocampal function (e.g. the acquisition of new episodic-semantic representations) will be spared in DLD. To test this hypothesis, we compared immediate retrieval performance associated with a hippocampo-dependent verbal declarative learning task (see Urbain et al., 2016 for details) between 12 DLD and 12 age-, sex- and non-verbal IQ-matched typically developing (TD) children (7-13 yo). During the learning task, children had to learn new episodic-semantic associations between 50 non-objects and their magical function (e.g. with this object you can “stop the rain”; “open any door”). As expected, a t-test for independent samples revealed similar retrieval performance between DLD and matched TD children (p=0.13). Of notice, all children were able to learn at least 75% of the new associations (i.e. to-be-reached learning criterion) and the number of learning sessions needed to reach this criterion did not differ between groups (p=0.58). Together, our results show typical episodic-semantic verbal declarative learning abilities in DLD, suggesting preserved hippocampo-dependent verbal declarative learning processes in this population. Future studies are needed to better characterize the neurophysiological processes underlying verbal declarative learning in DLD and the specific circumstances associated with a preservation or an alteration of this function in these patients.
Effect of text choice on reading motivation and engagement and on cognitive abilities

Margaux Genucchi (1); Fabienne Chetail (1)

(1) ULB

Recently, it has been shown that several motivation constructs predict unique variance of academic achievement growth in students, even after controlling for intelligence and personality. Among them, autonomy explains a unique portion of variance in academic achievement. Here, we focused on reading motivation. In that case, autonomy is defined as the perception that one has on reading choices. We examined the effect of choice in text reading on habitual and situational recreational reading motivation and engagement, and on cognitive abilities (i.e., novel word learning and reading comprehension). Two groups of participants were asked to read a short story. Half of them chose between five short stories which one they wanted to read whereas half of them were assigned to a short story, without choice. Overall, we found no significant effect of text choice on motivational and cognitive variables. However, the data showed that the scores of habitual motivation were higher in students than in employees and retired people. Moreover, when participants were used to read informative books, they had a higher number of correct responses in semantic learning of new words. Furthermore, we found that narrative book reading seems to have a positive effect on the amount of print exposure in leisure time compared to informative and comics book reading. Finally, the participants who read the least in their leisure time seemed to be the ones who were the most motivated and engaged during the text reading of the experiment (especially on situational and habitual reading engagement measures).
Informal caregivers at risk? An analysis of the Belgian Health Survey data on mental health

Pierre Gérain (1,2) and Emmanuelle Zech (2)

(1) Université de Lille, France; (2) UCLouvain

Informal caregiving refers to providing unpaid assistance to a relative or friend who has a disease or a disability. The assumption that providing informal care leads to deleterious health outcomes is widespread and commonly accepted. However, several comments have been made about the need to question this belief. To put this assumption to test, the Belgian National Health Survey from 2013 was used. In this nationwide sample (N = 6500), the association between informal care and mental health was investigated through the GHQ-12 and the SCL (depression, anxiety, and sleep subscales). Three complementary comparison were performed: (1) between informal caregivers and non-caregivers; (2) between informal caregivers at home, outside of home, and non-caregivers; (3) between informal caregivers providing care for more than 20 hours a week, those providing between 1 and 20 hours a week, and non-caregivers. Significant differences were controlled for gender, age, and perceived quality of social support. Overall, the results show that, with a population-based point of view, informal caregivers are not particularly at risk. Few comparisons were statically significant, and when they were, the effect sizes remained low. Far from settling this debate, these results rather suggest that the key point might lie elsewhere, as informal caregivers represents a diverse population in itself. Therefore, the focus should probably not be on the sole investigation of the differences between informal caregivers and the general population, but rather on how and why some caregivers differ from other caregivers and how such difference can represent a risk for them.
Categorical Perception and Generalization in individuals with and without Autism Spectrum Disorder

Birte Geusens (1), Jaana Van Overwalle (1) and Johan Wagemans (1)

(1) KU Leuven

Every day people are exposed to a vast amount of visual information. Categorization and discrimination (i.e., categorical perception) are essential processes to reduce this information overload and to allow to process the information in a more efficient manner. Individuals with Autism Spectrum Disorder (ASD) are thought to have problems with categorization, which could lead to reduced generalization to new situations. This study investigated category learning, discrimination and generalization of artificial forms in individuals with ASD, compared to individuals without ASD. To investigate differences in category learning, participants performed a two-alternative forced choice (2AFC) task in which they had to categorize artificial forms into two groups. No significant differences were found in category learning between individuals with and without ASD. To investigate differences in discrimination, participants performed a same-different task before and after category learning. The results of the discrimination task revealed narrower tuning of the discrimination peak after category learning and this was especially the case for participants with ASD. Finally, to investigate generalization, participants performed the 2AFC categorization task again, once on an extended version of the training stimulus set and once on a new stimulus set with the same properties as the original training stimulus set. However, no significant differences in generalization were found between individuals with and without ASD. These results indicate that, although there is no difference in the learning phase itself or in generalization, category learning enhanced the sensitivity of categorical perception especially in participants with ASD compared to participants without ASD.
In Belgium, the covid-19 crisis has led to the closure of schools from 16th March 2020. In secondary education, from 18th May 2020, some grades (mainly grades 8 and 12) have been allowed to return to school twice a week. On September 1st 2020, all secondary education students went back to school on a full time basis, but have had to wear facial masks and respect certain sanitary rules. Two surveys were conducted – in June 2020 (N= 6015) and in October 2020 (N=2423) – to assess students’ well-being and motivation during school closure and reopening. The aim of this contribution is to underline the impact of teachers’ emotional and educational support on students’ well-being and school motivation during this crisis. Indeed, teachers’ support is referenced in the literature as an important source (among others) of students’ well-being and school motivation (Galand & Philippot, 2005 ; Engels et al., 2016 ; Janosz et al., 1998). In our studies, we collected data about perceived teachers’ support, frequency of this support, students’ well-being, student’s schoolwork values and student’s self-efficacy. In June as in October, significant correlations were found between the frequency of teacher’s support and students’ feelings. Analyzes also show that teachers’ support positively predicts students’ self-efficacy in general and students’ self-efficacy regarding the pandemic situation and that teachers’ support influences students’ schoolwork values. Students’ comments at the end of the surveys highlight their need to speak with the teachers about their feelings regarding covid-19 crisis and its impact on their life and schoolwork.
Assessment of the impact of a training program including e-learning and role-plays on third years psychology students’ communication skills

Manon Goosse (1), Fanny Kreusch (2) and Sylvie Willems (1,2)

(1) ULiege; (2) Liege University Psychological and Logopaedical Clinic (CPLU)

Given the importance of communication skills in the psychologist-patient relationship, several training programs have been proposed. These programs are time and cost-consuming, but little is known about their effectiveness in terms of actual communication skills. Therefore, this pre-post study aims to test the effectiveness of a training program involving an e-learning module inspired by the cumulative micro-training of specific helping skills and 4 sessions of role-playing. Thirty third-year psychology students conducted a clinical interview role play before and after the training program. A blind expert evaluated: 1) objective communication skills as defined by Kuntz and colleagues; 2) perceived empathy with the CARE scale; and 3) confidence in the clinician using a one-question Likert scale. The results show significant changes with moderate to large effects on several communication skills (e.g. more adequate reformulations, reflection of feelings ...). One unexpected decrease is observed regarding probing questions. Perceived empathy and confidence in the clinician were also higher in the post-test. Surprisingly, no correlation is found between objective skills and perceived empathy whereas a moderate positive correlation is found between objective skills and confidence enhancements. E-learning module with 4 role-plays-based training leads third-year psychology students not only to enhance their communication skills but also to improve the perceived quality of the clinical relationship. The lack of consistent correlation highlights the need to evaluate both the objective and subjective facets of communication.
Poster #

*Augmentative and Alternative Communication’s process from speech and language therapists’s opinion*

Joanne Gosselain (1), Anne Bragard (1) and Nathalie Nader-Grosbois (1)

(1) UCLouvain

It is well established that speech and language therapists (SLT) play a central role in the Alternative and Augmentative Communication’s (AAC) process. However, numerous studies have highlighted many barriers to the participation of people with complex specific communication needs (e.g. Light & McNaughton, 2014). How do Belgian SLT go about the implementation of AAC? This study firstly explores critical steps in the process of implementing an AAC’s system, through Belgian speech-language therapists’s opinion. The research secondly aims to emphasize the challenges and facilitators they encounter in their clinical practice. Sixty-three Belgian French’s speaking SLT with various levels of experience in AAC participated in our study. Their clients are children with different types of disabilities under 12 years old. Qualitative and quantitative data were collected by an online survey (multiple-choice questions, open-ended questions, Likert scale). SLT report some facilitators and challenges at different stages of the AAC’s process 1) The process begins when SLT are considering AAC for a child (pre-assessment stage). Parents and environment were stressed as important nodes 2) After that, SLT collect information to test and select an appropriate system of AAC. Professional network is pointed out as a decisive element 3) Finally, SLT implement the system of AAC. They report facing obstacles to extend the use of AAC in all child’s environments. These results provide elements to understand consequences of the challenges on children’s participation. Belgian SLT’s opinion brings to light different levers of action to enhance the process of AAC.
Research on the determinants of health has shown significant links between the social context in which people live and their health. Within this literature, the “social cure” approach emphasizes the importance of social identification for mental and physical health. Although this approach has been intensively studied in psychology, it has mainly been applied to clinical settings, and less in prevention and health promotion. The current study aims to perform a systematic review of the social cure approach applied to health related behaviours. A review will first be performed on published systematic reviews on the social cure approach applied to health promotion. Next, a systematic review of primary studies will be performed following the PRISMA guidelines, using pre-defined search terms to identify studies on the relation between social identification and health behaviours in research databases (Psychinfo, Scopus, Embase, Pubmed). Relevant articles will be selected using pre-defined inclusion/exclusion criteria, checking for interrater reliability. Additional published studies will be retrieved from the reference lists. In addition to a narrative review a meta-analysis will be performed, using odds ratios and/or $R^2$ as standardized effect size indicators. We expect the combined studies to show a medium to strong effect size for the relation between social identification and health behaviours. Current stage of work: Three systematic review investigating the relation between social identity and health have been identified for the review of reviews. A first round of the title-abstract selection is done. The consideration of social identification as a determinant of health related behaviours could improve health promotion practice.
Specific executive functions predict 6-month functional decline in non-institutionalized older adults

Elise Grimm (1), Emilie Verreckt (2), Stefan Agrigoroaei (1), Marie de Saint Hubert (2), Pierre Philippot (1), Gérald Cremer (2) and Didier Schoevaerdts (2)

(1) UCLouvain; (2) CHU UCLouvain Namur

Functional decline is a public health challenge, with functional health predicting the length of hospitalization, readmission rates, patient living situation (e.g. home, institution, rehabilitation), and mortality. This raises urgent questions of prevention, early diagnosis, and potential healthcare interventions. Executive functioning, also shown to decline with age, is progressively emerging as a correlate of functional decline in older adults and a promising target for interventions. This study investigated the role of five executive functioning facets in predicting functional decline. Higher levels of inhibition, updating, flexibility, category fluency, and planning were expected to be significantly associated with less functional decline after six months. At baseline, participants (N=137), aged 75-93 (M=81.77, SD=4.26), completed a neuropsychological assessment and two measures of functional decline: the Katz Index of Independence in Activities of Daily Living (ADL) and the Lawton Instrumental Activities of Daily Living Scale (IADL). The same two measures were taken at a six-month follow-up by telephone. Functional decline for each scale was operationalized as a one-point increase in scores between baseline and six months. The likelihood of showing functional decline was calculated through two respective logistic regression models. The results revealed that lower inhibition and higher updating scores were significantly associated with Katz ADL, while lower flexibility and semantic fluency tasks predicted Lawton IADL, when controlling for age, sex, education, neurological condition, medication use, and Fried score. Our findings contribute to the emerging evidence that executive functioning modulates functional decline and are discussed in light of accessible interventions to promote functional health.
Poster #
(eligible for poster prize)

Mobilization of collective memories of the Belgian colonisation, conception of moral status and collective actions of associations of African descents in Brussels

Pauline Grippa (1); Simona Lastrego (1) and Laurent Licata (1)

(1) ULB

In the global context of claims addressed by minorities to majorities for the recognition of the European colonial past, we studied the specific claim for recognition of the Belgian colonial past addressed by associations of African descents to Belgium. More precisely, we studied their speeches to apprehend the processes of 1) mobilization of collective memories and 2) the conception of moral status. In order to do so, we interviewed ten members of associations and we ran an exploratory thematic analysis of their speech. Results showed, among other things, that the struggle for recognition of the collective memory of the African descent population and, therefore, of the exactions committed by Belgium during the colonisation was a part of the main struggle for recognition of African descents as Belgium citizens, a status that would allow them to have the same rights and the same visibility within the public sphere and that would also reduce racism within the Belgian society. In the context of that specific struggle for recognition of the colonial Belgian past, those associations seem to underline the status of positive agent -actor of moral actions- and the status of victim -the recipient of evil actions- in their speech. The significance of historical figures depicted as resistant and agentic such as Patrice Lumumba have also been noted. Future researches should study the perception and receptivity of the associations' audience in order to have a global vision of the intergroup dynamic in the context of the Belgian colonial past.
The effects of cognitive load on cognitive fatigue in early Multiple Sclerosis: Preliminary results

Camille Guillemin (1), Florence Requier (1), Julie Delvenne (1), Grégory Hammad (1), Émilie Lommers (1,2), Pierre Maquet (1,2) and Fabienne Collette (1)

(1) ULiège; (2) CHU of Liège Sart Tilman

Cognitive fatigue is one of the most frequent and debilitating symptom of Multiple Sclerosis (MS). While it is well established that MS patients show performances decrement during/following a long cognitive task, only few studies investigated the effects of cognitive load on MS-related fatigue. The present study aim at exploring the effects of cognitive load on performance decrement and pupil variations in MS. Thirteen patients with early MS (disease duration <5) and 12 matched healthy subjects performed a dual-task in cognitive load conditions (low and high). High cognitive load was adjusted to individual resources by determining the fastest presentation rate leading to at least 85% accuracy; the low cognitive load condition is 50% slower. Additionally, pupil size variations were obtained during the task for 6 patients and 7 controls. Repeated measures ANOVA were performed to determine the group, time and cognitive load effects on averaged performances and pupil size. Supplementary analysis were conducted on performances using Bayesian statistics. ANOVA on performances revealed an effect of condition (F(1,20)=37.79, p<.0001) and time (F(3,20)=13.32, p<.0001) but no effect of group nor interaction effects. Bayesian statistical analysis revealed an absence of difference in performances’ evolution between groups (BF01=5.71). ANOVA for pupil size revealed a tendency to significance for the group*condition interaction (p=0.077). In the present study, MS patients did not demonstrate larger fatigue effects on performances than control when the task is adapted to individual resources. The lack of pupillary response to cognitive load seems to reflect cognitive fatigue in patients despite behavioral compensation.
Helping behaviors, acting in a way that benefits others, comprise a wide variety of actions that can be defined and categorized in many ways. Recent research has shown that “Giving” behaviors (akin to volunteerism and philanthropy) and “Doing” behaviors (like activism) are associated with distinct motives. However, to date, adequate tools for measuring helping behaviors are still lacking. We propose a new Giving and Doing Behaviors Scale (GDBs).

Using Thomas and McGarty’s (2018) terminology, we conducted two studies to create a Giving and Doing Behavior scale, comprising two dimensions: Giving and Doing behaviors. Study 1 aimed to collect a set of behaviors to generate the scale’s items. Using an existing database of interviews conducted on volunteers engaged in humanitarian actions toward refugees in 2015 in Belgium, we gathered a thorough list of behaviors that were submitted to participants’ assessment on the two dimensions of interest. Statistical analyses were used to preselect the items that best represented the two dimensions. Study 2 aimed at testing the scale’s reliability and two-factor structure assumption. We also explored motives related to Giving and Doing behaviors. Study 2’s results revealed a two-factor solution, suggesting that it is indeed pertinent to distinguish helping behaviors in terms of Giving and Doing. Moreover, results indicated that different motives appeared to be responsible for Giving and Doing behaviors.
Measuring attentional bias in an alcohol-related virtual environment: A feasibility study

Michelle Heck (1), David Grogna (1), Etienne Quertemont (1) and Jessica Simon (1)

1) ULiège

Substance-relevant cues sometimes become the focus of attention and elicit substance-seeking behavior in the environment. This shift in attention allocation, called “attentional bias”, appears to be due to neurobiological and motivational processes leading alcohol-related stimuli to acquire incentive-motivational properties that can trigger craving and consumption (Field & Cox, 2008; Robinson & Berridge, 1993). Attentional biases have typically been assessed using attentional tasks as the addiction Stroop task (Cox et al., 2006) or the visual probe task (van Hemel-Ruiter et al., 2016), sometimes coupled with eye-tracking devices (Bollen et al., 2020; van Duijvenbode et al., 2017). However, the presentation of one single pair of stimuli or another more or less complex pattern of stimuli cannot be considered an adequate reflection of the complexity of real-life substance use situations (Hertel & Mathews, 2011). To increase the ecological validity of the task, we jointly used an eye-tacking device during the immersion in a virtual environment that includes multiple alcohol-related cues. We investigated the specific cues that may be related to attentional bias during free exploration of an alcohol-related environment. Finally, we investigated whether attentional bias is related to subjective craving and alcohol consumption. To this end, 30 social drinkers were recruited and exposed to a virtual bar. All of them completed a set of questionnaires before and after the virtual experience, including a craving scale. The data actually allowed us to identify the relevant items for the study of attentional biases.
The sense of presence: Validation of a new presence questionnaire

Michelle Heck (1), Aurélie Wagener (1) and Jessica Simon (1)

(1) ULiège

Over the past few decades, virtual reality (VR) has become a valuable tool in research and clinical psychology (Riva et al., 2020). The sense of presence is defined as the user’s feeling of being inside the virtual environment and is a key concept of immersion in VR (Diemer et al., 2015). Although several self-reported presence questionnaires already exist, very few of them are validated in French, and generally fail to integrate the assessment of the social aspects induced by the avatars present in the virtual environment. In order to address these issues, the present study aimed at validating a new questionnaire of presence based on Slater’s model (2009) and on Biocca and colleagues’ model (2003). In particular, we based our questionnaire on the assessment of four dimensions of presence: place presence, plausibility presence, social presence and copresence. We developed a 12-item questionnaire and validated it in a VR snowball fight game among 149 participants. Confirmatory factor analysis with four latent variables revealed a good fit of the data to the model ($X^2(48)=54.37; p=.25; \text{RMSE}=.030; \text{SRMR}=0.36; \text{CFI}=0.99; \text{TLI}=0.99$). Furthermore, we observed good internal consistency (Cronbach’s alpha =.90) and good concurrent validity with the Gatineau Presence Questionnaire. In conclusion, it seems like this new questionnaire could accurately assess the sense of presence in French-speaking participants.
Investigation of the neural networks underlying inhibition across verbal and visual domains

Louis Hody (1), Coline Grégoire (1) and Steve Majerus (1)

(1) ULiège

Inhibition is a central component of executive control as it allows ignoring irrelevant information, thereby facilitating the focus on relevant ones. The nature of inhibitory control mechanisms remains an open question, and particularly the domain-specificity of these mechanisms. This fMRI study investigated the neural networks associated with the inhibition of phonological, semantic and visual distractors in a target-probe matching task. 37 adult participants (20-40 years old) were placed in an MRI scanner and performed a similarity-judgement task in which they had to judge which item out of two probes was the most similar to two target items. In the facilitation condition, the correct probe item was preactivated via a prime appearing briefly before the trial; in the inhibition condition, the prime preactivated the wrong probe item, which then had to be inhibited for correct response selection. We will determine the commonality and differences of univariate neural networks associated with the inhibition condition for the phonological, semantic and visual task modalities. Furthermore, via multivariate voxel pattern analyses, we will examine whether neural patterns distinguishing inhibition vs facilitation in one modality allow to predict the same distinction in another modality. Such cross-modality prediction would be evidence for domain-general inhibitory mechanisms in executive control. Analyses are on-going and preliminary results will be presented.
Individual differences in visual working memory and their relation to the perception and appreciation of order and complexity

Daniel Hofmann (1), Eline Van Geert (1) and Johan Wagemans (1)

(1) KU Leuven

It has been hypothesized by many researchers that aesthetic appreciation is not only based on stimulus properties or individual differences, but rather that it is the compatibility between stimulus and person characteristics that determines aesthetic appreciation. In support of this, recent evidence suggests that if an individual can handle the complexity of an artwork, this artwork is preferred over other less complex pieces. Based on this preliminary evidence, we hypothesize that aesthetic appreciation depends on the compatibility or the match between an individual’s working memory capacity and the visual complexity of a stimulus. In addition, we expect preferences for complexity to depend on the individual’s working memory load within a specific context. In the current study, 268 participants rated subsets of a parametrically controlled set of 1611 stimuli varying both qualitatively and quantitatively on diverse objective order and complexity dimensions (created using the Order and Complexity Toolbox for Aesthetics; OCTA). Based on these ratings, we categorized the stimuli into a 3x3 (low, moderate, high) order and complexity grid. In a follow-up study, a selection of the stimuli will be presented to participants in a dual-task format. The participants will have to perform a 2-alternative forced choice task in which they have to indicate their preferences for visual stimuli with or without working memory load. This study will allow us to examine how both individual and contextual differences in working memory capacity relate to the appreciation of order and complexity in a parametrically controlled stimulus set.
Are mirror images really more difficult to discriminate than plane rotations?  
A study based on the COR hypothesis.

Marie Houbben* (1), Océane Vanhamme* (1), Gilles Vannuscorps (1,2).  
(*These authors contributed equally to this work)

(1) UCLouvain; (2) Harvard University, USA

It is widely assumed that mirror images are more difficult to discriminate than plane rotations of the same object. However, this conclusion stems from studies in which arbitrary types of plane rotation (often 180 degrees) were compared to objects mirrored across both intrinsic (e.g., their axis of symmetry or elongation) and extrinsic (e.g., the gravitational vertical) axes. The goal of this study was to overcome these limitations. We used a “same-different” orientation judgement task with tilted asymmetrical 2D stimuli. The second stimulus of each pair could be the same as the first one or (1) have a different tilt direction (e.g., 20° CW vs. 20° CCW), (2) be rotated by 180°, (3) be mirrored across an axis intrinsic to object or (4) be mirrored across a vertical (extrinsic) axis. Like previous studies, we found that shapes tilted 180° were the easiest to discriminate. In addition, we found that shapes reflected across an intrinsic axis were not significantly more difficult to discriminate than those reflected across an extrinsic axis and that shapes differing in terms of tilt direction were the most difficult to discriminate. Thus, mirror images are not necessarily more difficult to discriminate than plane rotations. We discuss the implications of these findings for cognitive models of orientation representation.
Optimal language development highly depends on language experiences of preschool children. In Belgium, 97% of children from 3 to 5 years old attend school most of the day. School has thus a key role in language development, especially for children who have insufficient language experiences at home. Current Belgian and International studies found that language skills are not enough stimulated at school, confirming the need to study variables which influence the language interactions. The quality level of language interaction is influenced by teachers’ characteristics, teachers’ knowledge of language development, self-evaluation of education practices and reported education practices. Considering these inter-individual differences, this research aims to evaluate how to improve language support in preschool classes. For this purpose, we will evaluate the current quality level of language interaction between teachers and children with CLASS PreK tool. From this general level of interaction quality, we will assess whether different interaction profiles emerge among the teachers. Different profiles would indicate different needs in terms of language support. Understanding these individualized needs is essential for the implementation of any professional development.
Training executive functions and social cognition in the classrooms

Marine Houssa (1), Nastasya Honoré (1), Alexandra Volckaert (1), Marie-Pascale Noël (1) and Nathalie Nader-Grosbois (1)

(1) UCLouvain

As executive functions and social cognition are closely related, we developed a training program that targets inhibition and social information processing and theory of mind abilities in order to improve emotion regulation and social behavior in children at school. Participants were 241 children. The study took place in schools (in kindergarten and lower primary school classes) for one academic year. In each grade of each school, one class was assigned to the experimental group (n = 121), which received the intervention program, and one class to the control group (n = 120), which engaged in usual classroom activities. The program consisted of eighteen 50-minute sessions implemented in the classroom in the presence of the teacher (one session a week). Direct and indirect measures (tests and questionnaires completed by parents and teachers) were administered before and after the intervention program (pre and post-test). The results showed that tackling executive functions and social cognition in the classroom at an early age improved visual attention, inhibition and flexibility as well as Theory of Mind abilities (affective and cognitive mental states understanding) and social information processing skills (judgment of appropriate and inappropriate behavior, justification).
Assessing emotion regulation ability: development and validation of a situational judgement test

Veerle Huyghe (1), Arpine Hovasapian (1) and Johnny Fontaine (1)

(1) UGent

A new situational judgement test was constructed to assess emotion regulation ability among young adults, which is a key component of the emotional intelligence construct. The 10 scenarios of the Components of Emotional Understanding Test (CEUT; Sekwena & Fontaine, 2018), which were developed on the basis of qualitative research with black and white students in South Africa, were taken as a basis. First, focus groups generated 159 possible regulation mechanisms. Clinical psychologists then evaluated these regulation mechanisms on their helpfulness for dealing with the respective scenarios. For each of the 10 CEUT scenarios, two helpful and two unhelpful regulation mechanisms were selected on the basis of these expert ratings. In total 165 participants rated each regulation mechanism on their helpfulness to deal with the respective scenarios. The expected internal structure emerged with one bipolar emotion regulation factor and one unipolar acquiescent responding factor. The new scale showed good internal consistency (Cronbach’s alpha of .81). The expected nomological network was by and large confirmed. The new regulation scale was substantially correlated with emotion understanding ability and the Situational Test of Emotion Management- Brief (STEM-B; Allen et al., 2015). It showed small to moderate correlations with wellbeing (positively), psychopathology (negatively), and with quality of social relationships (positively). It showed incremental validity in predicting the quality of social relationships compared to the STEM-B. It mediated all relationships of emotion understanding ability with the outcome variables. These results show first clear validity evidence for the new emotion regulation ability scale.
Several studies of serial dependence in visual perception presented evidence for the existence of hysteresis and adaptation effects (e.g., Bosch, Fritsche, Ehinger, & de Lange, 2020). Hysteresis is the attractive effect of a previous percept on the current percept and is assumed to help stabilize the perceptual system. In contrast, adaptation is the repulsive effect of a previous stimulus on the current percept and might be involved in emphasizing relevant and characteristic changes in the stimuli (Snyder et al., 2015). To improve the understanding of hysteresis and adaptation and to look for latent individual differences in the two effects, we attempted to model them. We used the data from the experiment by Schwiedrzik and colleagues (2014), in which they observed hysteresis and adaptation in the perceived orientation of dot lattice stimuli. Additionally, we adapted the code from an efficient coding model (Wei & Stocker, 2015), which takes noisy mapping between stimulus and sensory space into account when computing the likelihood in Bayesian inference of orientation perception. To investigate whether the efficient coding model can predict the hysteresis and adaptation effects in orientation perception of dot lattices, we adjusted it to the experimental design by Schwiedrzik et al. We performed hierarchical Bayesian fitting and model simulations. We will present the results from the model fitting and simulations. This study will provide further insight into the individual differences and the mechanism behind hysteresis and adaptation and hopefully inspire future models of the two effects in various contexts and experimental designs.
Negotiating ethnic identity at work: The relation between identity motives and coping strategies of women with a migration background in the workplace

Catho Jacobs (1), Colette Van Laar (1), Dorien Van De Mieroop (1) and Jenny Veldman (1)

(1) KU Leuven

When individuals from stigmatized groups feel that their identity is threatened in the workplace (through e.g. discrimination or prejudice) they actively cope with this through self-regulation and coping mechanisms (Van Laar et al., 2019). This poster presentation looks at two specific coping mechanisms (i.e. self-group distancing and finding solace in strong group identities of the stigmatized group) and investigates how they are related to identity motives (such as belonging, self-esteem or self-efficacy; Vignoles et al., 2006). Although previous research has already indicated that motives such as belonging or achievement play a role in coping with identity threat (e.g. Barreto, 2014), a more comprehensive view is missing in the literature. This study investigates (1) which identity motives drive the coping strategies of self-group distancing and moving towards the stigmatized group, and (2) what the effect of these strategies is on the fulfilment of motives. Importantly, we aim to innovate the methodology that is used to study coping strategies by investigating how linguistic and self-reported measures of moving towards the majority and/or minority group relate to each other. In particular, this study will collect data from approximately 100 women with a migration background, through an experience sampling method with weekly questionnaires and audio recordings across 6 weeks.
The impact of reading acquisition on adults’ eye movement behavior

Julia Justino (1) and Régine Kolinsky (1)

ULB (1)

Reading is a visual task that places a strong emphasis on visual components and their interaction with the linguistic system. Reading acquisition consists of a complex cognitive process that involves the development of a series of sophisticated skills including eye movements’ control to extract printed information. Over the years, several studies using eye movements monitoring have been carried out to examine the psychological processes underlying reading, and various theoretical models have been proposed. However, mainly due to the constraints imposed by this method on the recording of eye movements, most of the studies have focused on adults who have already strong reading skills and very little research has been done with children or adults at the start of reading acquisition. Nevertheless, a few studies have examined eye movement behavior in beginning readers in order to understand how this process evolves over time. They found several differences compared to highly skilled readers. Yet, studies with adult beginning readers remain rare. Thus, the aim of our study is to observe the development of eye movement behavior during reading acquisition process in adult literacy students. To this purpose we set up two linguistic tests using eye movements recording, adapted to this population. Results will be discussed in order to understand adult literacy students’ process of reading acquisition and when possible, we will also discuss our results taking into account previous findings in the relevant literature.
The development of being moved by sad music

Mareike Kaemmerer (1), Naomi Marchant (2) and David Grüning (3)

(1) UCLouvain; (2) ULB; (3) Heidelberg University

Listening to sad music can well be a positively moving experience. But at what age do individuals feel moved by sad music? Which underlying processes modify the development of emotional experience associated with music? The aim of the present study is to draw a temporal trend of children's experience to be moved by sad music. That is, we attempt to show how children's age affects their emotional response to sad music. To enlighten the underlying processes of this trend we will, across the age span of 3 to 12 years, assess (1) children's ability to use the theory of mind (ToM), (2) their ability for empathy, and (3) their attachment with central figures in their life. We plan to recruit pupils of different ages from Belgian schools. In the first part of the study, we will assess children's ability of ToM, empathy, and their attachment. In the second part of the study, the children will individually listen to a piece of sad music. Afterwards, their emotional responses to the music will be assessed with age appropriate questionnaires. With the planned study we hope to enlighten the developmental stages of being moved by music and identify mechanisms associated with this process.
Two concepts are usually considered for the study of regulatory skills: coping and emotion regulation (ER). Pediatric health conditions have been defined as major stressors and are mostly studied with coping models. Yet, emotional development includes more than just the regulation of stressful situations as children have to manage their emotions in many situations of life. Therefore, fully understanding and defining both regulatory processes in pediatrics is indispensable. In order to investigate the use of coping and ER concepts in pediatric psychology and estimate their degree of complementarity and overlap, we conducted a literature search in different databases (e.g., Embase, PsychInfo). Relevant literature including the terms “emotion regulation”, “coping” and “pediatrics” was identified. Coping is almost exclusively (98%) mentioned in included literature, as well as its link with stress (Lazarus & Folkman, 1984). Most references implicitly refer to ER as part of coping and do not mention any specific theoretical models of ER. Due to the lack of ER theories, it was not possible to establish a definition of regulatory processes including both concepts, nor was it possible to better understand the nature of their relationship. More general literature showed a partial overlap in conceptualisation and measurement of coping and ER (Compas et al., 2014, 2017; Delelis et al., 2011). This indicates that exclusively studying coping might be restrictive because it does not reflect the broad scope of regulatory processes of pediatric patients. Further examinations of the relationship between both concepts in pediatric psychology are necessary.
Poster #
(eligible for poster prize)

Reading abilities in deaf: Crowding effect on letters and symbols

Veena Kamble (1), Margot Buyle (1), Valentina Vencato (1) and Virginie Crollen (1)

(1) UCLouvain

Reading is a complex process that involves low-level visual processing, phonological processing, and higher-level semantic processing. Reading difficulty can therefore emerge from impairments at any stage of this reading circuitry. Interestingly, as deaf children often receive less complete linguistic inputs than their normally hearing peers, they often present reading deficits. While it is widely assumed that these impoverished readings skills are the result of poor phonological processing abilities, the studies examining the role visual constraints play in deaf reading are particularly scarce. In this study, we will therefore examine a basic and general phenomenon of visual perception associated with reading difficulties, the so-called crowding effect which is defined as a difficulty to recognize letters when surrounded by other letters. A string of 1, 3 or 5 characters (letters or symbols) were presented to congenitally deaf, hearing signers and hearing control adults, during 300 ms and to the left or to the right of a fixation cross. Participants were then required to determine, among two alternatives, what was the character presented in the middle of the sequence. Participants were then required to determine, among two alternatives, what was the character presented in the middle of the sequence. Our results demonstrated that the crowding effect was similarly observed in the 3 groups of participants. Performances were indeed better for letters than for symbols and decreased with the number of characters presented. Deaf participants therefore demonstrated the same expertise with letters than their hearing counterparts. This result suggests that the deaf reading difficulties may be rooted in higher processing levels.
Eye movement response to caloric vestibular irrigations reveal the contribution of voluntary processes to autonomic reflexes

Matthieu Koroma (1), Clément Delcamp (1), Sepehr Mortaheb (1), Federico Raimondo (2), Marie Detroz (1), Philippe Lefebvre (1) and Athena Demertzi (1)

(1) ULiège; (2) Heinrich-Heine-Universität of Düsseldorf, Germany

Can autonomic reflexes inform us about higher-order cognitive processes? To address this issue, we studied habituation (a form of non-associative learning) of the slow, uncontrolled eye movement response (nystagmus) following repetitive caloric (warm water) vestibular irrigation. After a 30s irrigation trial (total trials=6), participants (n=26) either kept their gaze fixated, or let their gaze move free, testing voluntary adaptations of the nystagmus response measured with electrooculography (EOG). Participants also reported the intensity of the vertigo that they experienced after each irrigation. We found that the amplitude of the nystagmus response decreased over repetitive irrigations, revealing a clear habituation of the nystagmus response (repeated measures ANOVA with participants as random factor, F(5)=18.8, p<0.001). We further show that the amplitude of nystagmus is reduced after the gaze fixation condition compared to the freely moving gaze (interaction between irrigation and fixation, F(5,1)=5.1, p=0.025). Finally, by relying on a model comparison approach, we demonstrate that the oculomotor response holds partial information on the decrease of the vertigo experienced over successive irrigations, suggesting a bi-directional interaction between central and autonomic processes (Likelihood-ratio chi-squared test between mixed-models predicting vertigo response including or excluding nystagmus duration, \( \chi^2(12)=11.96, p=0.013 \)). These findings suggest that reflexes carry partial information about voluntary processes. From the interoceptive active inference framework, these results might be relevant for evidencing signs of sentience when this cannot be communicated overtly.
For almost a year, the COVID-19 pandemic has caused a health crisis and psychological distress in the population, complicated by difficulties in reaching mental health professionals. In an attempt to prevent the increase of anxiety and stress, we launched, in May 2020, a self-help designed website, targeting children, adolescents, and young adults up to the age of 25. This site is built in two parts allowing the users to estimate their levels of anxiety and depression using well-validated screening tools before giving them access to empirically validated anxiety management tools (psychoeducation, emotion management, and relaxation exercises). We analysed the website usage statistics during the past year, and we observed an increased activity in parallel with the three epidemic waves. Each participant only answered once to the psychological scales. Analyses of the user’s responses show that adolescents (from 12 to 17 years old) and young adults (18 to 25-year-olds) reported a significantly increase in the level of anxiety, depression, stress, and perceived stress, especially between May-June and November-December. The most severe distress was found in girls aged 15-16 years. Children aged 7 to 11 reported increases in separation anxiety, obsessive-compulsive behaviours, and generalized anxiety. In contrast, younger children did not show psychological impairment, suggesting that they were more protected from the impact of the crisis. We propose to detail these findings and to discuss the evolution of the measures of psychological health among our target groups during the past year.
The COVID-19 pandemic has disturbed our habits in work. A lot of people are now working from home and the conditions for work can be very unequal. This situation can cause feelings of loneliness or other negative emotions, stress, anxiety, or depression. We conducted a study on the employees of the University of Mons (UMONS), and investigated their level of anxiety, depression, COVID-19-related perceived stress, positive and negative emotions, and work psychological health. We also questioned them about their work-relationships, workload, material working conditions, work-life balance, actual and future work conditions, and perceived competences. From 24 February 2021 to 26 March, 329 staff members of UMONS completed the survey. We analysed the data using nonparametric and chi-squared tests. We also used Spearman correlations between clinical variables, that showed significant correlations. Our results show moderate level of anxiety in our sample, but no sign of depression (evaluated by the HADS). Furthermore, 8.28% of the participants have high COVID-19-related-perceived stress (evaluated by the PSS-10-C, translated in French by our team). We also found that 78.22% of the respondents have a good work psychological health (evaluated by EMMBEPT and EMMDPT). However, not all the employees have the same experience. Indeed, PhD students are more at risk to develop anxiety, depression, stress about covid or bad work psychological health. People whom hourly work have decrease following the pandemic have significantly higher score of depression than others. The loss of meaning in the face of an uncertain future, could be a link between these results.
Poster #

Translation and validation of the French version of the revised Green et al., Paranoid Thoughts Scale (R-GPTS) in a non-clinical sample

Alizée Latteur (1), Frank Larøi (1,2,3) and Catherine Bortolon (4,5)

(1) ULiège; (2) University of Bergen, Norway; (3) University of Oslo, Norway; (4) University Grenoble Alpes, France; (5) Centre Hospitalier Alpes-Isère, France

Paranoia is a delusional state found among many psychological pathologies, but also in a minority of individuals of the general population (Freeman, 2007). It can be measured using several types of questionnaires. One recent questionnaire that measures paranoia in both clinical and non-clinical populations is the revised Green et al., Paranoid Thoughts Scale (R-GPTS) (Freeman et al., 2019). This questionnaire is an improved version of the Green et al., Paranoid Thoughts Scale (GPTS) (Green et al., 2008) and has excellent psychometric properties. In the present study, the R-GPTS was translated into French and the psychometric properties of the new French version were evaluated in a non-clinical sample (N= 600). The internal consistency and construct validity (convergent and discriminant validity) of the R-GPTS were evaluated. Moreover, the R-GPTS was administered again one month later in order to measure its test-retest reliability. Finally, the original two-factor structure of the R-GPTS was tested (confirmatory factor analysis). Results indicated that the internal consistency of the R-GPTS is excellent (alpha = 0.92 for the total score, 0.88 for the reference scale and 0.89 for the persecution scale). Evidence of good convergent and discriminant validity was found. Test-retest reliability showed significant positive correlations as expected (r > 0.7). Our two-factor model showed a good fit: CFI = 0.92, TLI = 0.91, SRMR = 0.049, RMSEA = 0.051, χ²(134) =359.598, p<0.0001, χ²/df = 2.68. In conclusion, the French version of the R-GPTS seems to be a valid and reliable tool to measure paranoia in the general population.
"Hope for the Best" vs "Fear the Worst": The roles of possible selves, math anxiety and cultural background on the motivation for math

Yun Lee (1), Brenda Jansen (1) and Sheida Novin (2)

(1) University of Amsterdam; (2) Utrecht University

The current study investigated whether a relation between math anxiety (MA) and self-regulatory motivation would depend on the cultural background and priming of possible selves. A total of 89 undergraduates with Dutch, Korean or Chinese cultural background were primed with either hoped-for selves, or feared possible selves. Subsequently, their self-regulatory motivation for a math-related course and MA were measured. Given the theorized role of culture in the influence of math anxiety and possible selves on motivation, we expected that students with an East Asian background (Korean or Chinese) would be more motivated for self-regulatory behavior when they had higher MA, and even more motivated when they wrote about feared selves compared to when they wrote about hoped-for selves. In contrast, we expected that students with a Western European (Dutch) background would be less motivated when they had higher MA, and even less motivated when they wrote about feared selves compared to when they wrote about hoped-for selves. Contrary to hypotheses, an interplay between MA, possible selves, and cultural background did not have an influence on self-regulatory motivation. Follow-up analyses for each cultural group revealed that an interplay between possible selves and MA did not have an influence on self-regulatory motivation either. Further exploratory analyses indicated that perceived importance of academic achievement interplayed with MA to predict self-regulatory motivation.
Several studies have shown that Muslims in Western Europe are perceived as symbolically threatening (e.g., Moss, Blodorn, Van Camp, & O’Brien, 2019; Velasco González, Verkuyten, Weesie, & Poppe, 2008). Following the prediction of the intergroup threat theory model (Stephan & Stephan, 2017), the present study will investigate the relationship between perception of symbolic threat (i.e., regarding religion, values and beliefs) from Muslim people and attitudes as well as beliefs towards the Islamic veil among Belgian non-Muslim citizens. We will manipulate perceived symbolic threat by asking participants to elaborate on their opinion regarding threatening (vs neutral) claims about Muslim people. Then, participants will have to rate their agreement with various statements about the Islamic veil. We hypothesise that participants in the perceived threat condition (i.e., compared to the control condition) will report more negative attitudes and beliefs about the Islamic veil. The results will inform us about how the perception of symbolic threat from Muslim people can impact attitudes and beliefs toward the Islamic veil.
After several years of research, it is now well-established that parental reminiscing style (i.e., the way parents discuss the past with their child) positively influences the accuracy of children’s autobiographical memory (Wu & Jobson, 2019). Some results have additionally suggested that parental reminiscing could also promote children’s ability to learn new information (Langley et al., 2017). The present longitudinal study examines among 53 parent-child dyads what specific elements of parental reminiscing could predict preschoolers’ ability to learn new information. To capture parental reminiscing style, we analyzed parent-child reminiscing about a prior standardized event (a museum visit). To assess children’s memory performance, story recall tasks were administered at baseline and, on average 9 months later, at follow-up. Cluster analyses conducted on our scores of parental reminiscing revealed the existence of 2 clusters of parents (labelled as “high-elaborative” or “less-elaborative”) that differed mainly on the content addressed during reminiscing. Specifically, high-elaborative parents engaged in richer reminiscing (i.e., by expanding on information about the event per se as well as on related information) and adopted a more metacognitive speech as compared to less-elaborative parents. Our results indicated that children of high-elaborative parents had better memory performance at the time of the reminiscing evaluation and at follow-up, confirming that differences in parental reminiscing could influence preschoolers’ ability to learn new information.
Adequate reporting practices are essential to transparent and reproducible research. A lack of adequate reporting could notably reflect methodological deficiencies, a rampant problem in experimental and biological psychology. We assessed the reporting quality in the literature on pharmacological and psychological treatments of alcohol-deprivation effect (ADE), a popular behavioral animal model of alcohol relapse. A literature search on PubMed yielded 154 titles among which we extracted 68 articles meeting the inclusion criteria. We evaluated these articles according the reporting guide ARRIVE 2.0 that comprises 54 items, each of which being coded as properly reported or not. On a 55-point scale (including 0), the median reporting score was 27 [IQR: 24; 29.25]. The articles reporting scores moderately increased from 1993 to 2020, as suggested by a LOWESS regression generated from 100 000 bootstraps, the R² being 0.158 [CI95%: 0.036; 0.316]. This trend was supported by the comparison, using a two-sided Mann-Whitney U test, of the scores derived from the articles published before 2010 (first publication of ARRIVE) and those published after 2012, which resulted in a 9.61% increase with a moderate effect size r of 0.34 [CI95: 0.11; 0.55]. Our results generalize the low quality of reporting practices found in several fields of experimental and biological psychology to the field of ADE. Although we found a measurable and encouraging increase in the quality of reporting, there is still much room for improvement.
Poster #

Is the literature assessing the efficacy of the pharmacological and psychological treatments of the alcohol-deprivation effect underpowered?

François Léonard (1) and Ezio Tirelli (1)

(1) ULiège

While adequate power and sample sizes are indispensable for the detection (by the statistical test) of a meaningful effect size (ES), many published studies in psychology do not describe sample-size calculation (SSC), which weakens the study methodological quality. Omission of SSC is often associated with a lack of prospective power, which exaggerates observed ES and increases the False Report Probability (FRP), thereby jeopardizing results reproducibility. Our purpose is to investigate in which extent this practice concerns the literature assessing the efficacy of the psychological and pharmacological treatments of the alcohol-deprivation effect (operationalized in an animal model). We will firstly select articles published from 1993 to 2020 using the database PubMed and check whether they mention a SSC. We will then classify the articles mentioning a SSC according to five components of a complete description of SSC (ex. power analysis with or without details). We will also check whether the hypothetical ES (used to determine sample sizes) is justified and the observed ES interpreted (discussion). Thereupon, in order to assess a possible ES overestimation in the selected literature, we will examine the relationship between the observed ES and the sample sizes. We will compute the “power-to-detect” of each relevant statistical test using small, medium and large ES (classifications). Finally, we will compute the FRP and the True Discovery Rate using a risk alpha of 1, 2.5 or 5%, the median “power-to-detect” and a representative range of pre-study odds (from 0.01 to 0.99), according to Ioannidis (2005) and Szucs & Ioannidis (2017).
A lack of prospective power and use of effect sizes in the literature of various fields have been revealed and characterized over the years, giving rise to serious doubts on the reproducibility of many scientific results (Button & al. 2013, Nat.Rev.Neurosci. 14:365-376; Cohen 1962, Abnorm.Psychol. 65:145-153). To our knowledge, no study has address this problem in the field of experimental psychopharmacology using animal models. The articles were identified in PubMed. The sample size, the type of statistical test, its result, degrees of freedom and p-value were recorded. We then computed the individual and the median prospective powers for 6 possible effect sizes (Cohen’s d: 0.01, 0.2, 0.5, 0.8, 1.2, 2). The TRP was computed from the median power, type-I error rate and the plausibility (prior probability). Amongst 139 articles, only 47 met our inclusion criteria for 109 statistical tests. In this sample, 77.57% of tests were significant. The median powers for small (0.2), medium (0.5) and large (0.8) effect sizes in F test were 9.56% [IQR 7.96%-11.5%], 34.45% [IQR 24.61%-47.01%] and 70.46% [IQR 52.92%-85.91%]. None of these numbers reached the recommended minimal prospective power of 80%. A 50% hypothetical plausibility yielded TRPs of 48.9%, 77.5%, and 87.6% for small, medium and large effect sizes. For a plausibility of 10%, the TRP were 16.1%, 40.8% and 58.5%. These results generalize to a subfield of animal-model experimental psychopharmacology (nicotine CPP in mice) the lack of power reported in the litterature of several neurobehavioural and psychological disciplines.
A core characteristic of people suffering from mathematical learning disability (MLD) is that they exhibit difficulties in simple tasks involving Arabic numerals. The main propositions that have been defended to explain these difficulties share the assumption that they reflect a deficit that would occur during the semantic stages of number processing; however, recent data suggest that the hypothesis of a digit visual recognition deficit could also be considered. To assess whether the difficulties in processing Arabic symbols in MLD could be explained by a digit visual recognition deficit, we compared 19 adults with MLD to 19 matched controls, first in a digit comparison task (i.e., deciding which of two digits is the largest), and then in a digit decision task (i.e., deciding whether or not the sign displayed is an existing digit). Two basic choice reaction time tasks (matched with the experimental ones for response requirements) were used to control for general differences in response speed. The results showed that MLD participants exhibited a significant slowdown in the digit comparison task only. They showed no specific difficulties in recognizing Arabic digits, neither as a group, nor examining each individual pattern of results. We therefore concluded that adults with MLD may exhibit difficulties in processing Arabic digits, while being able to visually process and recognize them efficiently. These results suggest that people with MLD encounter a core semantic deficit in processing Arabic numerals, affecting either the representation of numerical magnitude, or its access from symbolic number.
The effects of event structure and duration on the temporal compression of daily life activities in episodic memory

Nathan Leroy (1), David Stawarczyk (1) and Arnaud D’Argembeau (1)

(1) ULiège

Mentally replaying past events (e.g., having breakfast, doing the laundry) generally takes less time than the actual event duration, a phenomenon known as the temporal compression of events (TCE) in episodic memory. In this study, we evaluated the extent to which rates of TCE depend on the structure and duration of events by manipulating both dimensions orthogonally. Thirty-seven participants were presented with movie clips of everyday activities that lasted 30 or 60 s and that included few or many event boundaries (EBs; moments within activities corresponding to the transitions between sub-events). For each movie, participants had to mentally replay the unfolding of the event they just watched in as much detail as possible. TCE was computed as the ratio between the actual event duration to the duration of mental replay. Results showed that TCE was higher for long than short movies and for movies that contained few EBs. In addition, there was a significant interaction between event structure and duration, showing that the TCE difference between long and short movies was smaller when the number of event boundaries was high. These results are consistent with the view that the unfolding of events is represented in episodic memory as a succession of experience units that are formed by the perception of EBs. With increased temporal distance between EBs, the experience units encoded in episodic memory would fail to include the entire segment duration between EBs, leading to temporal discontinuities in the representation of the event’s unfolding and consequently higher TCE.
Organizations put a lot of effort in assessing how employees perceive aspects of their job. These perceptions are often modeled as latent constructs (e.g., job satisfaction) measured by multiple indicators. Although useful, this approach has certain limitations such as a lower performance in exploratory contexts with large numbers of variables. In the current paper, we introduce psychological network analysis as a promising method to examine a broad range of employee attitudes. The network approach allows studying complex patterns of relationships by modelling the different elements that make up an organizational survey as an interconnected system. This study illustrates the use of psychological network analysis in an archival employee survey collected from 507 employees of a business advisory firm. First, we constructed the network and tested its stability and accuracy after which we examine the relative importance of these items in the structure of the network. Second, we compare structural properties of networks in two groups of employees who are on different hierarchical levels within the organization. Our results reveal that structural properties of psychological networks can be examined to get a better understanding of employee perceptions. It is discussed how modelling employee perceptions as complex systems in which these perceptions emerge from the mutual interactions with each other constitutes a promising avenue for analyzing organizational survey data.
Poster #

Weaker neural responses to lexicality and word frequency in dyslexic adults: A frequency-tagging EEG study

Aliette Lochy (1), Emilie Collette (2), Bruno Rossion (2,3), Marie-Anne Schelstraete (2) and Christine Schiltz (1)

(1) Université du Luxembourg, Luxembourg; (2) UCLouvain; (3) Université de Lorraine, France

Dyslexia, a persistent reading disorder, is characterized by different brain activation patterns when reading. Here, we used a Fast Periodic Visual Stimulation paradigm during EEG recordings to assess the sensitivity of dyslexics to fine-grained psycholinguistic variations of letter strings: lexicality, lexical frequency, and orthographic regularity. Dyslexic and non-dyslexic students watched 60-seconds streams of stimuli presented at 10Hz, in which deviant items are inserted periodically (1/8, at 1.25Hz). Results show discrimination responses at 1.25Hz over left posterior occipito-temporal regions, reduced in dyslexics. Group differences were significant for discrimination of word lexicality and frequency, but not for word regularity. Interestingly, dyslexics did not discriminate regular words within streams of pseudowords, although they had significant responses for irregular words. Altogether, our results show that FPVS response amplitude distinguishes normal from pathological population. Since explicit reading is prohibited by the fast rate, results suggest differences of automatic and implicit word processing in dyslexics. The lack of group difference for regular/irregular words is interpreted post-hoc as reflecting the life-long drill of dyslexics to irregular words.
Poster #
(eligible for poster prize)

Brief heart coherence intervention among highly anxious individuals:
Effects on interoception and heart rate variability

Giulia Lorenzato (1), Alice Bodart (1), Laurent Lefebvre (1) and Mandy Rossignol (1,2)

(1) UMons; (2) UCLouvain

Trait anxiety is a stable facet of personality, which has been associated with (1) reduced autonomic flexibility and (2) increased interoception. Indeed anxious individuals show a predominance of sympathetic activation and increased attention to their body sensations, this vigilance towards the body is likely reinforcing their anxiety. To clarify how these biomarkers, the autonomous system and interoception, influence one another, an experimental group of anxious participants benefit from a weeklong breathing program, meant to enhance heart rate regulation. Therefore respiratory rate is paced at each individual’s resonance frequency. To help them synchronize their breathing, the mobile app Respirelax+ was used. Matched with them on age and gender, two control groups, an anxious and a non-anxious one, had to reflect on moral dilemmas and submit their answers in writing. To assess interceptive features prior and post intervention, participants completed the interoceptive accuracy (IAS) and attention scales (IATS) and performed the heartbeat counting task. Cardiac parameters were monitored with Polar H10 chest belt. We hypothesized that resonance breathing fosters a state of calm, eventually resulting in a decrease in interceptive components, with therefore a positive impact on the inflated attention towards body sensations. Statistical analyses are currently in progress and results will be presented at the conference. In addition to a further understanding of how interoception and heart rate variability are linked, our results would also allow to determine if a brief implementation of this breathing technique could not only serve anxiety and cardiovascular outcomes, but also improve dysfunctional interoceptive patterns.
Geometry intuitions without vision? A study in blind children and adults

Cathy Marlair (1), Elisa Pierret (1) and Virginie Crollen (1)

(1) UCLouvain

Geometry intuitions seem to be rooted in a non-verbal system that humans possess since early age and share with other animal species. However, the mechanisms underlying the comprehension of basic geometric concepts remain elusive. Some authors have suggested that the starting point of geometry development could be found in the visual perception of specific features in our environment, thus conferring to vision a foundational role in the acquisition of geometric skills. To examine whether vision is mandatory for the development of geometry, a test probing intuitive understanding of basic geometric concepts (e.g., line, points, figures, symmetry) was presented to twelve congenitally blind children and nineteen congenitally blind adults. Our results showed that the blind presented poorer performance as compared to the sighted participants who did the task in the visual modality (i.e., with the eyes open), but they performed equally well as the sighted who did the task in the tactile modality (i.e., with a blindfold). We therefore provide first evidence that geometric abilities are hindered by the lack of vision.
During toddlerhood, parents often face toddler’s challenging behaviors, such as temper tantrums (Fauziah et al., 2019). Challenging episodes of disruptive behaviors can decrease parental self-esteem, a cognitive aspect commonly embracing two dimensions: parental self-efficacy (PSE) and parental satisfaction (PS). Reciprocally, parents with decreased self-efficacy interact with less positive affects and behaviors (Schulz et al., 2019). Studies often focus on maternal cognitions, regardless of paternal cognitions (Murdock, 2013). However, factors predicting PSE in mothers and fathers are different, supporting the hypothesis of gender differences (Sevigny & Loutzenhiser, 2010). Gender differences in representations of parental roles could influence parents’ cognitions and behaviors with their child, but little information is available to this day (Favez et al., 2015). The first aim of this study is to determine how parental cognitions vary during a period of toddlerhood characterized by temper tantrums and how parental roles representations moderate parental cognitions. The second aim of this study is to determine how evidence-based practice such as video feedback (VF) interventions, effective to enhance sensitivity, positive behaviors, and self-efficacy in parent-child interactions (Balldin et al., 2018), could affect parental cognitions during the same period specifically regarding parents’ representations of their role and gender. Specifically, our goal is to a) evaluate PSE, SP, and parental roles representations of both mothers and fathers of toddlers (20-28 months); b) evaluate how VF intervention can affect those variables during a period of toddlerhood characterized by temper tantrums. Methodological design will be presented in this poster.
The short- and long-term effects of music education on visuospatial discrimination and verbal memory

Anne-Merel Meijer (1), Kobe Desender (1) and Eva Van den Bussche (1)

(1) KU Leuven

Musical training is found to benefit music-related skills and general intellectual ability as well. Brain imaging studies have shown that the left planum temporal region of the brain is larger in musicians. Since this region is involved in language processing, musical training might have a beneficial effect on verbal memory. No effects were found in the right temporal lobe, which is linked to visual memory. However, research has shown that musical expertise benefits visuospatial discrimination in adults, especially in the vertical dimension. The present study assessed the effects of musical training on visuospatial discrimination and verbal memory. Children with at least two years of musical training and adults with at least ten years of musical training were compared to children and adults with no musical training. All participants performed a visuospatial discrimination task, where a horizontal or vertical reference line was presented and followed by a target dot. Participants had to indicate whether the dot was presented left/right or above/below the reference line. After each trial a word was presented that the participants had to remember. A word recall test was performed after the visuospatial task and again a week later. Results showed that musical training benefits visuospatial discrimination in children, especially on the vertical dimension. Verbal memory was better in musicians than in non-musicians, especially for the long-term memory in the adult musicians. These results indicate that musical training has a short-term beneficial effect on visuospatial discrimination and a long-term effect on verbal memory.
Validation of a virtual audience for public speaking: Preliminary results

Pauline Menjot (1), Angélique Remacle (1,2), Michael Schyns (1), Elodie Etienne (1) and Anne-Lise Leclercq (1)

(1) ULiège; (2) ULB

Public speaking is one of the most feared activities (Furmark, 2002). Speaker’s anxiety influences their communication performance. While the literature highlights the benefits of public speaking training, it is complex to implement in real-life (Goberman et al., 2011). Hence, virtual reality (VR) could be a viable alternative tool (Owens & Beidel, 2015). The aim of this study was to validate a virtual audience for public speaking by assessing its qualities (i.e., feeling of presence and cybersickness) and its ability to elicit emotional (i.e., anxiety) and behavioral (i.e., dysfluencies) reactions. Forty participants without social anxiety (attested to by the PRCS, Heeren et al., 2013; LSAS-SR, Heeren et al., 2012; and BFNE-S, Rodebaugh et al., 2004) or fluency disorders (confirmed by the SSI-4, Riley, 2009) were recruited. They had to give an oral presentation under three counterbalanced conditions (in an empty virtual conference room and in front of virtual and real audiences). We aimed to analyze their speech and anxiety and the quality of VR. Due to the health crisis, this methodology was only pre-tested on 8 participants. However, positive results, including a sufficient feeling of presence and the lack of cybersickness, suggest that this virtual audience can be a relevant tool. The methodology will be discussed in light of these first positive results, on the one hand, and of the characteristics that can be improved (realism of the virtual audience and methodological limits), on the other hand, for the benefit of future studies.
Can working memory reduce the development of secondary hyperalgesia?  
The role of cognitive load, sex, arousal, and fear.

Elke Meyers (1), Andrew J. Palmer (1), Emanuel van den Broeke (2),  
Andreas von Leupoldt (1), Johan W. S. Vlaeyen (1) and Diana M. Torta (1)

(1) KU Leuven; (2) UCLouvain

Low-frequency electrical stimulation (LFS) of the human skin induces hypersensitivity to mechanical pinpricks. The concomitant execution of a highly demanding working memory task seems to interfere with the development of such hypersensitivity (Torta et al., 2020). The aim of the present study was to replicate and extend these findings by exploring the role of sex. Eighty-four healthy participants were randomized between two groups in which they engaged in a cognitive task before, during, and after receiving LFS. The control group performed a low demanding 0-back task whereas the experimental group performed a high demanding 2-back task. Electroencephalography (EEG) was used to record steady-state evoked potentials (SSEPs) elicited by LFS at 2 Hz. Skin conductance was recorded throughout the duration of the task. Intensity and unpleasantness ratings for mechanical pinpricks were collected before (T0) and 20 minutes after LFS (T1), the area of hypersensitivity was measured at T1, and ratings of perceived intensity and fear were obtained after the task. Based on the p-values, the behavioral results showed that although LFS induced mechanical hypersensitivity successfully, the intensity and unpleasantness ratings of the pinprick after LFS did not statistically differ between the two groups. Similarly, no difference was found in the area of hypersensitivity between the two groups. In addition, the results did not show any sex differences. In line with previous results (Torta et al., 2020), we found that higher ratings of perceived intensity of LFS correlated with greater hypersensitivity. In addition, fear of LFS showed a positive correlation with hypersensitivity.
An experimental study on the role of cultural concerns in emotional fit

Fattana Mirzada (1) and Jozefien De Leersnyder (1)

(1) KU Leuven

As global migration is on the rise, it becomes increasingly relevant to understand and foster the peaceful coexistence of various ethnic and cultural groups. One way to improve intergroup relations is through fostering emotional ‘fit’ among cultural minority and majority members since this reflects their mutual understanding of situations and may result in better social relationships (De Leersnyder, et al., 2014). Building upon prior findings that suggest that people’s emotional fit with one another increases upon interacting (e.g., Anderson et al., 2003; De Leersnyder et al., 2011), this study aimed to address a) to what extent minorities’ emotional patterns become contingent upon those of their majority peers while interacting and b) if the changes in emotional patterns can be understood from changes in ‘concerns’ – i.e. the goals and values people consider relevant in a situation and that reflect their interpretations of the situation at hand. To this end, we conducted a 7-trial quasi experiment with 40 dyads of Turkish or Moroccan Dutch minority and Dutch majority participants. On each trial, participants had to i) read an emotional situation; ii) individually report their emotional experiences (EPQ) and salient concerns (SVQ); and iii) discuss with each other in order to jointly complete the EPQ and SVQ once again. We test whether minorities’ patterns of emotions as well as patterns of concerns come to fit those of their majority interaction partner and, if so, to what extent minorities’ fit in concerns on one situation is predictive of their emotional fit in future situations.
Contentless thinking is associated with whole-brain positive inter-areal connectivity patterns

Sepehr Mortaheb (1), Laurens Van Calster (1), Paradeisos Alexandros Boulakis (1), Kleio Georgoula (1), Steve Majerus (1) and Athena Demertzi (1)

(1) ULiège

During spontaneous mentation, our minds are occupied with different contents, including periods of contentless thinking (mind blanking (MB)). As the frequency of MB events is non-negligible, an emerging question is whether this mental state constitutes an accidental blip or rather a default function of our ongoing mental flow. Using fMRI experience-sampling in 36 typical subjects during which MB could be chosen among various mental states, we show that MB is less frequent (5.75%) compared to sensory-oriented (Sens, M=19.79%), stimulus-dependent (SDep, 31.57%), and stimulus-independent thoughts (SInd, 42.90%), distributed equally across time (Chi-square uniformity test, $x^2=12.31$, $p=0.20$). The probability of reporting mind blanking is low but equal when departing from the other states (Markov chain transition probability=0.06), suggesting that this state is not driven by specific mental content. FMRI phase-based coherence showed that a recurrent brain pattern of overall positive functional connectivity was closer to mind blanking reports (in the sense of cosine distance) compared to other mental states ($p=0.03$ for MB vs. Sens and $p=0.003$ for MB vs. SDep and $p<0.001$ for MB vs. SInd, generalized linear mixed effect model and posthoc Tukey’s test). This indicates that mind blanking is a default mental state supported by an over-connected brain configuration. Such overall positive connectivity can reflect a distributed fight of multiple local units to enter into the supervisory attentional system, which may hinder reportable mental content formation.
French adaptation and validation of the Climate Anxiety Scale

Camille Mouguiama-Daouda (1), M. Annelise Blanchard (1,2),
Charlotte Coussement (1,3) and Alexandre Heeren (1,2)

(1) UCLouvain; (2) Belgian National Science Foundation (F.R.S.-FNRS);
(3) Le Beau Vallon – Psychiatric Hospital, Belgium

The notion of climate anxiety—i.e., anxiety associated with perceptions about climate change—has gained traction in the last couple of years. Clayton & Karazia (2020) recently developed the 22-item Climate Change Anxiety Scale that measures climate change anxiety. They also examined the factorial structure of their newly developed scale and reported that a four-factor structure (i.e., cognitive and related emotional impairments; functional impairments; personal experience; behavioral engagement) best fit their data. In this preregistered study (https://osf.io/5pnvu), we aimed at developing a French adaptation of the scale and validating it in a French-speaking community sample (n = 305). Although our confirmatory factor analyses replicated the four-factor model implied by Clayton & Karazia (2020), our results also pointed to a unidimensional factor-structure as a plausible and simpler—though statistically sound—alternative model. Moreover, both the four-factor and unidimensional approach to the French version of the scale yield good metric properties, including internal reliability and divergent validity. In this presentation, we will also discuss the implication of a four-factor versus unidimensional approach to climate anxiety.
Cognitive biases seem to play an important role in the development and maintenance of emotional disorders such as depression and anxiety. Novel procedures, known as Cognitive Bias Modification (CBM), were designed to reduce these dysfunctional information processing modes. This study aims to develop a new clinically inspired 4-session online CBM program to modify biased interpretations (CBM-IClin) in depression and anxiety. Volunteer participants will be recruited via social media, posters and universities. They will be randomly assigned to the experimental group or a waiting list control group. Both groups will complete questionnaires measuring cognitive and symptom variables as well as two experimental tasks to measure attention, memory, and interpretation cognitive biases before and after the intervention. All participants will receive, via email, follow-up questionnaires two weeks and three months after the post-intervention assessment. Analyses will test the effect of this new CBM-IClin in cognitive and symptom variables as well as the mechanisms of change using mediation models. Several limitations of previous CBM procedures are addressed. This trial was prospectively registered on June 17, 2019 with the ClinicalTrials.gov NCT03987477.
The impact of familiarity, place attachment, distance and social capital on effective urban green space attendance

Tania Noël (1) and Benoit Dardenne (1)

(1) ULiège

The numerous benefits linked to the presence of natural spaces in an urban environment are no longer to be demonstrated, whether on a physical level, a psychological level or regarding our social interactions. However, low park attendance would prevent all those benefits. This study focuses on the various variables that can influence the effective attendance of urban green space by citizens. The study was conducted as part of a pilot project to fight urban poverty in Seraing, Belgium. In order to understand what might influence area residents to attend local green spaces, three parks were studied. Based on the literature, we assume that the more familiar an individual is with the urban green space, the more the emotional bond (attachment) to the space will increase, which will result in an effective augmentation in space attendance. We also assume that the link between familiarity and attachment may be influenced by the individual’s active involvement in neighborhood life (social capital). Finally, we assume that the link between attachment and actual attendance might be influenced by the distance between the home and the space. Hypotheses were tested using linear mixed models. Results show that the more participants (N = 231) are familiar with the evaluated green space, the more they are attached to it, which leads to an increased attendance. Moreover, the link between familiarity and attachment is positively influenced by the number of memberships in local groups and by the regularity of participation. Distance does not have a significant moderating effect.
Lesion lateralization of multivariate cognitive profiles after stroke

Annick Odom (1), Nele Demeyere (2), Mauro Mancuso (3), Céline R. Gillebert (1) and Hanne Huygelier (1)

(1) KU Leuven; (2) University of Oxford, UK; (3) National Health Service, Grosseto, Italy

Cognitive impairment is prevalent after stroke. Most studies investigating stroke-related cognitive impairments and their neuro-anatomical correlates used a univariate approach. That is, they focused on impairments in specific cognitive domains. In contrast, when clinicians interpret test results, they typically integrate results of multiple cognitive tests rather than interpreting each test result in isolation. In this retrospective study, we took a novel approach, investigating the associations between multivariate cognitive profiles and lesion lateralization post-stroke. Data of 2219 stroke patients from the UK, Italy, and Belgium were pooled together. Domain-specific cognitive impairments (language, memory, praxis, numerical cognition, attention, and executive function) were assessed using the Oxford Cognitive Screen (OCS). Test scores were classified as impaired or not impaired based on previously published language-specific normative data. Using a hierarchical cluster analysis of subtask impairments on the OCS, we created cognitive profiles for individuals with complete subtask scores (n=1669). Finally, we ran a Bayesian multinomial logistic regression using lesion lateralization collected from clinical CT and MRI scans and radiologist reports (n=1335). We will present results from a hierarchical cluster analysis, revealing common cognitive comorbidities in stroke patients detected with the OCS. In addition, we will present results of the association between multivariate cognitive profiles and lesion lateralization. This study will provide insight into common cognitive comorbidities after stroke and reveal how multivariate cognitive profiles are associated with lesion lateralization.
Chemotherapy-related cognitive impairment in an infant mouse model of intrathecal methotrexate

Victoria Ossorio-Salazar (1), Silke Janssen (1), Disha Shah (1,2), Livine Craeghs (1), Willy Gsell (1), Uwe Himmelreich (1), Zsuzsanna Callaerts-Vegh (1) and Rudi D'Hooge (1)

(1) KU Leuven; (2) VIB

The increase in survival rates following advances in cancer treatments demands a better understanding of the negative consequences that these treatments inflict in the quality of life of cancer survivors, who often report discomfort in the form of cognitive impairment after chemotherapy. Despite the attention that chemotherapy-related cognitive impairment (chemobrain) has received in the last decades, the extent of the damage remains largely unknown. To gain further insight, chemobrain should be understood as a multifactorial phenomenon that affects various areas of behavior and brain regions. In this study, we developed a pre-clinical mouse model to mimic one of the chemotherapy treatments for the most common pediatric cancer – acute lymphoblastic leukemia. More specifically, we examined the consequences that early exposure to intrathecal methotrexate have long-term. We investigated aspects of cognition, social behavior, and emotional behavior (anxiety) longitudinally using a battery of validated behavioral tests. In addition, neuroimaging techniques – diffusion tensor imaging and resting state fMRI – were used to examine underlying changes in brain structure (white matter integrity) and functional connectivity. Our findings aim not only to expand the current knowledge in the field, but also to contribute to the improvement of current interventions, and likewise to the development of tools for early detection of impairments.
Positive affect reactivity: the association with subclinical depressive symptoms and the moderating role of positive reappraisal in general population young adults

Ana Mar Pacheco-Romero (1,2), Joana Velozo (1) and Thomas Vaessen (1)

(1) KU Leuven; (2) Universidad Complutense de Madrid, Spain

The onset of depressive symptoms, which previous work suggests is predicted by an increased negative affect (NA) reactivity to daily hassles (i.e. NA reactivity), may be likewise explained by a decrease in positive affect (PA) (i.e. PA reactivity). So far, most studies have investigated PA as a buffer against NA reactivity, and studies on the direct effect of PA reactivity in depression are inconclusive. This study investigates the relationship between stress, PA and subclinical depressive symptoms in a sample of general population young adults. In addition, we tested if positive reappraisal (PRA) increases PA at moments of stress and if it influences the association of depressive symptoms with PA reactivity. A total of 52 young adults participated in a momentary assessment study with the experience sampling method (ESM), collecting appraisals of stress and PA in daily life. Baseline levels of depression symptoms and trait PRA were obtained with validated questionnaires (subscales of DASS21 and CERQ, respectively). Linear multilevel regression was used to conduct the analyses. Findings show a significant main effect of stress on PA in all the models. However, there was no effect of depressive symptoms or PRA on PA reactivity. In conclusion, there was no support for the association between PA and subclinical depressive symptomatology. Likewise, PRA did not attenuate the effect of stress on PA. Further studies should investigate the effect of PA reactivity at follow up or with a more precise subclinical sample selection. PRA should be measured as a state variable.
Pain is a highly prevalent and aversive bodily symptom. Many theories and studies seem to support the notion that unpredictable pain is perceived more negatively and intense compared to its predictable counterparts. However, a recent review has revealed more mixed findings such that, unpredictable relative to predictable pain stimulation might also lead to equal or even less negative and intense pain perception. To help clarifying how pain perception is modulated by unpredictability, we decided to perform a systematic review and meta-analysis focusing on the effects of unpredictability on perceived pain intensity and unpleasantness. To this end, two researchers will independently screen the literature, evaluate the possible risk of bias of the selected articles and calculate the standardized effect sizes of the outcomes between the predictable and unpredictable conditions. To investigate the causes of heterogeneity, we will first realize exploratory single predictor meta regressions, corrected for multiple testing. In a second step, we will perform random forest analyses to rank the predictors according to their importance. One advantage of the random forest analyses is that through the decision trees it considers all the possible interactions between the predictors, and will therefore be complementary to the single predictor meta-regressions. We believe that this work will clarify the overall effect of unpredictability on pain perception and will identify variables being potentially responsible for the increased pain perception following either unpredictable or predictable painful stimulation.
Effects of transcutaneous auricular stimulation of the vagus nerve on event-related pupil size as a function of stimulation parameters.

Ana Perković (1), Martina D’Agostini (1), Andreas M. Burger (1), Mathijs Franssen (1), Stephan Claes (1), Andreas von Leupoldt (1), Peter R. Murphy (2) and Ilse Van Diest (1)

(1) KU Leuven; (2) Trinity College Dublin, Ireland

Transcutaneous auricular vagus nerve stimulation (taVNS) is a non-invasive technique that stimulates the auricular branch of the vagus nerve. TaVNS has been tested as a potential treatment for a variety of conditions, such as drug-resistant epilepsy and depression. One of the mechanisms hypothesized to underlie its effects is an increase of the noradrenergic activity (NA) in Locus Coeruleus. Evidence for such working mechanisms of taVNS in humans is, however, preliminary at best. Knowledge on the most effective stimulation parameters of taVNS is also scarce. A non-invasive way to assess NA activity in humans consists in measuring pupil size. This project aims to investigate whether taVNS increases pupil size as a function of stimulation parameters. 40 healthy individuals will receive sham stimulation (left earlobe) and taVNS (left cymba concha) in two separate sessions, in a counterbalanced order. Short bursts (5s) of seven stimulation settings varying as a function of pulse width and intensity will be administered 16 times in separate blocks. Pupil size will be measured in parallel. We expect short bursts of stimulation to elicit phasic NA activity as measured by event-related pupil dilation. We hypothesize that higher stimulation setting will elicit larger event-related pupil dilation in taVNS, compared to sham condition. In specific, larger stimulation settings in the taVNS condition are expected to linearly increase event-related pupil dilation. This project may inform about the mechanism and most effective stimulation parameters of taVNS, that are imperative to maximize the potential therapeutic benefits of taVNS.
How many dimensions are there in face perception? Traditionally, both cognitive and social psychology have considered 3 dimensions: warmth, competence, and dominance. Other dimensions have received so far few if any consideration but appeared important in other areas of social judgment: trustworthiness, morality, openness, and neuroticism. We presented randomly a total of 80 faces to 323 participants. They were asked to rate a subset of faces on 21 items (three per dimension) on a 7-point Likert scale. A total of 323 participants * 10 faces * 7 dimensions * 3 items = 68880 ratings was collected. The results of an exploratory factor analysis based on parallel selection suggested a 7 factors structure explaining 61% of the variance. Bartlett’s Test of Sphericity gave a p-value < 0.001. The normed χ² of this model was 4.83. An EFA enforcing a 7-factor structure (minimum residual extraction and promax rotation) revealed that all items loaded on their expected dimension. Only the traditional 3 dimensions and trustworthiness had a sum-of-square loadings > 2, altogether explaining 40% of the variance. In order to test this 7-factor structure, we performed a CFA. The normed χ² was 16.90. Parsimony of the model was reasonable (RMSEA = .07 with 90%CI [.068:.072]), reasonably different from a null model (CFI = .92), and the overall difference between the observed and predicted correlations was also satisfactory (SRMR = .07). Are the 3 traditional dimensions enough or should there be more? If so, how many? This question should be addressed in future studies.
The impact of syntactic knowledge on working memory for serial order

Pauline Querella (1) and Steve Majerus (1,2)

(1) ULiège, Belgium ; (2) National Fund for Scientific Research, Belgium

While a vast number of studies have shown that the retention of item information in verbal working memory (WM) is strongly determined by long-term language knowledge, the interaction between the retention of serial order information in WM and verbal long-term is much more controversial. This study explored the impact of syntactic long-term knowledge on serial order retention abilities in WM. We presented to French speaking participants sequences of adjective – noun pairs, with adjectives either preceding or following the noun. The French language is of particular interest here as depending on the type of adjective, the most frequent positional occurrence of an adjective is either before or after the noun. We constructed adjective-noun pair lists that either obeyed to these statistical syntactic rules or that violated these rules. We hypothesized that if serial order recall in WM depends on long-term knowledge, then serial order recall errors should be larger for WM lists including adjective-noun pairs with infrequent/illegal positional arrangement, and serial order migration errors should occur involving positional regularization of the infrequent/illegal adjective-noun pairing. This hypothesis was tested in 120 participants (18-35 years old) who had to memorize and repeat 6-word lists containing each 3 adjective-noun pairs, the pairings following the syntactically most frequent order or not. Data analysis is on-going and preliminary results will be presented.
Integration of attention control factors: An EEG study

Einat Rashal (1) and Nico Boehler (1)

(1) UGent

Attention can be controlled by bottom-up, stimulus driven, and top-down, goal-driven sources. The current study aims to examine how the different sources are integrated, using known EEG components related to attention – N2pc (i.e., lateralized negativity elicited 200-300 ms from stimulus onset), and Pd (i.e., lateralized positivity 200 ms from distractor onset). We used endogenous cues for top-down attention control and saliency for bottom-up attention control in a visual search task. Participants reported the orientation of a tilted target preceded by a valid or neutral cue. On some of the trials the target appeared in a different color, rendering it salient. On the other trials, target appeared with or without a salient distractor. Cueing effects were found on RT and accuracy, showing general facilitation of responses to validly cued targets. Responses were delayed when the search array contained a salient distractor. N2pc was found only in trials where the target was preceded by a neutral cue. Pd was evident only in trials where a target was preceded by a valid cue. The lack of N2pc in the validly cued trials suggests that no further engagement of attention was required by the search or the task. The evidenced Pd following a valid cue suggests the involvement of attention in the suppression of a salient distractor.
Social interactions and work event experiences

Gudrun Reindl (1) and Jonas W. B. Lang (1,2)

(1) UGent; (2) University of Exeter, UK

How do work experiences alone differ from face-to-face work experiences with others? Researchers have long suggested that social interactions in daily life are important and Susan Pinker has popularized the positive effects of regular social interactions under the term the "village effect". However, the exact correlates of face-to-face interaction are not well understood and the evidence for these effects from actual events in daily work life is limited. To study the role of social interactions in daily work life, information on 656 work events within 216 employees was gathered using diary designs before and during the COVID-19 pandemic. Participants rated their work events using the multidimensional CAPTION situation taxonomy that has recently been adapted for work events (Reindl, et al., in press). Structural equation modeling revealed that social interactions were directly linked to affective event dimensions so that social events were more positive, more humorous, and less adverse than events alone. Leader interactions were experienced as more cognitively challenging but also less humorous than work events with coworkers. Data gathered during COVID-19 showed that especially alone events were perceived as more complex but also as less negative. Overall, the findings support the idea that social aspects of events act as momentary resources and thus explain variability in daily event experiences. Theoretical and practical implications will be discussed.
Serial order in working memory (WM) is a fundamental component to process information. However, the way our brain represents serial order information remains largely debated. Two major hypotheses are currently proposed in the literature: one considering that serial order could be represented using spatial codes, according to a left-to-right dimension; a second one considering a time-based coding, where each item would be associated with a dynamic temporal context. We currently do not know if one these two codes is used preferentially, if both codes are used at the same time, or if they reflect a more general ordinal reference frame to represent serial order information. To test these hypotheses, participants performed three tasks in an fMRI scanner: a spatial task where participants had to detect the left-right spatial location of a dot; a temporal task where participants had to detect the occurrence of a high frequency sound within a temporal sequence of low frequency sounds, occurring at the beginning, the middle or the end of the sequence; an order WM probe recognition task where participants had to judge the serial order of two probe letters, with different serial positions of the WM list being probed. We will determine if one these codes is used preferentially, via multivoxel pattern analyses, by examining whether the discrimination between left/right in the spatial task and/or between start-of-list/end-of-list target items in the temporal task can predict the start-of-list/end-of-list serial position of the WM items that are being probed. Preliminary results will be discussed.
Assessing the prevalence of mind-blanking and its relation to attentional processes in a typical aging population

Aurèle Robert de Beauchamp (1), Matthieu Koroma (1), Kilian Elfert (1), Christine Bastin (1) and Athena Demertzi (1)

(1) ULiège

During spontaneous thinking the stream of consciousness is constantly fluctuating, as attention switches focus from one thought to another. But what happens when the content of some thoughts cannot be reported? Mind Blanking (MB) characterizes this particular mental state which appears as content-less thinking. MB may be relevant for the elderly population especially in light of ageing-related cognitive decline which may affect social interactions. The aim of this study is to explore MB occurrences in a cohort of elderly participants (65-75 years) and a control group of younger subjects (20-30 years). Using thought-sampling, a task which consists of behaviorally recording the content of the subject's thoughts at rest, we will measure the frequency of MB reports in relation to stimulus-related and stimulus-independent thoughts. Since age is negatively correlated with attentional processes, we hypothesize that there will be a positive correlation between age and MB occurrence frequency. Subjects will then answer the standardized ASQ questionnaire measuring different dimensions of attention. This study suggests that mental content (internal self-reflection) may be influenced by the impact of advancing age on cognition and more specifically, attentional abilities.
Motives and patterns of Instagram use in university students: a qualitative study

Silvana Romero Saletti (1), Stephan Van den Broucke (1) and Palmyra Zollo (1)

(1) UCLouvain

Using Social Networks Sites (SNS) is popular and has a substantial repercussion on the way we establish and maintain online and offline relationships. However, there is a growing awareness that SNS use can have negative effects and evolve to problematic use. Instagram, with a billion active users, is the second most engaged social network after Facebook and at least 71% of their users are under 35. Since Instagram relies heavily on posting images and stories as the primary means of expression, it can be assumed that its pattern of use and related problematic use will differ depending on the specific motivations and sought gratifications, yet thus far no studies have investigated this. The purpose of this study is to understand the motivations, sought gratifications and patterns of use of Instagram use among university students. Nineteen Belgian and Peruvian students were interviewed individually using a semi-structured interview focusing on their use of Instagram. An analysis using grounded theory methods allowed us to identify the following motives: self-expression, curiosity and comparison, documenting, entertainment, connection, following trends, avoidance of uncomfortable emotions, need to be seen, information, professional use and make an impact on others. Regarding usage patterns, we found different degrees of loss of control, urge to enter the platform and engagement, a variety of emotional reactions, a pattern of striving for perfection, comparison and passive use. All these findings suggest that different motives entail different and varied usage patterns which can derive in problematic use.
This poster will present the development of a short and accessible maladaptive trait measure that covers all relevant aspects of developmental trait pathology, in order to comprehensively assess potential antecedents of personality pathology. From this perspective, we constructed a 98-item version of the well-established DIPSI measure (DIPSI-B), that is fully age-neutral across the developmental stages of childhood and adolescence and further includes those items from the original measure with the most optimal coverage of the latent traits. Relying on a large community-based sample of Flemish children and adolescents (N = 1873) randomly split and balanced in terms of age and gender, a precise selection of items was performed followed by an inspection of psychometric properties. The final item-set appears to be reliable, structurally stable, and invariant across both gender and age. We hope that its feasibility stimulates the integration of the DIPSI-B in ongoing prospective designs examining developmental antecedents of personality disorders.
Exploring the relationship between source monitoring and cognitive theory of mind in schizophrenic patients with and without auditory hallucinations

Coralie Rouge (1), Alice Bodart (1) and Mandy Rossignol (1).

(1) UMons

Schizophrenia has been associated with cognitive deficits that affect cognitive Theory of Mind (ToM) or source monitoring. In particular, schizophrenic patients (SP) may misattribute their self-generated thoughts to external sources, and this external attribution bias (EAB) would be responsible for auditory hallucinations (AH). In these patients, an altered inference of one’s own and other’s mental states (cognitive ToM deficit) could contribute to the EAB and lead to AH. Yet, while an association between these cognitive functions has been shown in children’s populations, no study so far has investigated this question in schizophrenia. Thereby, this study aims to investigate the relationship between AH, source monitoring and cognitive ToM. To do so, 17 male schizophrenic inpatients with (9) and without (8) AH and 17 controls paired in age and gender undertook a source monitoring task with three conditions distinguishing two internal sources (words read aloud VS. imagined), two external sources (words read by female VS. male voices) and internal with external sources (words imagined VS. heard). Cognitive ToM was assessed by a referential communication task (Champagne-Lavau et al., 2009) which consists of an interaction between interlocutors about tangrams. We hypothesize that SP will show (i) less efficient source monitoring and cognitive ToM, (ii) a correlation between cognitive ToM deficit and EAB and (iii) these deficits will be majorated in patients with higher levels of AH. Results, which would allow us to better understand the mechanisms related to AH in schizophrenia, are being analyzed and will be presented at the conference.
Cognitive fatigue (CF) is a major source of work-related and traffic accidents. While the impact of prolonged cognitive activity in young adults is well documented, little information exists on the effect of CF on middle-aged people. However, some data highlight the specific sensitivity of that population to CF. We investigated here the influence of variables related to everyday life on the installment of CF in middle age. Sixty-six participants aged from 40 to 65 were recruited (50.98 ± 5.83 years old; 32 females. They first completed questionnaires encompassing demographic information, health status, quality of life, subjective fatigue and sleep quality. In a second session, they were submitted to the Psychomotor Vigilance task before a 100 minutes Stroop task. Assessment of CF was performed by analyzing changes in response times across the Stroop task (four blocks of 25 min) on the ex-gaussian tau parameter (known to be sensitive to fatigue effects) for each kind of item (Facilitator, interferent, neutral). Our results indicate that the relation between the blocks and the tau parameter is quadratic and varies among participants. There also exists a significant association between tau and the subjective fatigue index (p = .0352) as well as a significant interaction effect (p = .0486). However, no association was found with questionnaire assessing health status and quality of life. These results suggest that individual characteristics related to daily life (including health problems) are not the main determinant of cognitive fatigue in middle age.
Executive Function, Self-Regulation and Teacher-Student Interaction in preschool and primary school children: A systematic review

Simona Sankalaite (1), Jolien Dewandeleer (1), Canmei Xu (1), Mariëtte Huizinga (2) and Dieter Baeyens (1)

(1) KU Leuven; (2) Vrije Universiteit Amsterdam

Executive functions (EF) and self-regulation (SR) are fundamental for children’s learning, school functioning and academic achievement. Core EF/SR skills rapidly develop in preschool and continue to develop throughout childhood. However, in general, EF/SR fail to develop to its full potential if the contextual stimulation is not adequately presented. Recent research has shifted the attention towards malleable environmental factors; more specifically, to the role of school and classroom environment as an important developmental context for promoting children’s EF/SR skills and, in turn, their cognition and behaviour. Numerous observational studies have shown a correlation between the quality of teacher-student interaction (TSI) at the dyadic or the classroom level and children’s EF/SR skills. To explore this association further and to provide more insight, the objective of this systematic literature review is to examine the causal effect of interventions that aim to improve children’s EF/SR with an added manipulation of the TSI. Generally, the results indicate that children in the intervention groups show higher gains in EF/SR compared to controls. More importantly, the findings reveal the largest effects of interventions in those performing most poorly at baseline, suggesting that the cognitive deficits can be minimised if children are supported appropriately. This review informs and highlights the need for more research (and interventions) explicitly investigating TSI and its potential influence on EF/SR in children. It aims to provide information as to which specific aspects of TSI need to be examined more closely; hopefully, instructing further development and implementation of lenient and effective interventions in education.
Baby don't hurt me: Victimization and perpetration experiences of offline and online intimate partner violence

Janneke M. Schokkenbroek (1), Wim Hardyns (1) and Koen Ponnet (1)

(1) UGent

Intimate partner violence (IPV) is a highly prevalent phenomenon. While many studies have identified patterns of IPV victimization of women and perpetration by men, female perpetration and male victimization experiences are often overlooked. Additionally, most previous research among representative samples has focused on the occurrence of physical forms of IPV, often neglecting other forms of partner violence such as psychological or cyber (i.e., the use of online means to control the behaviour of one’s partner) IPV. In the present study, associations between and prevalence rates of victimization and perpetration experiences of physical, sexual, psychological and cyber partner violence were examined among a representative sample of adults. Additionally, we examined differences between men and women in these experiences. To do so, we conducted a survey study among a representative sample of citizens of Ghent. Of the total sample (n = 1587), 1144 (51.3% women, Mage = 47.7 years) were in a romantic relationship. IPV prevalence rates ranged from 4.0% to 60.1%, depending on the form of IPV. We found significant associations between all measured IPV experiences: between experiences of different forms of IPV (ranging from r = .220 to r = .472) as well as between victimization and perpetration experiences (ranging from r = .384 to r = .604). Additionally, we found significant differences between men and women for sexual IPV perpetration (men > women), psychological IPV victimization (men > women) and perpetration (women > men), and for cyber IPV victimization (men > women).
The impact of transcranial Direct Current Stimulation on the attention networks: 
A systematic review and meta-analysis of the sham-controlled studies

Emmanuelle Schoonjans (1), Charlotte Coussement (1,2) and Alexandre Heeren (1,3)

(1) UCLouvain; (2) Le Beau Vallon – Psychiatric Hospital, Belgium; 
(3) Belgian National Science Foundation (F.R.S.-FNRS).

The prominent multifaceted models of attention posit the existence of three independent but functionally related attentional networks, namely the alerting, orienting, and executive conflict networks. Researchers have recently started to envision strategies to enhance the attentional networks, and transcranial Direct Current Stimulation (tDCS) has emerged as a promising tool. Yet, these studies have led to mixed findings, precluding any strong conclusion regarding the impact of tDCS on the three attentional networks. Moreover, this research field has been characterized by many study-to-study variations in terms of targeted samples (clinical versus nonclinical), stimulation parameters, and electrodes placement. In this project, we thus aimed, in a preregistered fashion (see link below), at auditing this research’s field. To do so, we conducted a systematic review and a meta-analysis. We also assessed the quality of these studies. Only sham-controlled studies published (in English) in international peer-reviewed journals were included. A systematic search in bibliographical databases uncovered ten studies that compared a tDCS active stimulation to a sham stimulation. Our meta-analytic results suggest that tDCS produced a small and not significant modulation of the attentional networks. Yet, some meta-moderators were identified (e.g., electrodes localization). Although there was no indication of significant publication bias, the quality of the studies was substandard and modulated the effect sizes. From a clinical point of view, these findings imply that tDCS is not yet ready for wide-scale dissemination as a tool for targeting the attentional networks. https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=201199
Reducing gender inequality for men: Support as a solution to foster men's engagement in communal roles?

Julia Schreiber (1), Sanne van Grootel (2) and Colette van Laar (2)

(1) Free University Berlin; (2) KU Leuven

Gender social change has led to an increasing number of women being represented in traditionally masculine (STEM) fields. However, for men, gender social change is much slower, and men are still strongly underrepresented in traditionally feminine (HEED) roles. One reason for this underrepresentation might be men’s (mis)perception of the masculine norm. Since manhood is precarious, men often engage in traditionally masculine behaviors to assert their masculinity – especially when their masculinity is threatened. This might reinforce the perception of a traditional masculine norm that prescribes men to avoid or hide traditionally feminine attitudes and behaviors. Support could help to overcome this backlash by signaling men that others approve of their involvement in communal roles. In Study 1, we surveyed fathers in Belgium (N=132). We showed that experienced support is positively related to communal attitudes and behaviors, but that support can only buffer some negative effects of masculinity threat. In an additional experimental study (Study 2), we will further investigate the buffer role of support on the relationship between masculinity threat and men’s future intentions to be involved in the domestic sphere. Together, these studies address a potential solution for the difficult road to reduce gender inequality in the presence of masculinity threat.
Ensemble processing refers to the ability of the visual system to extract certain summary statistics for various features of a group of objects without necessarily storing the individual items in the set (e.g., Ariely, 2001). Recently, ensemble statistics have been proposed as the mechanism explaining the gap between rich perceptual experience and sparse perceptual report (Cohen et al., 2016). It is often argued that they are processed quickly and efficiently, but it is currently unclear whether this process relies on being aware of the ensemble. The broader goal of this study is thus to assess whether ensemble statistics can be processed for ensembles presented invisibly. We first set up an ensemble priming paradigm that would allow us to investigate masked priming of ensembles as well. Participants are briefly (32 ms) presented with an ensemble of nine oriented grating stimuli. The task is to indicate the orientation of a test grating, which has either the mean orientation of the ensemble, the same orientation as one of the members, or an explicitly different orientation. The preliminary results of an experiment without visual masking (n = 4) show that the reaction times for the mean orientation are, indeed, the lowest, compared to member and non-member items, indicating a priming effect for ensemble statistics. We will subsequently investigate the same priming effect while masking the ensemble of gratings. If the mean orientation is extracted without awareness, we expect that the same priming effect should be observed.
How do coastal landscapes impact stress, coping strategies, and pro-environmental attitudes?

Marine I. Severin (1), Filip Raes (2), Ann Buysse (3) and Gert Everaert (1)

(1) Flanders Marine Institute; (2) KU Leuven; (3) UGent

Recent studies have demonstrated salutogenic and restorative effects of being exposed to the coast on various mental health indicators. Contact with the coast has also been found to increase pro-environmental attitudes. The question remains of why that is and whether elements of pollution (e.g., plastic) potentially disrupt or weaken the benefits of the coastal experience. The present study has two aims: (1) assess the effect of exposure to coastal landscapes on stress, coping strategies, and pro-environmental attitudes; (2) evaluate the emotional experience of awe, nostalgia, and nature connectedness as potential mediators of these effects, and plastic as a potential moderator. We will conduct an online experimental study in which participants will be randomly assigned to one of six conditions in which they will watch a video-clip of a particular landscape that either contains plastic or not: “beach with a sunset”, “coastal dunes”, and “urban street”. Before the video-clip, participants will be asked to recall a stressful moment and report their stress level. After the video-clip, they will once more report their stress level as well as their emotions, coping strategies, and pro-environmental attitudes. We expect that coastal landscapes will lead to a higher decrease of stress and a higher increase in meaning-focused coping strategies and pro-environmental attitudes compared to the urban landscape. We also expect that awe, nostalgia, and nature connectedness will act as mediators and that plastic moderates the impact of coastal landscapes by weakening it. Understanding how the coast impacts wellbeing and pro-environmental attitudes is essential to help optimize the coastal experience to benefit human health and protect ocean health. Preregistration of the study can be found here: https://osf.io/x2aqv
At preschool age, main preoccupations in parents and teachers are social adjustment in family and in kindergarten. Some children display difficulties in their new interactions with peers or unfamiliar adults. They could develop a risk of internalizing or externalizing behavior disorders. Many studies highlighted the important role of social cognition and empathy, on abilities in emotion regulation (Hein, Röder, & Fingerle, 2018; Laghi, Lonigro, Pallini, & Baiocco, 2018) and on social adjustment (de Wied, Branje, & Meeus, 2007; Eisenberg, Eggum, & Di Giunta, 2010). It is important to better know the preschoolers’ profiles of affective and cognitive empathy, in order to understand their impact on emotion regulation and social behavior. However, inter- and intra- variability could be influenced by individual characteristics in children, such as gender (Strayer & Roberts, 2004), temperament (Wagers & Kiel, 2019), language competences (Rhee et al., 2013) and family factors (Miller, Eisenberg, Fabes, Shell, & Gular, 1989; Taylor, Eisenberg, Spinrad, Eggum, & Sulik, 2013). This study examines how affective and cognitive empathy vary depending on age, gender, personality, and abilities in executive functions, and depending on socio economic status and parental emotional expression. Links between emotion regulation and affective and cognitive empathy are also explored. Participants are 54 children (between 3 and 6 years-old). Their empathy profiles are assessed by a performance-based measure of empathy, an observational design and empathy questionnaires completed by parents. Emotion regulation checklist and the Dimensions of Openness to Emotions are filled by parents.
Learning new written words involves the establishment of a precise orthographic and semantic representation, and its integration with pre-existing knowledge in the mental lexicon. It has been argued that the lexical competition (i.e., the ability of a word to influence the activation of similar words) could be taken as a proof of lexical integration. Accordingly, several studies reported that competition effects emerge after intensive training sessions coupled with a consolidation period. However, these studies used very artificial training paradigms. Hence, the present study aimed to address the issue of new word learning through naturalistic contextual exposure. Participants were asked to read a short book with embedded pseudowords devised by substituting one letter of existing French hermit words (e.g., hamal-HAMAC). Participants were told to try to memorize these new words while reading stories. To assess lexical competition, they performed a semantic categorization task with the base words (e.g., HAMAC), immediately after learning and on the following day. Tasks assessing orthographic and semantic learning were also used. The results showed that, immediately after exposure, there was no evidence of a competition effect in the semantic categorization task, but such an effect emerged on the following day. These results are consistent with studies using more artificial training paradigms. The interpretations of novel word learning in terms of lexical competition and consolidation are discussed.
A dyadic study on discrimination and relationship satisfaction among same-sex couples: The role of internal stress and sex

Chao Song (1), Ann Buysse (1), Wei-Hong Zhang (1) and Alexis Dewaele (1)

(1) UGent

Despite the fact that the systemic transactional model (STM) is widely utilized for investigating associations between external stress, internal stress and relationship satisfaction, few researchers have considered minority stress indicators as external stressors and examined associations from a dyadic perspective. Also, possible sex differences in stress and relationship satisfaction have been considered only for heterosexual couples. This study examined the association between discrimination and relationship satisfaction among lesbian, gay, and bisexual (LGB) from a dyadic perspective, and also tested the potential mediating role of internal stress and sex difference in this association. Using an actor-partner interdependence mediation model (APIMem), we analyzed data including a sample of 241 LGB couples (133 female and 108 male same-sex dyads). APIMem revealed significant indirect actor and partner effects from discrimination to relationship satisfaction through their own and partner's internal stress for male same-sex couples. In female same-sex couples, there are only actor and partner effects on the direct association between internal stress and relationship satisfaction. Additionally, the effect of own internal stress on partner's relationship satisfaction was significantly stronger for woman compared to men. These findings demonstrated the utility of the STM framework for understanding the risk of stressors in damaging LGBs romantic relationships. Couple interventions should integrate knowledge from a dyadic perspective with attention to sex differences.
Maternal stress and children’s eating style

Juliette Taquet (1), Ellen Moens (1,2), Sandra Verbeken (1) and Lien Goossens (1).

(1) UGent; (2) Odisee Hogeschool, Gent

Picky eating among children is relatively common during toddlerhood, but may develop into a problematic eating style. Although it has been suggested that problematic eating in children is associated with stress in the parents, little research exists on this topic in Belgian samples. The aim of the present study was to explore the association between maternal stress and different eating styles among non-clinical children. Additionally, we investigated whether these associations differ among gender. The Child Eating Behavior Questionnaire (CEBQ) and the Nijmeegse Ouderlijke Stress Index (NOSI) were completed by the mothers of 171 children (88 boys and 83 girls; 3-9 years of age). Results demonstrate that the overall score of the NOSI correlated positively with the CEBQ subscales emotional overeating, satiety responsiveness, emotional undereating, food fussiness and food avoidance. Furthermore, when analyzing the data separately for boys and girls, we found positive correlations between the mothers’ stress index and emotional undereating, emotional overeating and food avoidance scales for both groups. Additionally, for boys we found a negative correlation with the enjoyment of food scale. The current results imply that maternal stress is associated with a number of problematic eating styles in young children among which emotional overeating, emotional undereating and food avoidance appear the most prominent ones. To determine the direction of this association, additional longitudinal research is needed.
Auditory frequency-tagging EEG to assess categorization and social preference of the human voice

Rowena Van den Broeck (1), Silke Vos (1), Francesca M. Barbero (2), Olivier Collignon (2,3) and Bart Boets (1)

(1) KU Leuven; (2) UCLouvain; (3) Università degli Studi di Trento, Italy

People often orient more to human voices than to other sounds in our environment. We wondered whether this social preference is equal for everyone, or whether interindividual differences in social preference exist. Individuals with autism spectrum disorder (ASD) are characterized by social deficits, such as difficulties with voice processing. Therefore, we developed two auditory stimulation frequency-tagging electro-encephalogram (EEG) paradigms. The first is an oddball paradigm that allows us to test differentiation and categorization between object sounds and voices, where objects sounds are presented at a base frequency of 4 Hz and voices at an oddball frequency of 1.333 Hz, or every third sound. The second paradigm is a multi-input paradigm that allows us to test social preference by simultaneously presenting two streams of sounds at different frequencies (3.45 Hz and 3.70 Hz). One stream consists of different object sounds and the other stream consists of all kinds of vocal stimuli. Preliminary results show us that the paradigms allow us to pinpoint individual sensitivity for vocal stimuli. For the oddball paradigm, we found an EEG response on both the base and oddball frequency in neurotypical adults, indicating that they differentiate the voices from the object sounds. For the multi-input paradigm we observed a response at both frequencies, but we found a higher peak (SNR) at the frequency related to the vocal stream. This suggests that neurotypical adults indeed prefer voices compared to object sounds. In a next stage, we will compare these findings with those of matched adults with ASD.
Stuttering is a speech disorder characterized by disruptions of the flow of speech. The causes of the disorder remain highly debated. Indeed, there are currently four major sets of theories of stuttering: (1) the speech motor control theories, (2) the cognitive and linguistic theories, (3) the rhythmic theories, and (4) the sensory theories. Here, we explored the possibility that all these theories may be true, but only for a subset of individuals who stutter. Four adults who stutter and 20 control were administered a battery of auditory, proprioceptive, tactile, cognitive, linguistic, motor and rhythmic tests relevant to assess the four main sets of theories. In line with our hypothesis, the individual profiles provided clear evidence that the clinical category of stuttering consists in fact of a heterogeneous set of patients with deficits at different levels in the functional architecture supporting speech production. This finding has important theoretical and clinical implications.
Knowledge of body biomechanics influences perceptual judgments of human motion

Antoine Vandenberghe (1) and Gilles Vannuscors (1,2)

(1) UCLouvain; (2) Harvard University, USA

Observers typically mislocate the final position of a moving target slightly farther along its trajectory – an effect known as the “representational momentum” (RM). In the field of human motion perception, the RM is known to be larger for movements of the arm resulting from shoulder rotations toward than away from actor’s body midline. Shoulder rotations away from the body are biomechanically harder to execute. Therefore, it has been suggested that RM for body movements is influenced by implicit knowledge of the biomechanical constraints of the body. An alternative, however, is that this effect results from a mere “landmark attraction effect” – a general tendency for larger RM effects when an object moves toward than away from another stationary object. The goal of this study was to discriminate these two accounts. In each trial of our experiment, participants saw videos depicting either an actor’s arm moving toward or away from the actor’s body or highly similar movements from a geometrical shape. We measured the size of the RM as a function of the direction of movement (toward or away) and the type of stimulus (human/shape). We found a main effect of the movement direction, indicating a general landmark attraction effect on the size of the RM, and an interaction between the conditions: the difference between the two directions of movement was larger for humans than for shapes. This indicates that knowledge of body biomechanics influences RM for body movement.
Poster #
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Fraud detection when using computerized adaptive tests in unproctored personnel selection

Steven Vanmarcke (1)

(1) Cebir, Leuvensesteenweg 320, B-3070 Kortenberg

The last decade has been marked by a sharp increase in unproctored testing within a personnel selection context. Unproctored testing allows candidates to take tests at home or at another location of choice. As a result, it can be used for an initial screening or to shorten the duration of the test battery at the office. At the same time, however, the use of unproctored testing significantly increases the risk of fraud (attempts) in a high-stakes selection context. We have taken various measures to reduce fraud among candidates: (1) the use of several parallel test versions of classical tests or the use of computerized adaptive tests with large item banks, (2) the verification of candidate identity before test onset, (3) the development of test items which are sufficiently resistant to candidate faking and item disclosure, (4) the automatic detection of “burned” test items via partial correlation analysis and (5) the verification of unproctored test scores via supervised hypothesis or control testing. In this study we discuss these measures focusing on unproctored computerized adaptive tests designed to quantify cognitive abilities such as fluid and/or crystallized intelligence. We highlight the challenges of unproctored compared to proctored testing and provide concrete guidelines to minimize fraud among candidates. Finally, we directly compare the use of hypothesis testing (assessing the plausibility of the unproctored test performance) and control testing (using a predefined selection criterium to check candidate performance in a supervised test setting) as different methods to verify the veridicality of unproctored test results.
Inhibition is a cognitive control function that allows us to focus on relevant task information, while suppressing irrelevant information. Inhibition can be further divided into two separate but related subprocesses, namely interference control (i.e., the suppression of irrelevant information) and response inhibition (i.e., the suppression of triggered but inaccurate responses). Previous studies have suggested that gifted adults outperform non-gifted adults in exerting cognitive control. However, it remains unclear whether this is the case for inhibition in particular, and specifically for both interference control and response inhibition. In this study, interference control and response inhibition were studied in gifted and non-gifted adults using a numerical flanker task and a Stroop task and a go/no-go task. In addition, we assessed participants' general cognitive ability and numerical abilities. We observed that the gifted individuals performed better on the numerical tasks. Crucially, the gifted individuals were significantly more accurate on the response inhibition task than non-gifted participants, while reaction times did not differ. However, although the gifted participants reacted significantly faster on the Stroop and Flanker task, there was no significant difference in interference control between the two groups (i.e., similar flanker and Stroop effects). Our study supports the notion that interference control and response inhibition are separate inhibitory processes and suggests that gifted individuals outperform non-gifted individuals with regards to response inhibition, but not interference control.
**Do you know what you’re doing?**

**Subjective perceptions of difficulty of varying levels of cognitive control**

Emilio M. Violato (1), Ellen S. Voorrips (1), Kobe Desender (1,2) and Eva Van den Bussche (1)

(1) KU Leuven (2) University Medical Center Hamburg-Eppendorf, Germany

Metacognition is the awareness of one’s own experiences that results from monitoring one’s own cognitive processes. This study explored whether we are metacognitively aware of varying task demands induced by cognitive conflict. To this end we implemented a numerical Stroop task and varied the proportion of congruent trials within different blocks to manipulate the objective difficulty of the task. Participants (N = 53) performed 10%, 25%, 50%, 75% and 90% proportion congruency blocks. After each trial as well as after each block, they were asked how difficult they found that trial or that block. The preliminary results from the post-block subjective ratings indicated that participants found blocks with a greater proportion of congruent trials to be less difficult than blocks with a smaller proportion of congruent trials. The trial-by-trial subjective difficulty ratings showed a significant interaction between the proportion congruency of the block and trial type (i.e., congruent or incongruent). Incongruent trials were judged to be more difficult as the proportion congruency increased and congruent trials were judged the be less difficult as the proportion congruency increased. This proportion congruency effect observed for subjective perceptions mirrored the proportion congruency effect observed for objective response times. These preliminary results indicate that participants are subjectively aware of varying demands of the task, and that subjective judgments of difficulty are directly related to the objective difficulty of the task.
Voices are important sources of social information, such as speaker identity and emotion. Autistic people have difficulties processing socio-affective information, although behavioural findings are inconsistent. Therefore, a more robust paradigm to reliably quantify socio-communicative sensitivity at the individual level is needed. Here, we apply auditory frequency-tagging EEG to investigate the implicit discrimination and categorization of emotion (Experiment 1) and speaker identity (Experiment 2) among a periodic stream of highly variable vocal utterances. The general principle is that frequency-tagging EEG elicits a steady-state evoked potential exactly at the frequency of presentation. Periodically presented oddball stimuli will also elicit a response at the oddball frequency, but only if the brain can differentiate the oddball from the standard stream. First, we presented a periodic stream of neutral vocal utterances at 4 Hz, with a fixed target emotion (e.g. fear) as oddball every 3rd utterance (i.e. at $4/3 = 1.333$ Hz). We found that neurotypical male adults ($N=20$) can implicitly differentiate emotions in a stream of utterances, as we observed robust EEG responses for both standard (4 Hz) and oddball frequency (1.333 Hz) for several emotion categories (i.e. fear, anger, happy, sad). Second, we presented a periodic stream of neutral vocal utterances of one speaker identity at 4 Hz, and oddball utterances of four different same-sex speakers at 1.333 Hz. We found that participants can also implicitly differentiate between identities in a stream of utterances, as both standard and oddball frequencies were present in the EEG data.
Disentangling the relation between Prematurity and Developmental Language Disorder

Astrid Warny (1), Camille Bonnet (1) and Jolijn Vanderauwera (1)

(1) UCLouvain

Infants born prematurely are at an increased risk for developing oral language deficits. However, due to inherent inconsistencies in methodological factors, there has been much controversy on the developmental prospects of this population. The question remains as to whether premature birth serves as a risk factor for a Developmental Language Disorder (DLD), or if these language deficits emerge as part of a neurodevelopmental disorder. As a result of this uncertainty, the categorization of these children remains unclear within the diagnostic framework developed by the CATALISE Consortium, dissociating language disorders as DLD or as a language disorder associated with a biomedical condition. The objective of this review is to disentangle the complex relation between DLD and prematurity and to provide a comprehensive review of the language, cognitive, and motor outcomes of children born prematurely. By using six electronic databases, our key search terms led to a total inclusion of 20 articles. The findings of developmental outcomes will be presented thematically, categorized by degree of prematurity and age of outcome measure.
A systematic approach to study the relations between order, complexity, and aesthetic appreciation

Astrid Warny (1), Eline Van Geert (1) and Johan Wagemans (1)

(1) KU Leuven

The relations of order, complexity, and their balance with aesthetic appreciation have been an interest of inquiry for centuries. The literature in this research field is contradictory, however, disagreeing on the type and direction of the relation of order and complexity with aesthetic appreciation. Moreover, the relationship between order and complexity is a puzzling one as it seems to be both antagonistic and complementary. Few studies have investigated both order and complexity simultaneously, while also recognizing both constructs to have multiple aspects. Furthermore, those studies that investigated the role of order often reduced it to examining symmetry. Our online study will overcome these issues and will empirically test how order and complexity contribute to aesthetic appreciation using a controlled stimulus set. We created an Order & Complexity Toolbox for Aesthetics (OCTA) to easily generate stimulus sets that, once published as an open-source Python package, will grant other researchers in the field the ability to manipulate stimuli to desired degrees of order and complexity in a number of different stimulus dimensions (e.g., size, shape, color pattern, etc.). The aim of this study is to further investigate the interplay between order and complexity in relation to aesthetic appreciation by examining how both constructs contribute to aesthetic appreciation, and whether they do so in an independent or a joint fashion. Levels of perceived complexity, order, and aesthetic appreciation will be collected, while individual differences and their interactions with stimulus properties will be examined to systematically investigate their role in aesthetic appreciation.
The “Manif pour tous” in France and the “LGBT-free zones” in Poland are just a few, although extreme examples of common and persistent negative attitudes towards gay and lesbian people in Europe. To better understand these attitudes, homonegativity is a useful notion as it encompasses stereotypes, prejudices, and discrimination against homosexual people at both the individual and societal levels (Herek et al., 2015; Morrison & Morrison, 2011). Nevertheless, existing homonegativity scales show little validity. Preuss and colleagues (2020) addressed this problem by developing the new Scenarios for measuring the Affective and Behavioral components of Attitudes toward lesbians and gay men Scale (SABA) in German. As part of a project aiming to validate this instrument in several countries and languages, the present study focuses on the French validation of the SABA in Belgium. To this end, an online questionnaire aiming at exploring the reliability and the validity of the French SABA was distributed. Responses from 375 French-speaking adults were collected. This questionnaire consisted of several other homonegativity scales, demographic questions, scales measuring social and psychological correlates of homonegativity, and a false petition to study the predictability of a queer-friendly behavior. The hypothesized two-factor structure of the SABA will be tested using confirmatory factor analysis, while expected correlations and predictions will be analyzed using multiple and logistic regressions, ANOVAs, and t-tests. The SABA has the potential to become a valuable instrument for studying homonegativity. Its intercultural validation will allow for comparisons and the implementation of controllable interventions across countries.
Impact of social exclusion and ostracism on attentional biases toward external and internal threatening cues in socially anxious children: A cyberball experiment

Erika Wauthia (1,3), Samantha Kennis (1), Wivine Blekic (1,3), Alice Bodart (1), Khira El Bouragui (1), Claus Vogele (2) and Mandy Rossignol (1)

(1) UMons; (2) University of Luxembourg, Luxembourg; (3) National Fund for Scientific Research (FNRS)

Cognitive models of social anxiety disorder (SAD) emphasized that the increased attentional processing of external and internal threatening cues would cause and maintain the main symptoms of the disorder. However, in children, studies having specifically examined this double attentional focalization are inexistent. In our study, 20 high socially anxious (HSA) children and 20 low socially anxious (LSA) children aged between 8 and 12 performed three sessions of a cyberball paradigm in which they were either included (sessions 1 and 3) or excluded (session 2) from an online ball-tossing game. Attentional biases (AB) towards external threatening cues were measured after each session with a visual dot-probe task while AB towards internal threat were investigated through a heartbeat perception task. First, we showed that all children displayed a facilitated vigilance to angry faces when compared to neutral ones and experienced disengagement difficulties from these after the exclusion session. Second, we showed that HSA children tend to display a greater vigilance toward angry faces and did not present an improvement of their heartbeat perception through game sessions when compared to the LSA group. Results confirmed the presence of an attentional preference for angry faces in HSA children and showed an AB for external threat in all children confronted to a social situation. However, only HSA children reported low interoceptive awareness throughout the game. This suggest the presence of AB toward internal only in the HSA group.
Contributions of attachment and parenting practices on expression of ADHD symptoms in school-aged children: A study protocol

J.-F. Wylock (1,3), A. Borghini (2), V. Delvenne (3) and H. Slama (1,4)

(1) ULB; (2) Higher School of Social Work (HETS), Switzerland; (3) Queen Fabiola Children’s University Hospital (QFCUH); (4) Erasme Hospital, Belgium.

Several studies observed an association between insecure and disorganized attachment and ADHD symptoms in clinical and community samples. Relationships between the child and his caregivers could minimize or amplify the effects of neurodevelopmental factors that underlie phenotypic expression of ADHD. However, few studies have investigated influences of confounding factors such as comorbidities, cognitive profiles, contextual factors or attachment assessment method. This ongoing cross-sectional study compares ADHD and typically developing children (TDC) aged 7 to 10 years old, and their parents. TDC are recruited from primary schools and youth movements. ADHD children are recruited from child psychiatry and child neurology outpatient clinics of two university hospitals. Inclusion/exclusion criteria are the presence of an ADHD diagnosis, absence of intellectual deficit (IQ > 80), epilepsy, prematurity or any neurological condition. Child assessment includes behavioral questionnaires rated by parents, measures of attentional and executive functions and emotional regulation. Child attachment is investigated using interview and self-report. Assessment of parents includes measures of mental health, ADHD and depressive symptoms, cognitive functions and attachment style. Parenting practices are assessed by parent self-report. The main objective of this research is to help disentangle contributions of parents-child relationships and cognitive characteristics on child ADHD symptoms, using an intergenerational perspective. The results could also allow developing efficient parenting-skill training programs to improve symptomatic expression of ADHD and reduce functional impairments. Trial registration: ClinicalTrials (NCT): NCT04337125.
Child attachment and ADHD: A systematic review

J.-F. Wylock (1,4), A. Borghini (2), H. Slama (1,3), V. Delvenne (4)

(1) ULB; (2) Higher School of Social Work (HETS), Switzerland; (3) Erasme Hospital, Belgium; (4) Queen Fabiola Children's University Hospital (QFCUH), Belgium.

ADHD children exhibit behavioral characteristics similar to children with insecure or disorganized attachment, such as hyperactivity, impulsivity and difficulties with emotional regulation. Several studies with adopted and deprived children have shown that early relationships influence the development of ADHD symptoms. However, the nature of this association in the general population is not clear. We conducted a systematic review excluding adopted and deprived populations. Studies published in English between 2000 and 2020 were included. Inclusion criteria: (1) participants were children or adolescents with a clinical diagnosis of ADHD or an ADHD symptomatology as assessed by a validated questionnaire; (2) the research must include a measure of the child attachment. Twenty-six studies met the inclusion criteria. Twelve included clinical ADHD children and 14 community samples. An association between insecure / disorganized attachment and ADHD was regularly observed. However, in some studies, the association could be explained by the presence of comorbidities. The pharmacological treatment for ADHD was associated with a decrease of disorganized attachment. A causal link between insecure or disorganized attachment and the development of ADHD symptoms is still unclear. Comorbidities, neuropsychological profiles and contextual factors should be considered in future studies investigating the association between ADHD and attachment. Longitudinal prospective studies including assessment of attachment and cognitive functioning at different points in time could help disentangle relationships between these factors.
Alliance and alliance rupture in couple therapy: A scoping review

Morgane Xhonneux (1), Marie Géonet (1) and Emmanuelle Zech (1)

(1) UCLouvain

It is widely known that the therapeutic alliance plays a major role in the efficacy of psychotherapy (Flückiger, Del Re, Wampold, & Horvath, 2018). The alliance was mainly conceptualized in individual therapies; and only a limited number of studies focused on the characteristics of the alliance within couple therapies. However, this is a therapeutic setting where alliance ruptures can be particularly common, ranging from 50 to 58% (Tremblay, Wright, Mamodhoussen, McDuff, & Côté, 2008). For this reason, a systematic scoping review was conducted to explore conceptualizations and processes of alliance and alliance ruptures in couple therapy. The scoping review was conducted according PRISMA for Scoping review guidelines (Tricco et al., 2018). The database search (Cairn, Francis, Pascal, PsycInfo, Pubmed, Scopus and Google scholar) led to find 1836 articles. Relevant articles were selected on the basis of exclusion/section criteria and inter-judges discussions. A total of 70 papers, mixing empirical and theoretical data, was finally included. After a systematic analysis of these articles, we have organized our scoping review around 3 core themes: alliance, alliance rupture, and the therapist’s effects. These findings will be detailed and discussed. We expect to provide to therapists a wide range of information to improve their professional practice and to prevent alliance ruptures in couple therapy.
Poster #
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Cultural fit of self: Novel measures and evidence from Turkish Belgian and Chinese British minorities

Erdem Yilmaz (1) and Jozefien De Leersnyder (1)

(1) KU Leuven

There are systematic cultural differences in the ways people define themselves and accordingly navigate daily situations (Markus & Kitayama, 1991; Vignoles et al., 2016). Consequently, cultural newcomers may demonstrate an initial mismatch with the majority culture’s typical ways of being and relating (e.g., in terms of independence and interdependence). Over time, however, they may come to ‘fit in’ with regard to their self-construals—a process we consider the ‘acculturation of self’. The current research aims to shed first light on the acculturation of self in reference to two studies. First one of these two compares Turkish immigrants in Belgium to their Belgian counterparts and assesses the self-construals by means of Kağıtçibaşı’s (2007) autonomy-relatedness scale; the other one compares Chinese-British biculturals to British and Chinese monoculturals and assesses the self-construals using the seven-dimensional scale by Vignoles and colleagues (2016). In our analysis, we first develop a novel method to capture the extent to which minorities’ self-concepts ‘fit’ with those that are perceived as typical of the majority. Subsequently, we test if minorities’ cultural fit in terms of self-concept is associated with their cultural engagement (e.g., years spent in majority culture, quantity of social contact with the majority, etc.) as well as identification with home and majority cultures and acculturation attitudes. Together, these studies expand the phenomena to be studied in terms of cultural fit and provide first insight into the acculturation of self.
Predictors of reading and writing skills in Brazilian elementary students

Tamires Zar (1,2) and Sylvia Domingos Barrera (1)

(1) University of São Paulo, Brazil; (2) ULB

Aspects related to visual perception were prevalent in pioneering studies on reading and its disabilities. Now, linguistic abilities related to phonological processing have been pointed out as the most relevant to explain success or failure in learning how to read. Nevertheless, these abilities are not enough to explain all the aspects related to the reading and writing deficits. Therefore, the main objective of this work was to analyze the contribution of visual and phonological processing skills in reading and writing performances on a sample of young children (1st to 5th grade) to better understand the contribution of these skills on the development of reading and writing. Our present sample is composed of 26 literate participants aged between 6 and 11 years (M = 8.27, S.D. = 1.37), from two Brazilian private schools. They were submitted to tests of words reading, spelling, phonological awareness, phonological working memory, visuospatial working memory, visual perception, and rapid automized naming (RAN). The study followed a cross-sectional design, with multiple regression analysis, with reading and writing as criterion variables. Results show an important role of phonological working memory in the early years, endorsing its importance in learning to read and write. Phonological awareness only appeared as a good predictor for writing, which highlights the difference between reading and writing learning processes. Visual processing skills were not good predictors for neither variables. Finally, RAN was the only variable presented as a good predictor for both skills analyzed, confirming its importance in reading and writing development.
Assessment of the executive function of mice trained in a fixed ratio schedule of reinforcement

Aurélie Zaros (1) and André Ferrara (1)

(1) ULiège

Operant tasks allow to study various behavioral and cognitive processes such as motivation, impulsivity, attention, memory or behavioral flexibility and are commonly used in animal models of brain pathologies (Blackshear et al., 2011; Trueman, Dunnett & Brooks, 2012). One of the simplest operant tasks is the fixed ratio schedule of reinforcement (FR). In this task, animals must provide a set of operant responses to obtain a food reward. Although simple, this test allows to obtain various behavioral indexes linked to motivation or general motor skills and several conventional measures are generally acquired like the post-reinforcement pause, the rate of reinforcement and the inter-response time (Alderson and al., 2012; Thompson et al., 2016; Tsutsui and al., 2011). However, there is a lack of interest in the executive function: how do animals plan their behavior? In this study, we focused on the distribution of food tray visits produced under a FR30 to examine how animals checked the consequences of their responses. We found that the more responses they had produced, the more frequently they checked the food tray, suggesting that animals planned their actions using a mental representation of the ratio of responses to be produced. Thus, we conclude that the analysis of the food tray visits helps to assess the planning ability of animals, providing an additional efficiency measure of the operant behavior.
The current study investigated to what extent language and culture shape emotional experience. Specifically, we randomly assigned 178 Chinese-English bilinguals to report on emotional situations, cultural exposure, engagement, and language proficiency in either English as a foreign language (LX) or Chinese (L1). We established their fit with both the typical patterns of emotions among British and Chinese monolinguals and predicted these fit indices from the survey language, cultural exposure, and engagement. Whereas monolinguals fitted their own culture’s emotional patterns best, bilinguals fitted both the typical LX and L1 patterns equally well. The survey language affected bilinguals’ emotional fit, but there was no evidence for true frame switching. Rather, bilinguals with low exposure to English encountered a drop in emotional fit when using English. Yet, this negative effect of survey language was buffered when bilinguals had better quality interactions with Westerners that are likely to foster conceptual restructuring in the LX.