AARHUS UNIVERSITET

CONTENTS

WELCOME

DEAR CONFERENCE PARTICIPANT

Welcome to Aarhus!

We are very happy to host this international conference bringing together the fields of human and non-human research on autobiographical and episodic memory. Together we will attempt to approach an answer to the intriguing question: How different are human and non-human animals at remembering their individual past?

Determining the memory systems that support non-human animals' ability to remember past events is currently the focus of an intense research effort and a lively debate. Generally, comparative psychology has adopted Tulving's framework by focusing on whether animals remember what-where-when something happened (i.e., episodic-like memory). In contrast, research on human memory for past events (i.e., autobiographical or episodic memory) involves a variety of conceptions that have been absent from - or less studied in - the animal literature, such as the distinction between specific episodes versus general events, intentional versus unintentional recall, as well as the link between remembering events in the past and imagining events in the future.

We believe that there is a need for bringing research on human and non-human event memory closer together and to explore the ways in which these two fields may enrich and challenge one another conceptually as well as methodologically.

At this conference some of the most outstanding researchers and scholars in these areas present their key findings and particular perspective on the conference topic. In addition, we have a poster session in which excellent researchers from many different countries present some of their most recent and exciting findings concerning how human and non-human animals remember their past. We are very pleased to see the perspectives of these fields being brought together at one conference, and look forward to some stimulating and thought provoking days.

Thank you for coming to Aarhus. We hope you will enjoy your stay.

The Conference Committee

Dorthe Berntsen
Annette Bohn
Anne Scharling Rasmussen
Katrine Willemoes Rasmussen
Marie Kirk
Jette Odgaard Villemoes
Tine Bennedsen Gehrt

The conference is hosted by Center on Autobiographical Memory Research (CON AMORE), a Center of Excellence funded by The Danish National Research Foundation and Aarhus University.

ABOUT **THE PROGRAM**

The program

The conference program consists of ten keynote presentations and one poster session.

Each keynote presentation reviews and discusses findings in a particular area of autobiographical memory research in a comparative perspective. A 60 minute time slot is scheduled for each keynote presentation, including 15-20 minutes for discussion.

Keynote presenters are kindly asked to leave time for discussion.

The poster session

The poster session is scheduled after lunch Wednesday. There will be coffee and tea available during the poster session.

In order to allow plenty of time to discuss the posters with the presenters, the poster session is scheduled for 1.5 hours.

Poster presenters are expected to be present at their poster during the scheduled session. The posters can be displayed from Wednesday morning, and can be on display both conference days.

PHOTO: STINE ODGAARD VILLEMOES (2013)

COMPARATIVE PERSPECTIVES ON AUTOBIOGRAPHICAL MEMORY

Wednesday 18th June

8.15 - 8.45	Foyer area	Registration and coffee	
8.45 - 9.00	Scandia Room	Welcome address	Dorthe Berntsen
9.00 - 10.00	Scandia Room	Keynote speech	Daniel L. Schacter
10.00 - 11.00	Scandia Room	Keynote speech	Eleanor A. Maguire
11.00 - 11.30	Foyer area	Break with refreshments	
11.30 - 12.30	Scandia Room	Keynote speech	David C. Rubin
Lunch and poster session			
12.30 - 13.30	Restaurant Scenario	Lunch	
13.30 - 15.00	Suecia Room	Poster session and refreshments	
15.00 - 16.00	Scandia Room	Keynote speech	Jonathon D. Crystal
16.00 - 17.00	Scandia Room	Keynote speech	Nicola S. Clayton Clive Wilkins
17.30 - 18.30	Aarhus City Hall	Reception	
19.00 - 22.00	Restaurant Scenario	Conference dinner	

Thursday 19th June

9.00 - 10.00	Scandia Room	Keynote speech	Martin A. Conway
10.00 - 11.00	Scandia Room	Keynote speech	Dorthe Berntsen
11.00 - 11.30	Foyer area	Break with refreshments	
11.30 - 12.30	Scandia Room	Keynote speech	Josep Call
12.30 - 13.30	Restaurant Scenario	Lunch	
13.30 - 14.30	Scandia Room	Keynote speech	Thomas R. Zentall
14.30 - 15.00	Foyer area	Break with refreshments	
15.00 - 16.00	Scandia Room	Keynote speech	Michael Corballis
16.00	Scandia Room	Thanks and Goodbye	Dorthe Berntsen

KEYNOTE PRESENTATIONS

Josep Call
Max Planck Institute for Evolutionary Anthropology (GER)
School of Psychology and Neuroscience,
University of St Andrews (UK)

Great Ape Memories

Historically, research on animal memory has contributed in significant ways to the growth of the field of comparative cognition. However, unlike research on human memory, comparative researchers have only recently begun to investigate the different systems (and their properties) underlying long-term memory in non-human animals. Most studies on this area have used species of rodents and corvids while great ape long-term memory has remained virtually unstudied. Great apes are long-lived, large-brained, feed on a high-quality diet, and are socially complex. This combination of traits might be associated with the development of precise long-term memories for events both in the ecological and social domains. I will present data on long-term memory in the great apes engaged in (non-social) problem solving tasks. I will focus on both encoding and retrieval aspects, placing a special emphasis on the constellation of cues that are associated with particular events and that trigger the memories about information that is needed to solve tasks weeks, months, or even years, after witnessing the original events.

Nicola S. Clayton & Clive Wilkins
Department of Psychology
University of Cambridge (UK)

The Projection of Self in Time

Re-living memories and imagining future scenarios lies at the heart of humanity. The very nature of imagination impedes and disorientates memories, and diversifies reality. We make use of this to define multiple realities, coexisting side by side. But are we unique among the animal kingdom in travelling mentally in time?

Martin A. Conway
Department of Psychology
City University, London (UK)

On the Evolution of Autobiographical Memory

I suggest that there are two memory systems. One system is a temporo-occipital system and mediates the processing of episodic memories – the episodic system. The other is a frontal-temporal system and mediates conceptual processing – the conceptual system. The episodic system is phylogenetically older than the conceptual system, it is ontogenetically earlier too, and may underpin the conceptual system. The episodic memory system is species-general whereas the conceptual system, at least in its full form, is only present in humans. I explore some of the implications of this view for memory in other species.

Michael Corballis
School of Psychology
University of Auckland (NZ)

Mental Time Travel and Language: What You Can and Cannot Tell

A longstanding tradition in psychology is that only humans can travel mentally in time, reliving autobiographical memories or imagining future episodes. One reason for this may be that only humans have language, and language is exquisitely designed to convey the nonpresent; it is through the invention of symbols and grammatical rules to represent and convey events that language allows us to tell our stories. Evidence from hippocampal recordings, in rats as in humans, nevertheless suggests neurophysiological replay of past events and preplay of possible future ones. Why, then, did only humans evolve a way of communicating their mental time travels? The answer may lie in the complexity of human social and material life, and the benefits of sharing this complex information.

KEYNOTE PRESENTATIONS

Jonathon D. Crystal
Department of Psychological & Brain Sciences
Indiana University (USA)

Remembering the Past and Planning for the Future in Rats

A growing body of research suggests that rats represent and remember specific unique earlier events from the past. Recent evidence suggests that rats may also represent events that are anticipated to occur in the future. Here I review studies which suggest that rats have detailed representations of the past, including (1) memory of what, where, and when earlier events occurred, (2) memory of incidentally encoded episodes that may be used to answer unexpected questions, (3) memory of the source by which their information was acquired. Evidence that rats represent events that are anticipated to occur in the future comes from (1) time-based and (2) event-based prospective memory. I also review evidence that practicing memory retrieval functions to improve subsequent successful memory performance. Overall, memory properties include retrieval of complex information about events, unexpectedness, long retention intervals, binding, and planning, which establish rats as a valuable animal model of event memory.

Eleanor A. Maguire
Wellcome Trust Centre for Neuroimaging
University College London (UK)

Scenes, Spaces and Memory Traces: How Do Humans Recollect the Past?

Human beings are not designed to live in the moment. We spend an inordinate amount of our time inhabiting the past, the future, other worlds, other minds. While it is recognised that brain regions such as the hippocampus are vital for supporting memories of our past experiences and thoughts about the future, we still lack fundamental knowledge about the mechanisms involved. In this talk I will argue that in order to leverage this long-standing issue, traditional notions regarding the architecture of memory should be set aside. I will present neuropsychological and neuroimaging evidence for a new framework that elucidates the neural substrates of autobiographical recollection, and which could also facilitate a new dialogue across species.

David C. Rubin
Department of Psychology and Neuroscience
Duke University (USA)

Event Memory: The Basis of Autobiographical Memory in Human and Non-human Animals

A key problem that hinders progress in understanding autobiographical memory across species is the concept of episodic memory: (a) a memory system, for events that (b) the person (c) doing the recalling (d) had at a particular time, and (e) that are recalled with a sense of mental time travel. Consider instead, event memory, a mental construction of a scene from a particular location and recalled as single occurrence (a) without a dedicated memory system (b) by human and non-human animals, (c) even those who were not participants in the event and (d) even if the construction is a summary of more than one occurrence. Event memory requires mentally placing oneself at a location, introducing a 'self' located in space and time, (e) which allows for, but does not necessitate, a sense of reliving or mental time travel. Event memory does not exclude from classification explicit memories of real and fictional events in which one did not participate, similar repeated events, and events recalled without a sense of reliving. Event memory integrates and accounts for laboratory and real world behavioral data from humans and non-humans and for neural data, including human neuropsychological and neuroimaging data, better than episodic memory. In doing so, it allows discussion to focus on data rather than a once useful definition that is now contradicted by the decades of accumulated data it spawned.

Daniel L. Schacter
Department of Psychology
Harvard University (USA)

Constructive Memory and Imagining the Future

A growing number of studies have shown that imagining or simulating future events depends on much of the same neural and cognitive machinery as does remembering past events. According to the *constructive episodic simulation hypothesis*, simulation of future events requires a system that can draw on the past in a manner that flexibly extracts and re-combines elements of previous experiences, sometimes producing memory distortions that reflect the operation of adaptive processes. This talk considers two lines of work that illuminate our understanding of constructive memory and episodic simulation. First, I will consider evidence that illuminates cognitive and neural mechanisms associated with adaptive memory distortions produced by reactivating or retrieving episodic memories. Second, I will consider the question of whether similarities between remembering the past and imagining the future are better explained by general, non-episodic mechanisms than by episodic mechanisms in light of recent work using a specificity induction to target episodic retrieval processes on memory and imagination tasks.

KEYNOTE PRESENTATIONS

Thomas Zentall
Department of Psychology
University of Kentucky (USA)

Episodic Memory: The Answer to a Surprising Question*)

The search for episodic memory in nonverbal animals has focused largely on the "what, where, and when" criterion proposed by Tulving (1972). However, we have argued that an important characteristic of human episodic memory is that at the time of the to-be-remembered episode, it should not be anticipated that a later request would be made to recall the episode (i.e., the request should be a surprise). Otherwise, one cannot rule out the possibility that the memory was an example of rule learning (a semantic memory). For example, in humans, the question, "What did you have for dinner last night?" would generally qualify as an unexpected question. The requirement of surprise suggests that procedures that involve training with to-be-tested events could engage semantic memory. To better achieve the goal of an unexpected question, we have proposed using designs involving surprising tests and have found evidence for such memories, at least over very short retention intervals.

*) Co-authored with Rebecca Singer and Jessica Stagner. University of Kentucky

Dorthe Berntsen
CON AMORE
Aarhus University (DK)

Involuntary Autobiographical Memories: A Shortcut to the Personal Past

Involuntary autobiographical memories are memories of personal experiences that come to mind spontaneously – i.e., with no preceding attempt at retrieval. They are common in daily life, but were until recently ignored conceptually and empirically by cognitive psychology as well as by most research on episodic remembering in non-human animals. I present evidence suggesting that involuntary memories are a basic mode of remembering past events in humans, which is likely to also operate in some non-human animal species. In contrast to strategic recall, the activation of involuntary memories depends on cue-item discriminability – that is, the ability of a situational cue to associatively discriminate a past event from alternatives. It therefore is a context-sensitive, associative and relatively automatic way of recollecting past episodes, involving little executive control. I review evidence for this claim including findings from experimental studies inducing involuntary memories in humans, brain imaging studies, naturalistic studies with self-monitored recording in humans and some recent research with non-human primates.

CITY HALL **RECEPTION** WEDNESDAY 18TH JUNE 17.30

PHOTO: VISIT AARHUS, ANDERS HEDE

All conference participants are cordially invited to the Aarhus Municipality Welcome Reception at the Aarhus City Hall on Wednesday 18th June at 17.30. The City Hall is situated right next to the conference venue.

A member of the City Council will give a short welcome speech, and a light snack will be served.

Aarhus City Hall - despite being more than 70 years old, Aarhus City Hall is still a modern, functionalistic building. Built by Arne Jacobsen and clad with Norwegian marble, it represents Danish design and architecture at its best.
(Text from Visit Aarhus website)

Scan the code and read more about the City Hall on Wikipedia

ALL RECEPTION PHOTOS: STINE ODGAARD VILLEMOES (2013)

OVERVIEW OF **POSTER SESSION**

Wednesday 18th June
Suecia Room 13.30 - 15.00

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102 Association between overgeneral autobiographical memory and post-traumatic stress disorder: A literature review and meta-analysis. Stewart & Burnside
103 The relation between Posttraumatic Stress Disorder (PTSD) and depression symptoms and the psychological distance of positive and negative events. Janssen, Hearne & Takarangi
104 Relationship between Cognitive and Memory Complaints, PTSD symptoms and Neuropsychological Test Performance in Danish Veterans with mTBI. Pedersen
105 Autobiographical memory responsiveness to an induced negative mood state: Overgeneral memories in vulnerable and non-vulnerable students. Mitchell
106 Shame autobiographical memory: An integrative model for the relations among autobiographical and traumatic shame memory properties, shame feelings and psychopathology. Matos & Pinto-Gouveia
107 A functional approach to understanding Autobiographical Memory in Borderline Personality Disorder. Bech, Elklit & Simonsen
108 Self-Defining Memories in Dissociative Identity Disorder and Complex PTSD. Huntjens & Wessel
109 The neural basis of the encoding and involuntary recall of 'flashback' memories; Univariate and multivariate analyses. Clark, Niehaus, Duff, Smith, Woolrich, Mackay & Holmes

Comparative Studies on Memory

110 The impact of emotional state on episodic memory performance: A study using a reverse-translated approach. Zlomuzica, Adolph, Dere & Margraf
111 Dogs' memory and deferred imitation of human actions: How long do they remember and what do they recall better? Fugazza & Miklósi
112 Using a What-Where-Which Task to Investigate Episodic Memory in Children. Bryant, Dickerson, Ainge & Seed
113 Nociception and analgesia: Implications for pain and memory in *Python regius*. Williams, James, Bertelsen & Wang
114 Is Feeding Behaviour A Reliable Indicator Of Pain In Snakes? James, Williams & Wang
115 Source memory of multiple, interleaved events in rats. Smith & Crystal
116 Not stuck in time: Jays that can act for a future self can also act for a current other. Ostojić, Legg, Shaw, Cheke, Mendl & Clayton

PHOTO: COLOURBOX

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117 The benefits of forgetting in relation to emotion, cognition and behavior. Nørby
118 Strategies and knowledge used when reconstructing the dates of autobiographical events. Holm & Thomsen
119 Memory for Repeated Events: Memories of Dancers for Competitions and Shows. Ece & Gulgoz
120 The Direct, the Generative, and the Involuntary: A look at phenomenological differences. Ersoy & Tekcan
121 Accuracy of voluntary and involuntary retrieval: Effect of retention interval. Staugaard & Berntsen
122 Investigating the role of executive functions in voluntary and involuntary autobiographical memory retrieval. Kirk, Staugaard & Berntsen

Life Span Development and Narratives

123 Reminiscence bumps in the distribution of self-images across the lifespan. Rathbone, Holmes, Ellis & Moulin
124 I know my story and I know your story: Comparing peoples' knowledge of their own versus a close other's life story. Thomsen & Pillemer
125 The Emotion-Regulation Function of Autobiographical Memory. Wolf
126 Adults' earliest memories of songs and melodies based on a large stratified sample. Krøjgaard, Berntsen & Kingo
127 The content of autobiographical memories differ between men and women. Karlsson, Síkström, Jönsson & Willander
128 What happens when we compare the lifespan distributions of life script events and life story events? A cross-cultural study. Scherman, Salgado & Berntsen
129 The Distribution of Word-Cued and Important Autobiographical Memories in a Hypothetical 70-Year-Old. Koppel & Berntsen

Memory Development from Infancy through Adolescence

130 Small children's verbal and nonverbal long-term memory for short movies. Kingo & Krøjgaard

131 "That one makes things small": Experimentally induced involuntary memories in 3-year-olds. Krøjgaard, Kingo, Dahl & Berntsen

132 What eye tracking reveals about 20 month-olds' encoding process in an elicited imitation study. Sonne, Kingo & Krøjgaard

133 The Magic Shrinking Machine revised: The presence of props make a difference! Dahl, Kingo & Krøjgaard

134 Two-year old children's recall of scripted events. Dahl, Kingo & Krøjgaard

135 Exploring the relationship between episodic memory, future thinking and scene construction in pre-schoolers. Dickerson, Bryant, Ainge & Seed

136 Three-year old boys treasure pirate memories: Gender and episodic memory in pre-schoolers. Wessel, Rutten & Ruiter

137 Remembering the Past and Imagining the Future in Children with Anxiety Disorders. Ramsgaard & Bohn

Remembering the Past and Imagining the Future

138 Phenomenology of Mental Time Travel: What Differentiates Past and Future Thinking? Cordonnier, Barnier & Sutton

139 Retrieving the Past and Imagining the Future Interfere with Verbal Memory Consolidation. Craig, Della Sala & Dewar

140 Past and Future Mental Time Travel in Patients with Borderline Personality Disorder, Eating Disorders, Obsessive-Compulsive Disorder and a Control Group. A. S. Rasmussen, Jørgensen, O'Connor, Bennedsen, Godt, Bøye & Berntsen

141 You must want what I want! A connection between representing 'other times' and representing 'other minds'. Legg & Clayton

142 Patients with Prefrontal Lesions are More Impaired at Remembering the Past than Imagining the Future. K. W. Rasmussen & Berntsen

PHOTO: STINE ODGAARD VILLEMOES (2013)

POSTER SESSION
Wednesday 18th June, Suecia Room 13.30 - 15.00

Clinical Aspects of Autobiographical Memory

101 A multiple mediational study investigating links between experiential avoidance, depression and autobiographical memory

Rose Stewart and Elizabeth Burnside
North Wales Clinical Psychology Programme, Bangor University, United Kingdom
Contact information: pspcb8@bangor.ac.uk

Objectives: To further study the role of functional avoidance in the relationship between overgeneral autobiographical memory (OGM) and depression proposed in Willams et al.'s (2007) CaR-FA-X model by employing the Multidimensional Experiential Avoidance Questionnaire (MEAQ) (Gámez et al, 2011); a recently published self-report measure assessing six sub-types of avoidance. Design: A within-subjects multiple mediational design. Methods: 399 participants completed online self-report measures. The results were analysed using a multiple mediator model employing bootstrapping. Results: Significant relationships were observed between avoidance, depression and OGM and the overall effect of avoidance partially mediated the relationship between OGM and depression. Of the six MEAQ sub-scales, only Repression/Denial had a significant mediating role. Conclusions: Results indicate that functional avoidance observed in OGM may be due to individuals repressing or denying painful memories and feelings and that subsequently their personal insight may be diminished.

102 Association between overgeneral autobiographical memory and post-traumatic stress disorder: A literature review and meta-analysis

Rose Stewart and Elizabeth Burnside
North Wales Clinical Psychology Programme, Bangor University, United Kingdom
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To date, the only mental health conditions reported to be significantly associated with overgeneral autobiographical memory (OGM) are depression and post-traumatic stress disorder (PTSD); however, methodologies and results have varied widely. This paper reviewed and synthesised the evidence for an association between OGM and PTSD. Twenty three studies were grouped according to their design, and effect sizes were calculated for case-controlled studies. Nearly three-quarters (73%) of the case controlled studies initially reported a significant main effect of PTSD group on OGM, and the summary effect size calculated was large and significant (ES=1.04, 95% CIs 0.39 - 1.69). The results indicate a significant association between PTSD and OGM; although the evidence for a causal relationship is not conclusive. The wide variation in study quality and design caused significant difficulties in synthesising results. Issues in the research field and recommendations for future research are outlined.

PHOTO: COLOURBOX

103 The relation between Posttraumatic Stress Disorder (PTSD) and depression symptoms and the psychological distance of positive and negative events

Steve M. J. Janssen, Tara Hearne and Melanie K. T. Takarangi
School of Psychology, Flinders University, Australia
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Psychological distance refers to how far and how long ago an event feels to the person remembering the event and how distant this person feels to the past self who experienced the event. Psychological distance is related to the recollective experience of memories, but people with PTSD and depression symptoms remember positive and negative memories differently. Whereas people with depression symptoms have overgeneral memory for both positive and negative events, the key feature of PTSD is flashbacks, which are episodes in which the person relives a traumatic experience. In the present study, participants reported their PTSD and depression symptoms and the psychological distance of a positive and a negative personal event. In line with previous work, participants generally felt close to positive experiences and distant from negative experiences. However, participants with depression symptoms felt distant from the positive event, whereas participants with PTSD symptoms felt close to the traumatic event.

104 Relationship between Cognitive and Memory Complaints, PTSD symptoms and Neuropsychological Test Performance in Danish Veterans with mTBI

Anders Degn Pedersen
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The relationship between cognitive and memory complaints (CMC), post traumatic stress disorder (PTSD), and neuropsychological test performance (NP) in mild traumatic brain injury (mTBI) is complex. In this first study of Danish veterans with mTBI it was hypothesized that CMC would correlate positively with PTSD and negatively with NP. Sixteen veterans with mTBI incurred during service were neuropsychological evaluated, and assessed for CMC, PTSD, and emotional symptoms (Cognitive Failures Questionnaire (CFQ), PTSD Check List (PCL), Symptom Checklist; (SCL-ANX, SCL-DEP, SCL-8), and Perceived Stress Scale (PSS)). Results showed, in addition to high PCL- and CFQ-scores, a strong and significant positive correlation between CFQ and PCL (r_s=.77, p<.001), SCL (r_s>.79, p<.001), and PSS (r_s=.79, p<.001). There were no significant correlations between CFQ and 18 NP test-variables when adjusting for multiple testing. Results suggest that CMC in veterans with a history of mTBI are associated with PTSD and emotional distress and not NP.

105 Autobiographical memory responsiveness to an induced negative mood state: Overgeneral memories in vulnerable and non-vulnerable students

Andrew E.P. Mitchell
University of Chester, United Kingdom
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This study investigates the relative accessibility of autobiographical memories in those with and without a previous history of a depression. The effects of vulnerability (non-vulnerable or vulnerable) and self-reported mood (pre or post induction) on reactivity of autobiographical memories was shown in a mixed factor design. Mood induction procedure was used to induce a negative mood state. Mood state was measured using UWIST-MACL (Matthews et al, 1990) and subdivided into three main mood components. Overgenerality of memory was measured by SCEPT (Raes et al, 2007). Overall, the results indicate that autobiographical memory is a phenomenon that is in part dependent on induced negative mood state and in part dependent on previous vulnerability to depression. Findings discussed on the basis of the literature and some proposals on possible applications of the present findings.

106 Shame autobiographical memory: An integrative model for the relations among autobiographical and traumatic shame memory properties, shame feelings and psychopathology

Marcela Matos and José Pinto-Gouveia
Cognitive and Behavioral Research Centre (CINEICC), University of Coimbra, Portugal
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This paper explores the phenomenological properties of shame autobiographical memories (AM) and how these relate to their traumatic and centrality features, shame and psychopathology, using a sample of 412 participants from the general population. Results showed that AM properties were related to traumatic and centrality qualities of the shame memory, shame feelings and psychopathology. Across analyses strength of recollection, reliving and similarity of emotions, importance to self and rehearsal were the best predictors of traumatic and centrality features of shame memory, shame and psychopathology. Path analysis results revealed a complex mediational chain where reliving of emotions, importance to self and rehearsal properties of shame AM indirectly predicted heightened external and internal shame and elevated symptoms of depression, anxiety and stress through increased traumatic and centrality qualities of shame memory. This integrative model of shame AM may have implications to current conceptualizations of shame and autobiographical memory, and to clinical work.

107 A functional approach to understanding Autobiographical Memory in Borderline Personality Disorder

Morten Bech, Ask Elklit and Erik Simonsen
Psykiatrisk Forskningsenhed, Roskilde, Denmark
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Individuals suffering from borderline personality disorder (BPD) often report difficulties knowing who they are and making sense of their past and current experiences - A phenomena referred to as identity diffusion in the clinical literature. One of the main functions of autobiographical memory (AM) is to provide us with a consistent and coherent sense of self and allow us to make sense of our past, present, and future experiences. Therefore it seems likely that a group suffering from identity diffusion - e.g. with BPD - should in some way differ in their use of AM. This poster presents data on AM in individuals with BPD and the functions of self vs. directive memories are discussed.

108 Self-Defining Memories in Dissociative Identity Disorder and Complex PTSD

Rafaële J. C. Huntjens and Ineke Wessel
University of Groningen, the Netherlands
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In dissociative identity disorder (DID), different identities serve different functions, with trauma identities focused on the reliving of past traumatic experiences, while other identities focusing on the avoidance of trauma and the functioning in daily life. DID patients were asked to retrieve self-defining memories in both a trauma state and an avoidant state. The results indicated that in both identity states, DID patients retrieved more trauma-related memories compared to healthy controls. Their scores were comparable to a control group of (complex) PTSD patients. In trauma identity states, the patients retrieved emotionally negative, trauma-related memories (e.g., memories of actual traumatic incidents), while in avoidant identity states, they retrieved positive, trauma-related memories (e.g., memories of learning to cope with the consequences of trauma). These differences in retrieval of self-defining memories might contribute to the formation or maintenance of a different self-construct in different identities, hindering the formation of a stable self-system.

109 The neural basis of the encoding and involuntary recall of 'flashback' memories; Univariate and multivariate analyses

Ian A. Clark[a], Katherine Niehaus[a], Eugene P. Duff[a], Stephen M. Smith[a], Mark W. Woolrich[a], Clare E. Mackay[a] and Emily A. Holmes[b]
[a] University of Oxford, United Kingdom
[b] MRC Cognition and Brain Sciences Unit, Cambridge, United Kingdom
Contact information: ian.clark@psych.ox.ac.uk

In everyday day life memories of past events are often spontaneously and involuntarily recalled to consciousness. Clinically, these involuntary memories, herewith "flashbacks", are a hallmark symptom of posttraumatic stress disorder. Yet only some moments of trauma return as a flashback. We conducted a neuroimaging study to investigate the neural signature of flashback encoding and flashback involuntary recall. Participants underwent fMRI while exposed to traumatic film footage known to induce flashbacks. After film viewing, participants indicated within the scanner if they experienced a flashback of the film. Further flashbacks were recorded over the following week. Univariate analysis found a widespread neural signature during both flashback encoding and involuntary flashback recall. Machine learning was able to predict whether a participant would experience a flashback of a particular scene solely from the brain activation during film viewing. Results suggest that involuntary flashback memories are characterised by a distinct widespread pattern of neural activation.

VIEW OF THE SOUTH PART OF THE UNIVERSITY CAMPUS PHOTO: LARS KRUSE, AU COMMUNICATION

Comparative Studies on Memory

110 The impact of emotional state on episodic memory performance: A study using a reverse-translated approach

Armin Zlomuzica[a], Dirk Adolph[a], Ekrem Dere[b] and Jürgen Margraf[a]
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[b] Université Pierre et Marie Curie, Paris, France
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Our rodent model of episodic-like memory is currently used to investigate the genetics, neuropharmacology and neuroanatomy of episodic-like memory. Following a reverse-translational approach, we have now generated a human version of the episodic-like memory test that utilizes virtual reality techniques. It has been proposed that emotional activation is a prerequisite for episodic memory formation. We tested here whether the induction of a positive and/or a negative emotional state had a beneficial effect on episodic memories in our newly developed task. Healthy participants were subjected to either an anxious, neutral or positive film material and subsequently explored a virtual reality apartment at different time points. At each time point a different scenario was presented. Our preliminary data point towards an enhanced episodic memory performance under the negative state induction. Our findings further confirm that our tasks are suitable for the cross-species assessment of neurobiological and pathological mechanisms of episodic memory.

111 Dogs' memory and deferred imitation of human actions: How long do they remember and what do they recall better?

Claudia Fugazza and Ádám Miklósi
Department of Ethology, Eötvös Loránd University, Budapest, Hungary
Contact information: claudia.happydog@gmail.com

Deferred imitation is the ability to encode the demonstration of an action and replicate it after a delay. We used the Do as I do paradigm (Topál et al. 2006) to study dog's (n=12) memory of novel human actions after intervals longer than 1 hour. We also assessed what information dogs (n=16) remember better between the location and the object manipulated during the demonstration. Our results showed that dogs were typically able to recall and imitate the demonstrated action after 1 hour and 2 hours (Binomial tests $P<0.0001$) and their memory tended to decrease after 12 hours (Binomial test $P<0.071$). When spatial information and object information were made incongruent after the demonstration, dogs typically matched the spatial information (Fisher's Exact test $P=0.0002$). In conclusion dogs possess the ability to encode and recall human demonstrated actions after long delays and tend to match spatial information more than object information.

112 Using a What-Where-Which Task to Investigate Episodic Memory in Children

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Tests investigating episodic memory have largely focused on spatial-temporal relations between objects or events (what-where-when). Eacott and Norman (2004) suggested this was problematic in rodent testing and devised a new paradigm integrating information about object, location and context in which it is encountered, what-where-which (WWWhich), with promising results. Using context as a cue to episodic memory may be an alternative to temporal information as a way to disambiguate a unique event, yet remains unexplored in other species. We propose that the relationship between paradigms can be explored by adapting the WWWhich task for use with pre-school children. By comparing differences in performance on the WWWhich test with other tests of episodic memory we can investigate to what extent they share a common cognitive mechanism. Validating WWWhich as a test of episodic memory would provide crucial links between the fields of child development, comparative memory research and neuroscience.

113 Nociception and analgesia: Implications for pain and memory in *Python regius*

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Nociception was central to forming a neurological model of memory in comparative studies. Physiological measures that relate to the experience of pain can be useful in investigating pain and memory in non-verbal, non-social and relatively behaviourally unresponsive species such as squamates. In the present study we investigated the impact of two opiate drugs that are commonly used to reduce pain and the memory of pain in mammals, on physiological parameters related to the nociceptive stimulus of subcutaneous capsaicin injection in the snake *Python regius*. The opiates reduced the change in heart rate in response to nociception 7hrs after their injection. Differing receptor subtype bias (morphine - μ and butorphanol - μ/) were compared, and while both reduced heart rate, sedation was more profound with butorphanol. As pre-emptive analgesia is used to reduce the memory of pain in humans, this study may impact on our understanding of these concepts in reptiles.

114 Is Feeding Behaviour A Reliable Indicator Of Pain In Snakes?

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When measuring pain, it is pertinent to distinguish nociception from the cognitive process of pain perception; therefore the use of physiological parameters is problematic. However, the common definition of pain includes an adverse effect on normal behaviour, and while such effects have been characterised in some mammals and fish, virtually nothing is known about reptiles. This may be due to the challenges associated with assessing behaviour in these non-social and relatively inactive animals. In this study, a fixed protocol was used to examine how procedures involving either chronic or acutely painful stimuli affect the time course for the return to normal feeding in ball pythons (*Python regius*). Feeding behaviour was monitored on both a short-term (immediately after surgery) and long-term (the subsequent four weeks) basis with the aim of evaluating the use of such a model as an accurate representation of pain perception in the royal python.

115 Source memory of multiple, interleaved events in rats

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Source memory is a representation of the origin (source) of information. Human episodic memory relies on source information to bind together and differentiate between multiple, interleaved events. Previous research suggests that rats remember the source of encoded information. Here we asked if rats remember source information from multiple interleaved memories. Three lines of evidence implicate retrieval of multiple, distinct, and interleaved episodes. First, rats adjusted revisit rates to distinctive, replenishing locations based on the source of information. Second, by increasing memory load, we demonstrated that source information is encoded and remembered for each separate event. Third, when the similarity of multiple events was systematically manipulated to potentially produce patterns of interference and facilitation, we observed consistently high source-memory performance. We conclude that rats separately represent multiple episodes. Our model should facilitate attempts to elucidate the biological underpinnings of source-memory impairments in human memory disorders.

116 Not stuck in time: Jays that can act for a future self can also act for a current other

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According to the Bischof-Köhler hypothesis (BKH), non-human animals cannot anticipate and act towards the satisfaction of a future need not currently experienced or cued by their present motivational state. However, recent evidence has shown that Eurasian jays' (Garrulus glandarius) caching behaviour is not solely driven by the jays' current motivation but also takes their future desire for the cached food into account. Although the BKH has been put forward in the context of mental time travel, the ability to overcome one's current state has also been proposed to underlie thinking about others' internal states (state-attribution). Here, we present and discuss evidence that jays' actions for another individual are also not solely driven by their own current state but take the other's mental state into account: male jays' food-sharing behaviour is not entirely driven by their own current state but takes into account their female partner's desires.

PHOTO: COLOURBOX

Cueing and Retrieval Processes

117 The benefits of forgetting in relation to emotion, cognition and behavior

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What are the positive functions of forgetting? Memory loss is often associated with frustration in everyday life. Yet forgetting does not have exclusively negative consequences, and in this presentation I suggest that forgetting serves three constructive purposes. First, forgetting is part of emotion regulation, and promotes subjective well-being by limiting access to negative memories and by reducing unpleasant affect. Second, it is involved in knowledge acquisition, and provides a basis for obtaining semantic and procedural knowledge. Third, forgetting is part of behavioral attunement, and orients information-processing for the present and the future by facilitating environmental sensitivity, and by ensuring that knowledge is up to date. Overall, it is suggested that forgetting helps people to be happy, well-organized, and context sensitive, and thereby serves fundamentally adaptive functions.

118 Strategies and knowledge used when reconstructing the dates of autobiographical events

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Individuals rarely remember the dates of specific memories. Rather they reconstruct dates using a variety of strategies and knowledge. In this study, we examined how often individuals use and combine different types of strategies and knowledge. Forty-five participants were each presented with diary descriptions of approximately 42 events from their first term at university that they had written 3 ½ years prior and were asked to date remembered events while they thought out loud. The results revealed that participants most frequently used period knowledge as a strategy in dating events. Other frequently used strategies were temporal schemas and temporal landmarks. Participants often combined strategies. Most frequently they combined period knowledge and temporal landmarks. The study provides insight into the mechanisms contributing to locating autobiographical memories in time.

119 Memory for Repeated Events: Memories of Dancers for Competitions and Shows

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Autobiographical memory studies generally focus on first-time, last-time, traumatic, emotional, or life changing events. The current study contributes to the limited research on memory for repeated events. Memories of dancers for dance competitions and shows were examined. A total of 57 dancers (22 male) participated (Age, $M = 27.65$, $SD = 4.17$). They reported memories of three competitions and shows. Memory for a movie was asked as a control event. Participants reported event qualities for each event. Results showed that competition, show, and movie memories were different in event characteristics such as importance and emotional intensity. There were no differences in the phenomenology of remembering, indicating that shows and competitions were as ordinary as remembering a movie for dancers. Analyses of retrieval order showed that first reported events were the most important, emotionally positive, and intense memories. Event qualities declined as a function of the retrieval order.

120 The Direct, the Generative, and the Involuntary: A look at phenomenological differences

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Although several studies compared characteristics of involuntary (IAM) vs voluntary autobiographical memories (VAM), potential differences in retrieval processes of VAMs have generally been neglected. The present study investigated phenomenological differences between IAMs and VAMs, by taking into account whether the latter were recalled through direct versus generative retrieval. In Study 1, IAMs were elicited through the Vigilance Task, and VAMs through cue words. Results showed that retrieval times of IAMs and directly accessed VAMs were shorter than that for VAMs accessed through a generative process. They were also rated higher in several phenomenology variables (measured by the AMQ). Study 2 further compared IAMs and VAMs by manipulating the similarity of the cues used in retrieving voluntary and involuntary memories.

121 Accuracy of voluntary and involuntary retrieval: Effect of retention interval

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Humans have quite accurate memory, but we do make some errors. One type of memory error is binding errors, where we remember the wrong details associated with an event (e.g., who attended the conference last year). During voluntary remembering, we use different monitoring strategies to gauge the accuracy of our memories. The question is whether such strategies are also used during involuntary retrieval. Involuntary retrieval is a cue-driven, automatic form of recollection we likely share with other animals. If there is no monitoring for accuracy during involuntary retrieval, this might mean that such retrieval is less accurate compared with voluntary retrieval. However, the opposite could also be true if monitoring enables greater interference. Finally, the effect of retrieval strategy on accuracy might also be moderated by the passage of time. The purpose of the present series of experiments is to examine these possibilities.

122 Investigating the role of executive functions in voluntary and involuntary autobiographical memory retrieval

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Research has shown how voluntary autobiographical memory is affected in terms of increased retrieval times and reduced output specificity, when the executive control mechanisms that facilitate this kind of retrieval must compete with a concurrent task for executive resources. However, relatively little is known about how increased executive function demands from a concurrent task may impact on involuntary autobiographical memory retrieval. We introduce one of the first experiments to systematically manipulate executive function demands during both voluntary and involuntary autobiographical memory retrieval in order to examine whether the two types of retrieval are affected differently. If involuntary retrieval is an automatic and purely stimulus-driven process that only requires minimal attentional capacity, then this type of retrieval should ideally be able to occur simultaneously and unimpeded in the face of competition from a secondary task.

Life Span Development and Narratives

123 Reminiscence bumps in the distribution of self-images across the lifespan

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One explanation for the reminiscence bump (preferential retrieval for events in young adulthood) is that it reflects periods of identity formation. To test this identity formation account we plotted the lifespan distribution of 324 self-images (in the form of 'I am' statements, e.g., 'I am a dancer') which were freely generated by 82 adults over the age of 40 (range 40 – 81) and dated for age of self-image formation (e.g., when participants felt each self-image became part of their identity). The self-images were categorised by type (e.g., traits, social roles, evaluative statements) and valence (positive, negative and neutral). Results showed a prominent reminiscence bump in adolescence for traits and negative and positive self-images, and a later bump in participants' twenties for social and neutral self-images. Results are discussed with reference to theories of the reminiscence bump and the role of self-images in the organisation of autobiographical memories.

124 I know my story and I know your story: Comparing peoples' knowledge of their own versus a close other's life story

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Personal life stories have been widely researched. But individuals also have knowledge of other peoples' life stories, and almost no studies have examined this. In two studies, we examined similarities and differences in peoples' knowledge of their own and a close other's life story. Participants were 170 and 143 students, who identified chapters and specific memories in their own and/or a close other's life story, rated these on emotional valence and completed measures of personality traits. Both studies showed that participants identified more chapters and specific memories in their own life story and rated their own life story as more positive. Study 2 showed that number of chapters, specific memories and emotional valence in own and close other's life stories correlated positively. Personality traits were more consistently related to the emotional valence of one's own life story than to the emotional valence of the close other's life story.

125 The Emotion-Regulation Function of Autobiographical Memory

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Current research distinguishes between a *self*, a *directive*, and a *social* function of autobiographical memory. From a lifespan perspective, the frequency in which these functions are used is expected to decrease with age. Recent findings showed that this decrease could be adequately described by a linear function of age. In contrast, the associations among these functions have been found to increase with age (*dedifferentiation*). The present study extends previous work by investigating a possible fourth function, namely, an emotion-regulation function. In an empirical study based on a lifespan sample, the *Thinking About Life Experiences Questionnaire* (TALE) was extended by ten theoretically derived items assessing the emotion-regulation function. A series of factor analysis supported the presumed four-factor structure. Moreover, the use of the new emotion-regulation function followed a U-shaped pattern across age. This finding implies that not all functions of autobiographical decrease in their frequency linearly with age.

126 Adults' earliest memories of songs and melodies based on a large stratified sample

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In a recent study (Kingo, Berntsen & Krøjgaard, 2013) we investigated adults' earliest memories in a large stratified sample. Based on the same stratified sample, we here examined adults' earliest memory for songs and melodies encountered early in life in the context of childhood amnesia. Thus, the present study provides information on earliest memories of a prominent category of predominantly *recurrent* events. As expected the earliest memories of songs and melodies were not the adults' first memories. Women had earlier first memories of song/melodies than men, whereas the adults' age had no impact. The scores on phenomenological qualities revealed that memories of the earliest memories of songs/melodies were typical, fragmented and highly positive. Interestingly, the quality of remembered 'parent communication quality' was a strong predictor of all the phenomenological qualities tested.

127 The content of autobiographical memories differs between men and women

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To communicate previously experienced events in language distinguishes human beings from other animal species. In the present study we investigated whether the content (i.e., the semantic representation) of autobiographical memories could predict gender. Previous studies investigating the relation between gender and episodic memory have mostly focused on phenomenological ratings, word counting or manual thematic coding. In the present study we used a fully computational algorithm, where 775 autobiographical memories were analyzed with latent semantic analysis (LSA). Eighty participants (60 women, 20 men) ranging in age between 19-40 years were asked to retrieve autobiographical events by means of cued retrieval. The retrieved memories were verbally described, transcribed and subjected to LSA. The semantic representation of the retrieved autobiographical memories reliably predicted the gender of the participants. In conclusion, the content of retrieved autobiographical memories differs between men and women.

128 What happens when we compare the lifespan distributions of life script events and life story events? A cross-cultural study

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Cultural life scripts contain information about commonly shared expectations regarding the timing and sequencing of important life events, such as marriage and childbirth. According to the cultural life script theory, the cultural life script helps individuals to remember important autobiographical memories and structure their own life stories. In the present study we collected cultural life scripts and life stories events from participants in Mexico, Greenland, China, and Denmark. We compared the lifespan distributions of cultural life script and life story events. Consistent with predictions based on the cultural life script theory and earlier empirical evidence, results showed an overlap between both distributions during the lifespan, except for the period of early infancy - where life story events were reduced, compared with life script events, possibly due to childhood amnesia. In addition, both distributions showed an increase of events during the reminiscence bump period and an overrepresentation of positive life events.

129 The Distribution of Word-Cued and Important Autobiographical Memories in a Hypothetical 70-Year-Old

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The reminiscence bump (the disproportionate number of autobiographical memories, in adults aged 40 and over, dating from adolescence and early adulthood) has been found for both word-cued and important autobiographical memories. However, the bump is often located earlier in the lifespan for word-cued memories than for important memories. In the current study, we examined whether the bump is likewise found at differential locations when probing not autobiographical memories per se, but the imagined autobiographical memories of a hypothetical, prototypical 70-year-old within one's culture. We found a striking parallel between this hypothetical bump and the actual bump in autobiographical memory: In particular, the bump for imagined word-cued memories was earlier than the bump for imagined most important memories (with the bumps located from ages 6 to 20 and 16 to 30, respectively). We discuss the implications of these findings for the mechanisms underlying the respective bumps in word-cued and important memories.

Memory Development from Infancy through Adolescence

130 Small children's verbal and nonverbal long-term memory for short movies

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Small children's long-term memory is typically investigated by either non-verbal/implicit memory tests or by explicit/verbal tests. This study investigated 33- and 39-month-old's verbal and non-verbal memory for short movies with a simple narrative after 6 months retention. Memory was tested by both eye-tracking (in the visual paired comparison paradigm) and by explicit verbal questioning, and these measures were compared with each other and with the children's productive vocabulary at encoding and test. The oldest children remembered the familiar movie both during visual paired comparison and in response to explicit questioning. In contrast, the youngest children only remembered the familiar movie in response to explicit questioning. Vocabulary at test was associated with both verbal and nonverbal memory but only for the youngest group of children. However, vocabulary was generally a better predictor of memory performance than age. These results are discussed in relation to memory development and different expressions of memory.

131 "That one makes things small": Experimentally induced involuntary memories in 3-year-olds

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We introduce a new method for examining involuntary autobiographical memories in 3-year-old children, by inducing them in a laboratory setting. Thirty-eight 3-year-olds, who had previously participated in a study in our lab involving highly unique props, were brought back after a one-month delay to the same lab arranged as in the original study and with the same Experimenter present. While waiting for the Experimenter in front of the props, their spontaneous verbalizations about the previous unique experiment were recorded, scored, and compared to those of 29 children of the same age who had no previous experience of the experiment. Relative to controls, children in the experimental group produced significantly more spontaneous verbalizations related to the to-be-remembered event measured on a variety of dimensions, suggesting that they involuntarily retrieved the past event. The new method is a promising approach to investigating involuntary memories in young children in a controlled lab setting.

132 What eye tracking reveals about 20 month-olds' encoding process in an elicited imitation study

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The present study investigated the encoding process of 20-month-old infants participating in an elicited imitation task by means of eye tracking. Current assessments of encoding within the elicited imitation paradigm have primarily focused on the *result* of the infants' encoding, i.e. the number of steps and number of correct sequences remembered from the demonstration. However, very little is known regarding the encoding *process* and *how* infants actually encode the relevant information. In the present study seventy-four 20-month-old infants were shown video demonstrations of 3-step action sequences of three different props while being eye tracked. Subsequently the infants were tested on their ability to reproduce the demonstrated sequences, both immediately after encoding and after a two-week retention interval. A control group of 22 infants provided baseline measures of the three props without any preceding demonstrations. Overall, the results were surprising. For instance, overall looking time correlated *negatively* with subsequent memory measures.

133 The Magic Shrinking Machine revised: The presence of props make a difference!

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In their seminal study Simcock and Hayne (2002) examined children's ability to translate a preverbal memory of a "Magic Shrinking Machine" (MSM) into language across 6 or 12 month delays. The verbal recall was conducted *without* the MSM being present. The results from Simcock and Hayne (2002) revealed that at no instance did the children verbally report information about the event that was not already part of their vocabulary at the time of encoding. By means of including an additional "machine" ("The Crazy Duplicator") as control in a 2 x 2 design, we could replicate the original study but with the machines present as a memory cue, while controlling for on-line reasoning. The presence of props did indeed make a difference. With the props present the children did use newly acquired words to describe the to-be-remembered event.

134 Two-year old children's recall of scripted events

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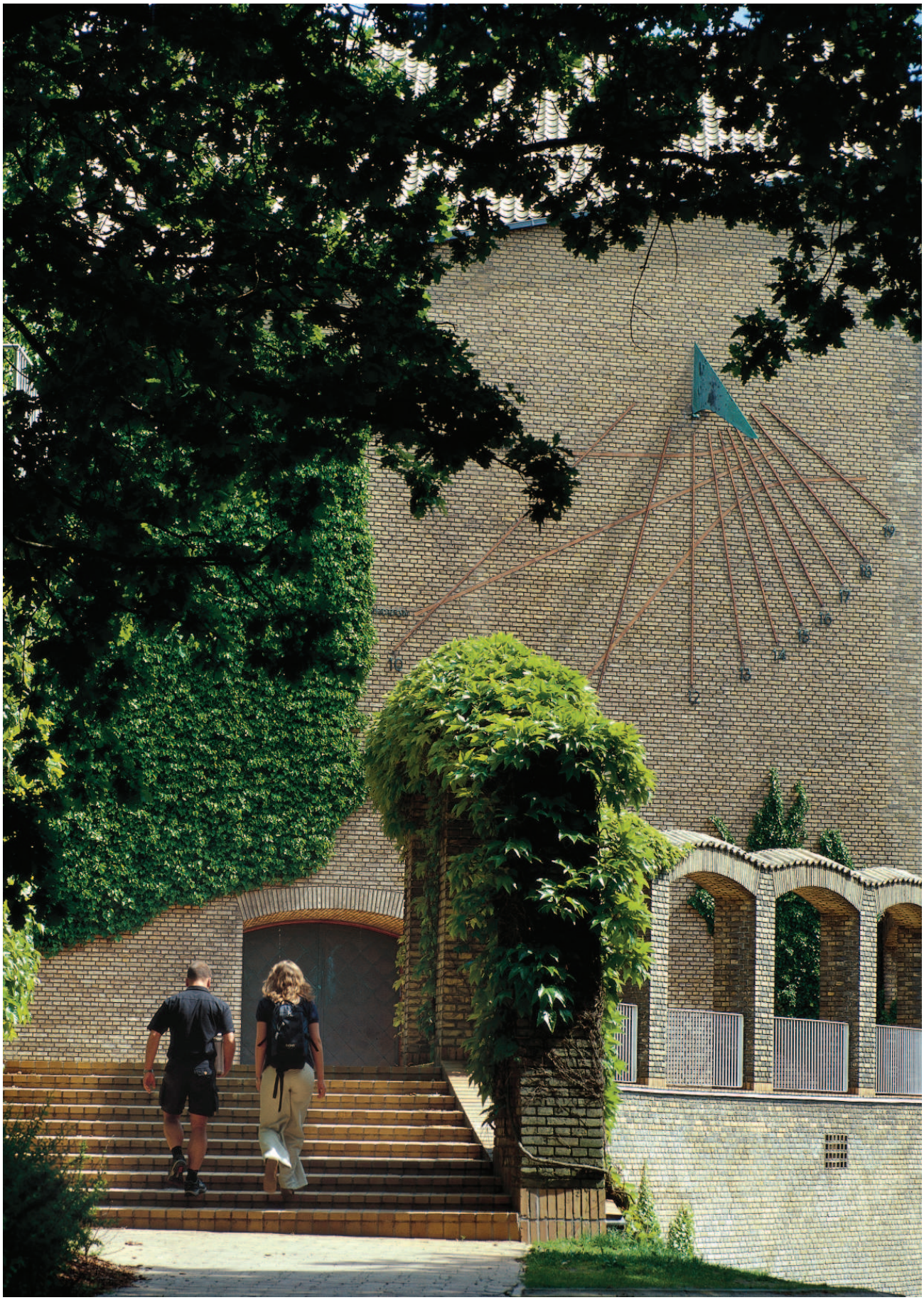
While numerous studies have investigated scripts in adults and verbally proficient children, few have looked into the development of scripts and their impact on memory in pre-verbal children. According to the Event-Schema and Fuzzy-Trace theories a child's increased experience with a particular event will produce a generalized level of recall with few episodic details (Fivush 1984; Hudson, 1990; Brainerd & Reyna, 2004). In contrast, based on theories on distinctiveness effects on memory (Hunt & Worthen, 2006), we would expect the atypical items or actions to be remembered better. In the present study, we investigated by means of the elicited imitation paradigm how two year-olds recalled expected and unexpected incidents in highly scripted events and more unfamiliar events, respectively. Overall the results revealed that unless the events were constrained by causal relations, then the scripts had substantial impact on the children's ability to remember the action sequences.



DETAIL FROM THE UNIVERSITY AULA AND PATIO

PHOTO: POUL IB HENRIKSEN, AU COMMUNICATION

135 Exploring the relationship between episodic memory, future thinking and scene construction in pre-schoolers

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The ability to mentally recreate past experiences and the ability to imagine future episodes are intimately connected in adults by a common network of brain regions, (Addis, 2007). The explanation for this link at a cognitive level is debated, but one popular notion is that both draw upon the cognitive skill of 'scene construction' (Hassabis, 2007). We propose that one productive line of research for exploring this hypothesis is to look at individual differences in imagination, memory and planning over child development. We describe a new test-battery consisting of interview techniques (carefully modified from those conducted on adults (Hassabis, 2007)) and experimental tests of memory and planning (versions of the so-called 'spoon test' (Suddendorf, 2005; Atance, 2013)). Differences will be evaluated within individuals and across development through an analysis of children between three and five years of age.

136 Three-year old boys treasure pirate memories: Gender and episodic memory in pre- schoolers

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Recently, Scarf and colleagues (2013) proposed that 3-year olds fail to retain episodic memories for longer than 15 minutes. In their study, children found a locked pirate's treasure chest in a sandbox. After a delay in which the child was elsewhere, the experimenter announced that they would return to the sandbox. Before returning, the child was to choose a present out of 3 items, including a key. More 4-year olds than 3-year olds selected the key, indicating better episodic memory. The present aim was to replicate this finding in a Dutch sample (N = 46). Unexpectedly, no overall age effects emerged. Instead, gender moderated age effects such that more 3-year old boys than 3-year old girls selected the key. Three-year old boys selected the key and mentioned the treasure chest as often as 4-year olds. These findings challenge the idea that episodic memories are rapidly forgotten at age 3.

137 Remembering the Past and Imagining the Future in Children with Anxiety Disorders

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Research has shown that for normal populations of children and adults, cultural life scripts play an important role for the ability to make sense of one's personal past, and, importantly, to imagine one's personal future positively. Cultural life scripts are culturally shared assumptions as to the order and timing of important life events (Berntsen & Rubin, 2004). In the present study we ask children with anxiety disorders to write their life story, to imagine the future and to generate a cultural life script before and after Cognitive Behavioral Therapy. We expect life stories of past and future to be more negative and show less evaluation of events in the anxiety group compared to a healthy population. Understanding the impact of anxiety on daily activities and fundamental functions like autobiographical memory and imagining the future is a step toward increasing our understanding of the functional effects of anxiety in childhood.

Remembering the Past and Imagining the Future

138 Phenomenology of Mental Time Travel: What Differentiates Past and Future Thinking?

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If the past can be known or remembered, the future can be imagined, simulated, planned for, pondered, pre-lived, projected or predicted. We can mentally time travel to it or have some type of episodic foresight or prospection. These terms, nested under the concept of "future thinking", demonstrate the diversity of the ways we can think about the future. In our study, we investigated how imagining a future event versus planning for it would affect the phenomenology of the thought event. We also compared these two types of future thinking tasks with a more traditional recall task in order to understand the similarities and differences between past and future thinking. With the use of factor analysis, we explored different aspects such as mental time travel, familiarity of the setting, emotions, perspective taking and personal importance.

139 Retrieving the Past and Imagining the Future Interfere with Verbal Memory Consolidation

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New memories are retained better if learning is followed by a few minutes of wakeful rest than by novel encoding. Novel encoding is said to interfere with the consolidation of recently acquired memories. We report four experiments in which we examined whether autobiographical retrieval/future imagination also interfere with consolidation. In Experiment 1 and 2 participants were presented with three word lists; one list was followed by wakeful rest, one by novel picture encoding and one by retrieval/imagination, cued by concrete sounds. Both novel encoding and retrieval/imagination lowered word list retention significantly when compared to wakeful rest. In Experiments 3 and 4 we demonstrated that this reduction in retention could not be accounted for by the sound cues alone or by executive retrieval processes. We propose that rich autobiographical retrieval/future imagination hampers the consolidation of recently acquired verbal memories, particularly so in the presence of external concrete cues.

140 Past and Future Mental Time Travel in Patients with Borderline Personality Disorder, Eating Disorders, Obsessive-Compulsive Disorder and a Control Group

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It is well-established that future as compared to past mental time travel (MTT) is characterized by an increased positivity bias as well as more effortful construction. The positivity bias for past events has been shown to be reduced in clinical populations, but little is known about the future positivity bias in such populations. Here, we asked patients with borderline personality disorder, eating disorders, obsessive-compulsive disorder and a non-clinical control group to generate important past and future events. Across all four groups, future as compared to past MTT was characterized by an increased positivity bias for future events, whereas there were only minor group differences in emotional valence. Future as compared to past event narratives were rated lower on coherency, consistent with more constructive effort. However, clear group differences were also identified with less coherent event narratives in the clinical groups relative to the control group regardless of temporal direction.

141 You must want what I want! A connection between representing 'other times' and representing 'other minds'

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The same cognitive mechanism has been proposed to underlie the ability to represent one's own mind at other times and the ability to represent others' minds. Previous research has shown that an adult's current state will bias their recollection of past episodes and prediction of future episodes. If representing one's own mind at other times and representing others' minds rely on the same cognitive mechanism then a similar bias would be expected when attributing mental states to others. Here we provide evidence that participants' decisions about what others might want to watch are biased by their own current state. The results indicate that similar biases occur when agents represent others' minds and when they represent their own mind at other times. We discuss these results and their implications for the cognitive mechanism governing the representation of 'other minds' and 'other times'.

142 Patients with Prefrontal Lesions are More Impaired at Remembering the Past than Imagining the Future

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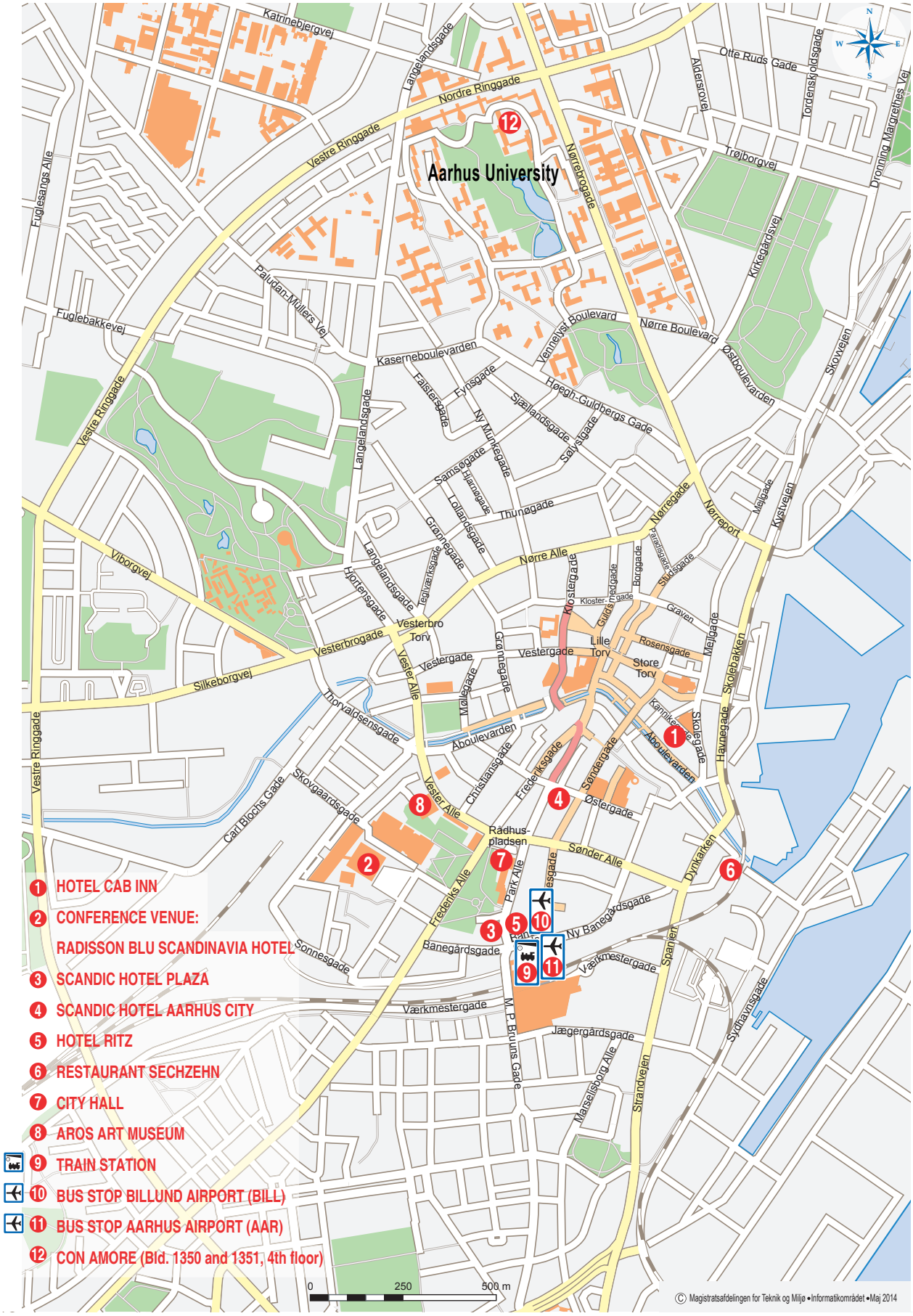
Functional neuroimaging have suggested that past and future mental time travel (MTT) activate a common network of brain regions including areas of the prefrontal cortex (PFC). Although patients with prefrontal damage are often described as blind to the future consequences of their decisions, and inclined to "live in the here and now", it is unclear whether and how the PFC mediates MTT into the past and the future. Here, PFC patients and healthy controls were asked to generate past and future events. PFC patients were impaired on both past and future MTT, generating fewer episodic details than healthy controls. Importantly, this effect of group was larger in the past condition than in the future condition. In contrast, for both temporal conditions, semantic details were comparable between groups. The findings suggest that PFC lesions can impair episodic aspects of event construction, affecting the future to a lesser extent than past MTT.

PHOTO: COLOURBOX


Aarhus University
1 HOTEL CAB INN
2 CONFERENCE VENUE:
RADISSON BLU SCANDINAVIA HOTEL
3 SCANDIC HOTEL PLAZA
4 SCANDIC HOTEL AARHUS CITY
5 HOTEL RITZ
6 RESTAURANT SECHZEHN
7 CITY HALL
8 AROS ART MUSEUM
9 TRAIN STATION
10 BUS STOP BILLUND AIRPORT (BILL)
11 BUS STOP AARHUS AIRPORT (AAR)
12 CON AMORE (Bld. 1350 and 1351, 4th floor)
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