2020
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Aging & Brain Health

Mental Health and Well-being

Featuring the 2nd Annual What's Next Canada Innovation Day

ABSTRACTS

Virtual Posters

1. **Perceived memory decline predicts future depressive symptoms in cognitively intact older adults – results across four large, independent samples**
   BHANG, I., HILL, N., MOGLE, J., BRATLEE-WHITAKER, E., BHARGAVA, S., & BELL, T. R.
   The Pennsylvania State University, College of Nursing, USA

   Three studies using four large, independent samples (n1= 1,162; n2=1,724; n3=5,069, n4=5,505) examined the concurrent and lagged associations among different types of memory self-report (frequency of memory problems, current memory rating, and perceived memory decline) and depressive symptoms. Data were drawn from longitudinal studies (range = 2-18 years of follow-up) and included cognitively intact, community-dwelling older adult samples. Results from autoregressive multilevel modeling showed that perceived memory decline was concurrently associated with depressive symptoms and predicted future depressive symptoms across all four samples. Self-reported frequency of memory problems and current memory ratings were inconsistently associated with depressive symptoms; across all samples, there were no temporal associations between these two items and depressive symptoms. Cognitively intact older adults who perceive memory decline may be at risk for future depressive symptoms.

2. **Evidence for alteration of frontal-executive and corticolimbic circuits in late-life depression and relationship to dementia: a systematic review**
   RASHIDI-RANJBAR, N., & MIRANDA, D., & BUTTERS, M. A., & MULSANT, B. H., & VOINESKOS, A. N.
   Institute of Medical Science, Faculty of Medicine, University of Toronto, Toronto, ON, Canada
   Campbell Family Mental Health Research Institute, Centre for Addiction and Mental Health, Toronto, ON, Canada

   Poster withdrawn from virtual poster session.

3. **Alterations in complex white matter architecture in aging**
   CHAD, J.A., PASTERNAK, O., & CHEN, J.J.
   Rotman Research Institute, Baycrest Health Sciences & Department of Medical Biophysics, University of Toronto, Canada

   Poster withdrawn from virtual poster session.

4. **Assessing intervention responsiveness of the memory impact questionnaire**
   PATRICK, B.J., SHAIKH, K.T., TROYER, A.K., RICH, J.B., & VANDERMORRIS, S
   Department of Psychology, York University, Canada

   Age-related memory changes can impact everyday living. We developed the Memory Impact Questionnaire (MIQ) to assess the impact of memory changes on nuanced aspects of everyday life, including adaptive coping, negative feelings about memory changes, and restrictions in lifestyle activities. Here, we examine the responsiveness of the MIQ to an empirically validated psychoeducational and memory strategy training intervention that has been qualitatively shown to mitigate the negative burden of age-related memory changes. Thirty-two older adult participants completed the MIQ before and after the intervention. Following the intervention, participants reported greater adaptive coping behaviours, $t(31) = -3.4$, $p = .002$, $d = 0.6$, as well as a reduced overall burden, $t(31) = -2.2$, $p = .03$, $d = 0.4$. No changes were reported in lifestyle activity restrictions or negative emotions. Our results indicate good responsiveness to intervention for the MIQ Positive Coping subscale and total score.

5. **Auditory GABA levels decline in aging and are associated with speech-in-noise understanding**

DOBRI, S. & ROSS, B.
Rotman Research Institute, University of Toronto Department of Medical Biophysics, Toronto, Canada

Older adults often have difficulty understanding speech in a noisy environment. This is in part due to hearing loss, but also age-related changes in central auditory processing which impair the brain's ability to separate speech sounds from background noise. Central auditory processing depends on a fine balance between excitatory and inhibitory mechanisms. Recent evidence suggests that this balance is upset in aging. In this study, we measured the level of the inhibitory neurotransmitter gamma- aminobutyric acid (GABA) in the auditory cortex using magnetic resonance spectroscopy (MRS). We found that GABA levels decreased with age. Moreover, we found that decreased GABA levels were more strongly related to deficits in speech-in-noise performance than chronological age. Our results indicate an age-related decline in inhibitory mechanisms which contributes to functional impairments.

6. **Prediction of cognitive status for elderly with hypertension by using the Neurocognitive Frailty Index**

PAKZAD, S., BOURQUE, P., SAUCIER, & FALLAH, N.
University of Moncton, Canada

Poster withdrawn from virtual poster session.

7. **Personality moderates the relationship between self-reported memory problems and depressive symptoms in adults aged 70 and older**

BRATLEE-WHITAKER, E., HILL, N. L., MOGLE, J., BELL, T., & BHARGAVA, S.
College of Nursing, The Pennsylvania State University, USA

This study examined associations between self-reported memory and depressive symptoms, and whether personality traits moderated these associations. A sample of community-dwelling older adults (N = 427; Mage = 76.69, SD = 4.72) was drawn from a longitudinal cohort study conducted in New York City. Participants completed an average of 3 waves of data. Annual assessments evaluated depressive symptoms and self-reported memory (frequency of forgetting, perceived one-year memory decline, and perceived ten-year memory decline). Personality (neuroticism, conscientiousness, and extraversion) was treated as a trait and assessed once. Multilevel modeling showed that for individuals higher in conscientiousness, higher frequency of forgetting was related to fewer depressive symptoms. This association was not significant for individuals lower in conscientiousness. Older adults who perceived a one- or ten-year memory decline were more likely to report depressive symptoms if they had higher levels of neuroticism. Results demonstrate nuanced relationships between self-reported memory, personality, and depressive symptoms.

8. **Parental dementia as a moderator of the association between depressive symptoms and memory complaints**

BHARGAVA, S., HILL, N.L., MOGLE, J., & BELL, T.R.
The Pennsylvania State University, USA

This study examined whether exposure to dementia in parents moderates the association of depressive symptoms with memory complaints in cognitively intact older adults. Data were drawn from a nationally representative longitudinal study (N=3,654, Mage = 66.02; SD = 1.72; 79.83% White; 12.21% Black; 7.96% Hispanic; median waves = 3). Biennial assessments included two measures of memory complaints (current memory rating and perceived 2-year memory decline), depressive symptoms and parental history of dementia. Multilevel modeling showed that, at times when participants reported more depressive symptoms, they also reported lower current memory ratings. This association was significant only for

older adults with parental history of dementia. Additionally, these older adults were more likely to report a memory decline over the past two years compared to their counterparts. Results demonstrate the importance of considering exposure to dementia in parents when examining the association of depressive symptoms with memory complaints in cognitively intact older adults.

9. **Experience recruiting geriatric in-patients to a rTDCS study**

KAMMERER, H, RAWANI, D, RASO, J, ET AL
Glenrose Rehabilitation Hospital, Edmonton, Canada

Many seniors admitted for rehabilitation have symptoms of depression or anxiety. This needs to be addressed prior to effective engagement in rehabilitation therapy. Pharmacological agents are often prescribed, however, there are numerous reasons why alternative treatments may be desirable. Repetitive transcranial direct current stimulation (rTDCS) is a low-risk, non-invasive, and well-tolerated treatment that may improve depression and anxiety. Our goal was to determine if rTDCS reduces symptoms of depression, anxiety in older adults, compared to standard care (SoC) using the GDS, GAS and OPQoLS scores respectively. The effect of rTDCS on length of in hospital stay was also examined. The rTDCS intervention is applied in addition to SoC for 20 minutes, over 15 sessions. Participants were recruited from three geriatric units at a large rehabilitation hospital, and were randomized into: SoC with active rTDCS, or SoC with sham rTDCS. To date 56 patients have consented to participate evenly split between M (77.6+6.7yrs) and F (78.0+8.1yrs). 3 patients dropped put before commencing and a further 9 dropped out within 5 sessions. To date 27/56 completed all 15 sessions. Initial average scores in the intervention and sham groups were: GDS, 7.6+3.6 and 7.7+3.5; GAI, 10.3+4.9 and 10.6+6.9 and OPQoLS, 118.0+15.8 and 115.2+16.4 respectively.

10. **Sleep-dependent consolidation enhances episodic memory for a real-life event**

SIMPSON, S., DIAMOND, N., LEVESQUE, L., WANG, Y., LE, C., JEWELL, D., MURRAY, B., & LEVINE, B.
Rotman Research Institute at Baycrest; Dept of Psychology at University of Toronto, Canada

Consolidation during a period of sleep, compared to wakefulness, has been shown to improve episodic memory retrieval. However, it is still debated whether sleep equally benefits all aspects of episodic memory given that spatiotemporal (sequence) information appears to profit more from sleep than perceptual (item) details. Moreover, most of this prior work applied oversimplified, lab-based stimuli. Thus, the primary goal of this study was to determine whether these results generalized to memory for more complex real-life events. Here, we examined memory for an encoded staged event in which 70 healthy adults participated in the Baycrest Tour, a museum-style, audio-guided, staged-event followed by independent assessments of sequence and item memory for items encountered during the tour. These tests were administered at 30 minutes, 12 hours, 1 week, and 1 month after encoding. Participants were randomized to either an awake or sleep (polysomnography) condition during the 12- hour delay, allowing us to extract sleep spindle and slow-wave oscillation measures. Extending previous research, we found that sleep, particularly N2 and N3 (slow wave sleep), boosts memory performance at the 12-hour test interval, with group effects observed for both sequence and item memory. This suggests that sleep-dependent memory processing may facilitate a widespread mnemonic advantage. These results shed light on the mnemonic benefit of sleep-dependent consolidation for both the items and sequences that compose real-world experiences.

11. **Stroke in very old patients in Albania**
DOBI, E., BERBERI, F., COCOLI, K., & DOBI, D.
Ryerson University, Toronto, Canada

Poster withdrawn from virtual poster session.

12. **Exercise intervention for late-life depression: a meta-analysis** KLIL-DRORI, S., KLIL-DRORI, A.J., PIRA, S., CHERTKOW, H., & REJ, S. Rotman Research Institute, Baycrest Health Sciences, Toronto, Canada

Our objective was to quantify the association between physical exercise intervention (PEI) and reduction in depressive symptoms in older adults. Data Sources: MEDLINE, PsycINFO, and EMBASE were searched from inception through December 2018 using keywords related to exercise, depression, elderly, and randomized controlled trials (RCTs). We selected RCTs of supervised, moderate intensity PEI with participants age >60, exploring a primary outcome of depression. Data was extracted using a standard form. Random-effects models were used to pool standardized mean differences (Hedges g) in depressive symptoms across studies. Nine studies involving 1,308 participants were included; mean age was 82 years. Moderate PEI was associated with a medium effect size of 0.64 in reducing depressive symptoms among older adults. There was considerable heterogeneity in the effect of PEI across included studies. Age >80 years, MMSE score <23, and no depression at baseline, contributed to heterogeneity.

13. **Examining the individual and combined effects of the running and neurofeedback program**
LEVY, Y.J., SHAW, S., MCKINNON, M., & BECKER, S.
McMaster University, Canada

Poster withdrawn from virtual poster session.

14. **Age differences in the relationship between two hippocampal-dependent domains - memory and spatial cognition**
LEVI, A., BELCHEV, Z., MENDOZA, L., FRASER, M., GREEN, R.E.A., & GILBOA, A.
Rotman Research Institute at Baycrest, Toronto, Canada

The hippocampus has been implicated in two cognitive domains: memory and spatial cognition. Major theories suggest close relationships between these two domains, but empirical evidence is scarce and mixed. It is also known that healthy aging is associated with a decline in both hippocampal volume and function. The present study aimed to compare hippocampal-dependent abilities within individuals, and between healthy older adults and healthy younger adults. These abilities included the mnemonic memory processes of pattern separation and pattern completion, and spatial memory and navigation. In younger adults, both subjective and objective measures of spatial abilities, most prominently mental mapping abilities, successfully predicted both memory processes. Confirmatory modeling in older adults based on the structure of the relationship in the younger adults did not reveal the same pattern. Exploratory analyses in the older adult group revealed that spatial abilities can predict indices of pattern completion, but not separation, and are presumably driven by objective spatial measures. These results suggest that abilities in memory and spatial cognition domains are related, but that there is a shift towards independence between them in healthy aging, particularly with pattern separation.

15. **Drift diffusion modelling in big data: lower episodic memory abilities are associated with better reasoning performance**

FAN, C. L., LEVINE, B., & MACK, M. L.
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People differ in how they remember the past: some richly re-experience details from memories, while others recall only the gist of past episodes. Episodic memory contributes to a variety of functions such as future imagination and problem solving, but strong episodic memory abilities and a focus on specific details may hinder performance on tasks that require generalization. We measured self-reported episodic memory abilities in over two thousand participants and tested their performance on a grammatical reasoning task. There was a slight negative correlation between overall task performance and episodic memory ability, and we applied drift diffusion models (DDM) to better understand the cognitive mechanisms that may underlie this effect. We compared the fit of three models, each regressing one DDM parameter on episodic memory abilities: drift rate (v), boundary separation (α), and non-decision time (t). The best model fit drift rate to memory abilities, indicating that individuals with lower episodic memory abilities were quicker to accumulate evidence and reason to a correct decision. These results not only have theoretical implications for understanding individual differences in memory and how they relate to other areas of cognition, but they also extend the application of DDM to large datasets composed of many participants but few trials per participant.

16. **Tunnel vision: a novel investigation of the effect of depression on field of view**

RYAN, J.
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The central conceptual question investigated whether formerly depressed (Remitted) individuals are truly "cognitively remitted" and display the same emotional and attention inhibitions and memory as currently depressed, specifically under a negatively induced mood state. Nine female participants aged 39-85 were grouped into Healthy (non-depressed) and Remitted categories. The study followed a three- day procedure during which participants underwent neuropsychological testing and eye-tracking tasks involving encoding and recognition of emotionally valenced scenes, under neutral and negative mood inductions. Results showed a trend toward a narrower field of view, and greater visual exploration to negatively valenced information, especially when subjected to a negative mood induction for Remitted individuals. There was no difference in recognition accuracy between groups. This supports the idea that Remitted individuals experience a perceptual and cognitive tunnel vision that elaborates on their inhibited negative cognitive schemas and puts them at risk for relapse into further depressive episodes.

17. **Demographics and psychometric characteristics on the Cogniciti Brain Health Assessment**

MCKETTON, L., D'SOUZA, A., LEVINE, B., & TROYER, A.
Cogniciti- Baycrest, Rotman Research Institute, Toronto, Canada

The Cogniciti Brian Health Assessment (BHR) was designed to provide a scientifically validated and rapid online pre-screening tool of cognitive function based on normative age distributions. Initial validation of the BHR was conducted in a screened sample of 360 volunteers after extensive testing (Troyer et al., 2014) which led to over 36,000 assessment completions after its public launch in 2014. To date, the BHR has been validated in ages 20-94 with over 100,000 tests taken. The current study investigates demographics (age, gender, health history, education, geographical area, memory and mood questionnaires) and psychometric properties from a target measure from each separate task (Spatial Working Memory; Stroop Interference; Face-Name Association; and Letter-Name Alternation) in a sample of N = 65,291 after database cleaning. This analysis sheds light on demographics, population statistics, and cognitive status from a self-administered assessment, useful in big data analytics and online participant registry facilitation into clinical trials.

18. Can intensive, targeted environmental enrichment improve memory and navigation in older adults?

BELCHEV, Z., RYBKINA, J., JEFFAY, E., GREEN, R.E.A., & GILBOA, A.
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Healthy aging is associated with worsening memory and navigation abilities, linked to a reduction in hippocampal structure and function. Conversely, intensive environmental enrichment – periods of cognitively engaging activities – can lead to cognitive benefits which may be leveraged to improve this known age-related trajectory. In the present study, we developed a novel cognitive intervention targeting hippocampal function in healthy older adults, through training on virtual navigation using Google Streetview. The intervention is self-administered and completed remotely on a training website 5 days a week for 16 weeks. To test behavioural efficacy of the intervention, post-training changes to tasks measuring memory and spatial cognition in the experimental navigation training group are compared with a control training group completing generalized enrichment through educational videos at the same intensity schedule. Preliminary results suggest that participants in the navigation training group improve on spatial cognition, but not memory. Therefore, in older adults navigation training generalizes to other spatial tasks, but not to hippocampal-dependent mnemonic abilities. This is consistent with findings that mnemonic abilities are strongly predicted by spatial ones only in young adults whereas in older adults this relationship appears weaker.

19. Differential influence of lesions to ventromedial prefrontal cortex on schema and category knowledge

GIULIANO, A., BONASIA, K., GHOSH, V., MOSCOVITCH, M., & GILBOA, A.
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Mnemonic effects of prior knowledge (PK) may result from its influence on how we interpret information and must first be reinstated and instantiated as it interacts with incoming stimuli. We focused on two types of PK, categories (mediated by anterolateral temporal lobes (ATL)) and schemas (mediated by ventromedial prefrontal cortex (vmPFC)). However, because semantic categories are also implicated in schematic knowledge, vmPFC damage may also impair category processing. Patients with vmPFC damage (n=11) and matched controls (n=13) brought to mind a schema or a category (reinstatement) and then classified stimuli accordingly (instantiation) while electroencephalography was recorded. Pre and post-stimulus vmPFC-posterior neocortex desynchronization and lateral temporal- posterior neocortex desynchronization facilitated reinstatement and instantiation. Patients showed abnormal synchrony patterns, however, only patients with damage to the subcallosal vmPFC showed deficits specific to schemas. We conclude that damage to vmPFC influences processing of both schemas and categories, but the network-level mechanisms of this disruption differ.

20. Examining known-group and convergent validity of the Baycrest Multiple Errands Test in community dwelling older adults.

KOCHAR, Y., DAWSON, D., & ROTENBERG, S.
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This study investigated known-group validity of the Baycrest Multiple Errands test (BMET) between older adults with subjective cognitive decline (SCD) and those with objective cognitive impairment but no diagnosis of mild cognitive impairment. The BMET, a standardized observation based assessment characterizing the effects of executive difficulties in everyday life, requires participants to perform 12 tasks while following 10 predefined rules, within Baycrest. Older adults (n=245, age 71.3±6.6) were classified into those with SCD (n=123) and those with objective cognitive impairment (n=122). Participants with SCD completed significantly more BMET tasks ($p=.000$) and broke significantly fewer rules ($p<0.01$) compared to the cognitively impaired group, supporting the known-group validity of the BMET. Small to moderate correlations were found between BMET total error score and neuropsychological measures of

memory and executive functions (r= .16 -.32, p=.00-.013), suggesting everyday life performance requires observation as it is not adequately predicted by pencil and paper tasks.

21. Transitive inference in patients with ventromedial PFC lesions

WING, E.A., D'ANGELO, M.C., GILBOA, A., & RYAN, J.D.
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Transitive inference is the extrapolation of novel relationships between items based on overlapping associations. Deficits in relational memory typically impair inference ability. However, healthy older adults improve on transitive inference if the item pairs share an inherent semantic connection. Notably however, this benefit has not been found in cases of severe amnesia stemming from hippocampal damage. To further elucidate the neural mechanisms of semantic support of transitive inference, we tested patients with damage to the ventromedial PFC (vmPFC), which supports retrieval of prior knowledge in the service of hippocampal function. Four of five patients showed chance-level performance, suggesting that semantically-supported inference may require preserved vmPFC function and higher baseline relational memory capacity than was observed in our sample. However, in one patient with more dorsal mPFC damage and better relational memory, pre-existing conceptual relationships did boost performance above a comparison condition where relationships were arbitrary, mirroring a pattern of performance seen in older adults. Thus, in contrast to marked inference deficits in hippocampal patients, vmPFC damage may not invariably limit the utility of semantic support for transitive inference if relational memory function remains at least somewhat intact.

22. Fornix integrity and fiber length as a dementia biomarker: a pilot diffusion tensor imaging (DTI) study in Thai older adults

SRISAIKAEW, P., WONGPAKARAN, N., KOTHAN, S., VARNADO, P., ANDERSON, N.D., CHEN, J.J., & MAHAKKANUKRAUH, P.
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Damage to the fornix, the major efferent pathway in the human memory circuit, leads to significant memory impairment. Because there is no cure for dementia, early detection is important in order to introduce appropriate therapies. Our aim is to investigate if fornix damage, assessed with diffusion tensor imaging (DTI), is an early biomarker of dementia. Eighty Thai older adults were recruited, and 20 were diagnosed as cognitively normal and 21 as having mild cognitive impairment (MCI). A 1.5T MRI scan was performed that included DTI to manually trace the fornix, blinded to diagnosis. Intra-observer reliability over three repetitions was high (α=0.980). Here we will report group differences in WM integrity and fornix fiber length in efforts to identify an early indicator of dementia that could help physicians initiate treatment to maintain quality of life.

23. Changes in power spectrum and source activity in resting-state electroencephalography as a potential biomarker of amnestic mild cognitive impairment

CHOW, R., RABI, R., HASHER, L., ANDERSON, N., & ALAIN, C.
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Alzheimer's disease (AD) is characterized by progressive changes in neural oscillatory activity. Resting-state electroencephalography (EEG) thus has potential to aid with early identification of AD in the prodromal, amnestic mild cognitive impairment (aMCI) phase. Previous studies have involved small, heterogeneous samples of amnestic and non-amnestic MCI, and have yet to examine the influence of time-of-day. In this study, resting-state EEG was recorded from a homogenous sample of 40 aMCI and 37 healthy controls (HC) during eyes-open and eyes-closed conditions, with half of participants in the morning, and the other half evening. Power spectra and cortical source activation were examined in each frequency band using multiple-source beamforming techniques. In the eyes-closed condition, the power

in multiple frequency bands and source activation was greater in aMCI compared to HC, with effects of time-of-day across groups. Our study suggests resting-state EEG alterations in power and activation have the potential to supplement diagnosis of aMCI to allow for earlier intervention, and highlights the influence of time-of-day in a prodromal phase of AD.

24. Neural correlates of emotion recognition in aging

PENHEIRO, R., FYNES-CLINTON, S., STARRS, F., ROBERTS, R. P., TIPPETT, L. J., RUFFMAN, T., MELZER, T., ADDIS, D. R.
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Older adults can accurately recognize happiness and disgust, but also show deficits in recognizing fear and anger. This fMRI study characterised the differences and similarities between young and older adults in brain activity during accurate recognition of facial emotions (anger, disgust, fear, happiness) using mean-centred task partial least squares (PLS) analyses. During happiness recognition, both age groups had comparable levels of accuracy and exhibited similar patterns of widespread activity in anterior cingulate cortex, bilateral superior frontal and temporal gyri. These findings demonstrate consistency with previous reports that recognition of happiness is relatively preserved in older age. Anger recognition, in contrast, was associated with activation in frontoparietal and salience networks. Although both groups exhibited this pattern of anger-related activity, older adults additionally engaged these regions during recognition of other negative emotions (i.e., fear and disgust), suggestive of age- related compensation. Future analyses will explore how functional connectivity and brain atrophy also contribute to age-related preservations and impairments in recognizing these emotions.

25. A novel index of attentional engagement is related to skill learning in a memory intervention for acquired brain injury

LLOYD-KUZIK, A., THOMAS, A., SRITHARAN, J., LASS, J., SHAHAF, G., & VASQUEZ, B.
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The Memory Link program at Baycrest trains individuals with moderate-to-severe memory impairment in the use of commercial technologies (e.g. smartphones) as compensatory aids with the goal of improving independence and well-being. Training targets intact implicit learning mechanisms to circumvent deficits in explicit memory, but also requires in-session engagement. In the present study, we examined the attentional engagement during training using a novel EEG marker, the Brain Engagement Index (BEI). Nine participants with memory impairment from different etiologies underwent skill training on either a calendar or journal application on their smartphone while wearing a single-channel EEG headset. The results showed that BEI increased over time across all training sessions. Further, the association between learning and engagement appeared to depend on client characteristics which was explored through individual level analyses examining patterns of cognitive impairment and other factors. These findings have implications for both cognitive rehabilitation theory and clinical practice.

26. Are we over relying on subjective complaints when assessing cognition? KLIL-

DRORI, S. FERNANDES, A.., CHERTKOW, H., SOLOMON, S., & PHILLIPS, N.
Rotman Research Institute, Baycrest, Toronto, Canada

Our aim was to explore the presence or not of subjective memory complaints among older individuals who showed objective cognitive impairment by screening tests. Background - The progression of Alzheimer's disease (AD) and most other dementias is conceptualised as going from: (1) a period of subjective cognitive impairment (SCI) to (2) mild cognitive impairment (MCI - subjective as well as objective evidence of memory loss) to (3) dementia – which requires impairment in function as well. But is this order always respected? If subjective complaints are not reliable indicators, their presence might not reflect the presumed clinical course outlined above. Methods - we recruited healthy older adults over

age 65 using an advertisement that stated: “we are looking for healthy people aged 65 and up”. A shortened telephone version of the MoCA (T-MoCA) with score >14 as normal, was administered to respondents along with a brief questionnaire about their general health and subjective cognitive complaints (Jessen et al scale 2014). Patients who presented with normal cognition according to T-MoCA were subsequently evaluated with a regular face to face MoCA in the clinic, with normal considered as a score > 26. In total, 296 subjects were evaluated. 125 (42% of the cohort) had objective cognitive impairment according to either the T-MoCA or full MoCA. Of those, 90 had subjective concerns and would meet MCI criteria, but 35 (28%) did not have concerns. Conclusions - Close to 1/3 of those showing objective cognitive loss on screening lacked subjective complaints. Possible explanations are: 1. Anosagnosia (unlike which is unlikely at this early stage) 2. The specificity of the MoCA test is only 90% so some people may be below cut-off scores while experiencing no personal impairment. 3. Personality characteristics such as expression of more/less complaints than others, and 4. Other non-cognitive factors that may impact the performance on the cognitive test such as stress, fatigue, pain, or anxiety symptoms. Overreliance on subjective symptoms may therefore not be valid.

27. Neuropsychological effects of chronic low-level carbon monoxide exposure in older adults

CHESHIRE, B., & HOLLAND, C., & CRAWFORD, T.
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Poster withdrawn from virtual poster session.

28. Statistical modelling of age-related change in memory and attention in over 60,000 Cogniciti participants

D'SOUZA, A.A., ANDERSON, N.D., MCKETTON, L., LEVINE, B., & TROYER, A.
Rotman Research Institute, Baycrest, University of Toronto, Canada

Recent advances in digital technologies and statistical modelling enable researchers to examine age-related changes in cognition far more precisely than previously. The current study investigates age-related changes in memory and attention, using a psychometrically validated online assessment for individuals with memory concerns (Cogniciti Brain Health Assessment; Troyer et al., 2014). Trajectories from young adulthood to aging were modelled in a massive internet sample (n = 60,015, ages 20-90). Changepoint models using segmented regression identified the transition periods at which shifts in performance occur, and the rate of change between periods. Performance was assessed on four cognitive abilities (interference control, spatial working memory, associative recognition memory, and executive attention) and their underlying mechanisms (e.g., item and associative recognition), and measured on several indicators (speed, accuracy, and intra-individual variability). These dissociations enable us to identify differential lifespan trajectories per ability, and potential compensatory strategies among older adults.

29. Submission withdrawn

30. Relational memory remediated through unitization strategy and practice

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Aging is associated with deficits in relational memory, in which distinct elements must be bound together. Unitization is a cognitive strategy which alleviates relational memory deficits through the fusion of elements by an action/consequence scenario. We examined which of the cognitive components of unitization (fusion, motion, action-consequence) may be important for success within individuals, whether strategy transfer is observed to other novel conditions, and whether practice supports performance. One group of older adults was provided with 6 unique sets of transverse patterning (TP);

the first set had no strategy training, followed by four sets of strategy training (fusion, motion, action/consequence, and unitization), and finally, a set with no strategy training. A second group of older adults was given the 6 unique sets of TP, but without any strategies. Practice alone helped performance in the absence of strategy training. Performance and transfer was supported by unitization and action/consequence strategies.

31. Age differences in selective visual attention and recognition memory

PARIMOO, S., CHOI, A., IAFRATE, L., LIU, A., GRADY, C., & OLSEN, R.
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Recognition memory was examined in healthy older and younger adults across two eye-tracking experiments. Participants incidentally encoded target and distractor item-color pairs while maintaining central fixation (Experiment 1) or freely viewing the stimuli (Experiment 2). Item and associative memory were greater for cued stimuli than for uncued stimuli in both experiments. In Experiment 1, recognition of cued items was lower among older adults than younger adults but did not differ between the two groups in Experiment 2. There were no age differences in location memory for the items, but consistent with past research, older adults showed poorer recognition for colors associated with cued items compared to younger adults. These findings demonstrate an age-related reduction in item-color associative memory for target information and further illustrate how limiting the opportunity for visual sampling by restricting eye movements has a more pronounced effect on memory encoding in the older group (Experiment 1).

32. How eye-movements contribute to attention of highly controlled stimuli in a subsequent memory task

YU, L., GEIER, K.T., BUCHSBAUM, B.R., WAGNER, A.D., & OLSEN, R.K.
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Attention is important for memory as it controls what information is received from the environment for neural processing. Measuring eye-movements during memory processing provides an indicator of visual attention. Past studies have shown that the number of eye fixations made during encoding was related to later memory of objects (e.g. an apple). Our study seeks to extend past results by using a memory paradigm with a unique stimulus set. The stimuli used in the current study are tightly controlled in terms of physical similarity as this feature may drive memory and eye-movement patterns. We investigated how eye-movements related to both the subsequent recognition of repeated objects and the discrimination of similar lure objects. We examined fixation count, sampling variability, and eye- movement pattern similarity between trials. Some, but not all, eye-movement measures related to memory accuracy. The findings showed that eye-movements during encoding can be predictive of both subsequent recognition and discrimination.

33. Is there a relationship between sex, alcohol use, and age-related cognitive decline?

CHAFE, K., & OINONEN, K.A.
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Healthy aging is associated with a decline in some cognitive abilities over time. Lifestyle factors (e.g., diet, alcohol use, exercise) may influence the extent of age-related cognitive decline, and the strength and direction of lifestyle-cognition relationships may differ for men and women. The present study analyzed data collected from 50,000 Canadians through the Canadian Longitudinal Study on Aging to investigate the relationships and interactions between age, sex, alcohol use, and cognitive performance. Abstainers and never-users typically performed worse on cognitive tests, even when controlling for physical and social factors. Results support general sex differences in cognition (i.e., auditory memory, verbal fluency, and executive function) as well as small effect size interactions between age group and current alcohol use. Cognitive differences between groups based on alcohol consumption occurred more frequently

among older adults (i.e., 60s to 80s) suggesting that older adults may be more susceptible to both beneficial and detrimental effects of alcohol on cognition.

34. iMeditate at home: a mindfulness meditation intervention for caregivers and older adults with mild cognitive impairment

ROUDAIA, E., HASHEMI, A., ANDERSON, N.D., ALAIN, C., ALEONG, R., KHATRI, N., SEREDIUK, F., FREEDMAN, M., & SEKULER, A.B
Rotman Research Institute, Baycrest, Toronto, Canada

Individuals diagnosed with mild cognitive impairment (MCI) are an important target population for interventions aimed at reducing their risk of developing dementia. Cognitive impairment and dementia also have negative effects on the cognitive and mental health of family caregivers, who report increased levels of stress. Mindfulness meditation is one behavioural intervention that may benefit both older adults with cognitive impairment and family caregivers (Berk et al., Frontiers in Psychology, 2018). We present the protocol for an ongoing, pilot randomized controlled trial of an at-home mindfulness meditation intervention for older adults with MCI and family caregivers. The intervention is delivered through a mobile application (Muse) paired with a wireless EEG headband. Participants are randomly assigned to receive auditory neurofeedback or not during meditation. Assessments before and after the six-week intervention evaluate mindfulness, psychological well-being, and cognitive and perceptual abilities using behavioural and electrophysiological markers. We present preliminary results on the feasibility and acceptability of the intervention for persons with MCI and caregivers.

35. The meaning of behavioural expressions in persons with dementia (PwD)

LUTHRA, A. S., & BREEN, T.
Homewood Health Centre, McMaster University, Hamilton Health Sciences, Guelph, Canada

Poster withdrawn from virtual poster session.

36. Mnemonic discrimination of highly similar auditory stimuli in older adults and an amnesic person with dentate gyrus lesions

HOANG, N.V., BAKER, S., DAOU, J., MOSCOVITCH, M., & ROSENBAUM, R.S.
Rotman Research Institute, Baycrest and University of Toronto, Canada

Poster withdrawn from virtual poster session.

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