



Symposium in Honour of Lynn Hasher

November 17, 2017

WELCOME

Thank you for attending the Symposium in Honour of Lynn Hasher.

Professor Lynn Hasher will be retiring from the University of Toronto in December 2017 and moving to a part-time research position at the Rotman Research Institute.

In honour of Professor Hasher's many great contributions to cognitive psychology, we are hosting a day of talks by collaborators and former trainees. This symposium brings together a number of experts from the fields of neurocognitive aging and memory to share their latest research findings, discuss the impact of Professor Hasher's work, and maybe divulge a personal anecdote or two.

SCHEDULE

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| 8:30am | Registration | |
| 9:00am | Individual and Collaborative Processes in a Long Career | <i>Rose Zacks</i> |
| 9:20am | Memories are Made of This: Who am I to Disagree | <i>Janet Gibson</i> |
| 9:40am | Inhibition and the Brain | <i>Cheryl Grady</i> |
| 10:00am | Modifiable Factors Affecting Neural Decline in Aging: The Roles of Context and Experience | <i>John Anderson</i> |
| 10:20am | From Milliseconds to Millimeters to Miles: Linking Physical and Social Activity to Neurocognitive Health | <i>Michelle Carlson</i> |
| 10:40am | Coffee Break | |
| 11:10am | The Applicability of Distractibility for Older Adults | <i>Renee Biss</i> |
| 11:30am | The Cognitive Psychology of Aging: Practical Applications | <i>Kelly Murphy</i> |
| 11:50am | Creativity and Aging: Positive Consequences of Diminished Inhibitory Control | <i>Carolyn Yoon</i> |
| 12:10pm | Levels of Processing Distraction in Younger and Older Adults | <i>Ruthann Thomas</i> |
| 12:30pm | Lunch | |

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| 1:30pm | Ignoring Irrelevant Information: Applying Research Evidence to Clinical Populations | <i>Gillian Rowe</i> |
| 1:50pm | Executive Functions and Retrieval Efficacy in Older Adults | <i>Fergus Craik</i> |
| 2:10pm | Priming, Not Inhibition, of Competing Representations During Future Imagining | <i>Karen Campbell</i> |
| 2:30pm | Remembering the 2016 Election Campaign: The Role of Temporal Associations | <i>Karl Healey</i> |
| 2:50pm | Coffee Break | |
| 3:20pm | For Whom the Mind Wanders, and Where | <i>Mike Kane</i> |
| 3:40pm | Attention and Effort: Not Just for Lynn's Mentees! | <i>Cindy Lustig</i> |
| 4:00pm | Selective Forgetting and Meta- Cognitive Monitoring of Memory: Age Differences and Valence Effect | <i>Lixia Yang</i> |
| 4:20pm | Are Old Cats Equally Curious? An Evaluation of Age Differences in Curiosity about Positive and Negative Information | <i>Cynthia May</i> |
| 4:40pm | Closing Remarks | <i>Lynn Hasher</i> |
| 5:00pm | Reception | |

ABSTRACTS

Individual and Collaborative Processes in a Long Career

Rose Zacks (Michigan State University)

I will trace Lynn's 50+ year academic career from the perspective of our lengthy collaboration. To that collaboration, and to her collaborations with many of the speakers to follow, Lynn brought a highly original mind, a willingness to take intellectual risks, unflinching determination to pursue promising ideas, and deep insights into the embeddedness of memory in the whole cognitive system and in the individual's social and environmental context. A brief overview of some of our joint work will demonstrate these attributes and set the stage for today's other presentations.

Memories are Made of This: Who am I to Disagree

Janet Gibson (Grinnell College)

My career in cognitive psychology began as an undergraduate at Temple University 38 years ago when I took Lynn Hasher's Cognitive Psychology and Research Methods in Cognitive Psychology courses. As a walk down memory lane will reveal, our interactions over the years frequently involved discussions where she persuaded me (with experimental evidence) to see her point of view. She once told me that everything she taught me back then was wrong! I'd like to disagree, of course. But I will agree that changes since the 1970s in what we know about cognition, memory and attention in particular, were influenced by her research contributions. Certainly, it is true that as a mentor and role model, she inspired my development as a teacher, researcher, and mentor to my undergraduate students at Grinnell College.

Inhibition and the Brain

Cheyl Grady (Rotman Research Institute)

Probably the biggest influence that Lynn has had on my work is to get me more interested in inhibition and cognitive control. In my talk, I plan to describe several fMRI studies on the brain mechanisms of inhibition that were either directly inspired by Lynn or emerged from my increased focus on cognitive control. The first experiment involved recognition memory for faces, and in conversation one day Lynn wondered if the noisy environment of the magnet might distract older adults and be related to poorer memory. Indeed, both younger and older adults showed reduced activation of the hippocampus during unsuccessful encoding, but only older adults showed increased activity in auditory cortex, suggesting interference from brain regions mediating the distracting noise. More recently we have used data from several large publicly-available fMRI databases to examine the relation between inhibitory performance and functional connectivity within brain networks, especially those involved directly in cognitive control. This work has shown that both network segregation and integration are associated with superior inhibitory control, depending on age. In addition, the developmental trajectory of the relation between network connectivity and inhibition is influenced by affective experience.

Modifiable Factors Affecting Neural Decline in Aging: The Roles of Context and Experience

John Anderson (York University)

The proportion of Canadian seniors aged 60 and older is rising. In 2012, they comprised 21% of the population. By 2050, seniors are projected to comprise 41% of Canada's population. Finding approaches to maintain cognitive function and resist dementia in older age is, therefore, vital. There are two promising approaches. First, long-term experiential factors can slow cognitive decline. These protective factors, called cognitive reserve include exercise, education, stimulating employment and speaking multiple languages. A second approach to maximizing cognitive function in the elderly examines how environmental/contextual factors dynamically shape cognition. These factors include moment-to-moment changes in alertness due to fatigue, caffeine, and the dynamics of individual differences in circadian rhythms and time of testing. My research explores how each of these factors change what we think of as normal aging.

From milliseconds to millimeters to miles: Linking Physical and Social Activity to Neurocognitive Health

Michelle Carlson (Johns Hopkins University)

My talk will focus on the following:

- Any movement is good (Revenge of the Sit I & II)
 - Why do people move? Social, purposeful and other motivations to tap into
 - Why don't people move? Barriers related to the individual's health and to the environment
 - Community-based volunteer intervention: Experience Corps
 - Environment as key intervention design factor
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The Applicability of Distractibility for Older Adults

Renee Biss (Baycrest)

While inhibitory deficit theory predicts that older adults' performance disproportionately suffers when distraction is present, there may also be downstream benefits if distraction can cue rehearsal of information that older adults want to remember. I will present evidence that distraction helps older, but not younger adults to rehearse words and face-name pairings, as well as evidence suggesting that this benefit extends to older individuals with mild cognitive impairment. Understanding older adults' inhibitory abilities allows for both a characterization of how their existing processing style can both help and hinder memory and suggests novel interventions that may be tailored for older adults' unique cognitive tendencies.

The Cognitive Psychology of Aging: Practical Applications

Kelly Murphy (Baycrest)

Discoveries about age differences in factors influencing knowledge acquisition and the demonstration of knowledge; such as time of day, previous experience, and susceptibility to distraction, have critically informed the crafting of interventions aimed at improving cognition in older adults. Also informed is the measurement of cognitive outcomes. The practical application of these discoveries will be illustrated with reference to two evidence-based behavioural interventions designed for older adults. The first a memory intervention program aimed at improving functional memory in those at risk of dementia; and the second, a web-based activity, involving visual artwork, that is aimed at sustaining and / or improving well-being through cognitive and social engagement.

Creativity and Aging:

Positive Consequences of Diminished Inhibitory Control

Carolyn Yoon (University of Michigan)

Diminished inhibitory control in cognitive functioning renders people vulnerable to the negative effects of distracting information. Older adults' decreased ability to inhibit information makes them especially susceptible to the disruptive effects of distraction; but in the domain of creativity, it may have beneficial consequences. Across four studies, we show that young and older adults, who are presented with distracting information that is congruent with target information in a subsequent creativity task, generate more creative options. This increase in creativity with congruent distraction is preserved and even slightly enhanced, among older relative to young adults. Present findings suggest that diminished inhibitory control does not necessarily lead to negative consequences, and can boost people's creativity across the adult lifespan.

Levels of Processing Distraction in Younger and Older Adults

Ruthann Thomas (Hendrix College)

The current research examined whether younger and older adults attend to distraction at a surface-level or a deeper, meaning-based level of processing by examining errors (i.e., false alarms) on a later recognition task. Twenty-four younger adults and 24 older adults were presented with words that had previously appeared as distraction as well as new words that were either similar in appearance, similar in meaning, or unrelated to previously distracting words. Results showed that both younger and older adults were more likely to make false alarms to words similar in appearance than to words similar in meaning to previously distracting words, suggesting that both younger and older adults may be attending to surface-level rather than semantic features of distraction. Ongoing research is aimed at modifying materials to eliminate a feature of words similar in appearance (i.e., compound words) that may have biased the false alarm rate towards visually similar words.

Ignoring Irrelevant Information: Applying Research Evidence to Clinical Populations

Gillian Rowe (Baycrest)

At any given moment during the course of a day, information relevant to the task at hand must be kept in the focus of attention, and, equally important, irrelevant information must be ignored. Implications resulting from difficulty ignoring distraction may range from mild frustration and worry to a significant reduction in an individual's level of independence. This talk will discuss how considering factors that influence the ability to ignore distraction can increase independence and quality of life in clinical populations.

Executive Functions and Retrieval Efficacy in Older Adults

Fergus Craik & Eldar Eftekhari (Rotman Research Institute)

Two prominent aspects of memory problems in older adults are first a difficulty in retrieving recent episodic events, and second a transient inability to retrieve names and facts from semantic memory. The question addressed in the present study was whether these age-related difficulties reflect a common cause – a retrieval impairment related to less effective executive functions (EF). Fifty older adults were given 4 short tests of EF, which were then combined to yield a composite measure of EF. Participants also performed 3 retrieval tests: verbal free recall, paired-associate recall, and retrieval of general knowledge names and facts. EF correlated strongly with a measure of retrieval efficacy in free recall, less strongly with paired-associate recall, and non-significantly with retrieval of general knowledge. These results are taken to disconfirm the initial hypothesis and to suggest instead that retrieval of information from episodic and semantic memory involves somewhat different mechanisms.

Priming, not Inhibition, of Competing Representations During Future Imagining

Karen Campbell (Brock University)

Remembering the past and imagining the future both involve the retrieval of details stored in episodic memory and rely on the same core network of brain regions. Given these parallels, one might expect similar component processes to be involved in remembering and imagining. While a strong case can be made for the role of inhibition in memory retrieval (largely thanks to Lynn's work on the subject), few studies have examined whether inhibition is also necessary for future imagining. In this talk, I will present results from two recent studies showing that competing representations are primed, rather than inhibited, during future imagining. Potential reasons for this discrepancy will be discussed.

Remembering the 2016 Election Campaign: The Role of Temporal Associations

Karl Healey (Michigan State University)

Recalling one memory is like pulling on one link of a chain; it brings with it many others. A fundamental principle of numerous memory models is that these links form between memories that are encoded nearby in time. Evidence for this temporal contiguity effect comes almost exclusively from laboratory list learning tasks. To determine if the effect also occurs outside the laboratory, we asked participants to recall news stories related to the 2016 presidential election shortly following Election Day. Despite the long timescale separating the individual stories and the fact that participants had no expectation that their memory would be tested when they first experienced these events, order of recall was strongly influenced by the order in which the stories had originally appeared in the news. Moreover, this remained true even when we accounted for the fact that stories that occur close together in time tend to be semantically related.

For Whom the Mind Wanders, and Where

Mike Kane (University of North Carolina Greensboro)

Mind-wandering is a subjective and spontaneous experience, yet psychologists conduct most mind-wandering research under controlled laboratory conditions. Probes interrupt subjects' tasks, asking them to report their current thoughts. This method demonstrates mind-wandering's effects on task performance and individual differences therein, but can it illuminate the nature of mind-wandering as it typically unfolds in human experience? Whereas the laboratory seems like a neutral context to researchers, it is strange to participants and may create irregularities in their behavior and experience. This study expands on prior findings to show that—regarding individual differences—the laboratory biases our perspective on mind-wandering.

Attention and Effort: Not Just for Lynn's Mentees!

Cindy Lustig (University of Michigan)

Lynn certainly knows how to get her students' attention and keep them motivated! More importantly, her work has also considered whether what might at first glance seem like cognitive differences between younger and older adults – usually interpreted as cognitive deficits on the part of older adults – might in fact represent different priorities or wisdom based on experience. I will present work from my lab suggesting that right prefrontal cortex plays an important role in the interactions between attention and motivation, and that younger and older adults respond very differently to incentives intended to motivate attention. Integrating these findings may deepen our understanding of when older adults show more versus less activation of prefrontal cortex than young adults in demanding tasks.

Selective Forgetting and Meta-Cognitive Monitoring of Memory: Age Differences and Valence Effect

Lixia Yang & Sara Gallant (Ryerson University)

The positivity effect, a processing bias for positive over negative information, in older adults has been well-reported in the attention and memory literature. The present research aimed to examine whether this bias could be extended to selective forgetting and meta-cognitive monitoring of memory. Three studies were conducted to assess forgetting and meta-cognitive memory monitoring of positive, negative, and neutral words in young and older adults, using a cue-based (Studies 1-2) or value-based (Study 3) item-directed forgetting task. At encoding, words were either cued as to-be-remembered (TBR) or to-be-forgotten (TBF) in the cue-based paradigm, or assigned a number signaling a gain (+10) or loss (-10) of value in the value-based paradigm. Meta-cognitive monitoring was indexed by prospective judgments of learning (JOLs) at encoding (Study 2) and retrospective source attributions at retrieval (Studies 1-3). The results showed that 1) both age groups demonstrated consistent directed forgetting effects in item memory regardless of valence, suggesting that they were able to strategically control the encoding of emotional words; 2) despite age-equivalent performance in prospective JOLs, older adults, but not young adults, differentially attributed higher value sources (i.e., TBR or +10) to positive items and/or lower value sources (i.e., TBF or -10) to negative items, reflecting an age-associated positivity effect in retrospective source judgments; 3) emotional valence (positive or negative) boosted performance in item memory and JOLs, suggesting an emotional enhancement effect.

Are Old Cats Equally Curious? An Evaluation of Age Differences in Curiosity About Positive and Negative Information.

Cynthia May (College of Charleston)

Curiosity is the drive to seek out new information or experiences. This drive can be advantageous when outcomes are positive (e.g., opening a present), entertaining (e.g., celebrity romances), or even simply informative (e.g., the results of medical tests). But curiosity has its dark side, at least for young adults. Recent evidence demonstrates that young adults are curious even when negative outcomes are expected, for example, young adults will intentionally press a pen that delivers a shock, will smell foul odors, will view negative images, and will listen to offensive sounds simply to satisfy their curiosity (Hsee & Ruan, 2016). The present research compared curiosity for younger and older adults when positive versus negative outcomes were expected.

