Abstracts: Annual Meeting

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Schedule – ALL TIMES ARE FOR BRISBANE!

Friday April 9

	Stream 1 – Abel Smith	Stream 2 – Rm 304/305	Stream 3 – Rm 203/204	Stream 4 – Rm 201/202	Site Legend
	Brain Imaging	**Language**	**High-Level Cognition**	**Face Processing**	
	Moderator: *Puckett*	Moderator: *de Zubicaray*	Moderator: *Garner*	Moderator: *Craig*	
09:00 - 09:20		#99 - Toraiwa *	#105 - Garner	#29 - Craig	Adelaide
09:20 - 09:40	#113 - Puckett	#37 - Ashcroft	#194 - Danielson *	#144 - Rahman	Auckland
09:40 - 10:00	#52 - Afzali *	#46 - Du *	#115 - Cross	#158 - Favelle	Brisbane
10:00 - 10:20		#100 - Ward *	#90 - Hill	#2 - Keough *	Christchurch
					Hobart
10:20 - 10:40			Morning Tea		Melbourne
					Newcastle
	Prediction	**Language**	**Diffusion Models**	**Face Processing**	Perth
	Moderator: *Mattingley*	Moderator: *de Zubicaray*	Moderator: *Sewell*	Moderator: *Kritikos*	Wellington
10:40 - 11:00	#17 - Kieseker *	#85 - Roodenrys	#104 - Kozica	#15 - Eisenbarth	Wollongong
11:00 - 11:20	#8 - Sexton	#122 - Mascelloni *	#71 - Holwerda	#167 - Lanfranco	Zoom
11:20 - 11:40	#132 - Hogendoorn	#154 - Beyersmann	#136 - Sewell	#98 - Little *	
11:40 - 12:00	#65 - Lowe *	#10 - Kumarage *	#57 - Zhou *	#32 - Caruana	
12:00 - 12:20	#106 – Saurels *	#27 - Bruggeman	#86 - Osth		
12:20 - 13:20			Lunch		
	Perceptual Processes	**Emotion**	**Distraction**	**Face Processing**	
	Moderator: *Arnold*	Moderator: *Stjepanovic*	Moderator: *Evans*	Moderator: *Ribeiro*	
13:20 - 13:40	#87 - Badcock	#61 - Campbell *	#11 - Evans	#177 - Lynch	
13:40 - 14:00	#124 - Chouinard	#59 - Smit *	#54 - Knight *	#145 -Giffard *	
14:00 - 14:20	#196 - Grootswagers	#174 - Braga	#85 - Chen *	#200 - Gogan *	
14:20 - 14:40	#123 - Rangelov	#69 - Prideaux-Brune	#58 - Jefferies	#163 - Patterson	
14:40 - 15:00	#179 - Paul		#83 - Riddell	#41 - White	
15:00 - 15:20	#16 - Arnold	#28 - Moeck	#73 - Georgiades *		
15:20 - 16:00			Afternoon Tea		
16:00 - 17:00			Ross Day Plenary Lecture: Prof. Paul Dux		
17:30…			Welcome Gathering		

Saturday April 10

	Stream 1 – Abel Smith	Stream 2 – Rm 304/305	Stream 3-Rm 203/204	Stream 3-Rm 201/202	Site Legend
	Perceptual Processes	**Language**	**Working Memory**	**Face Processing**	
	Moderator: *Harrold*	Moderator: *Burt*	Moderator: *Bradley*	Moderator: *Pegna*	
09:00 - 09:20	#147 - Hammond		#110 - Erb		Adelaide
09:20 - 09:40	#197 - Schwarzkopf	#62 - Purcell	#183 - Vella *	#187 - McKay	Auckland
09:40 - 10:00	#160 - Urale *	#39 - Fioravanti	#203 - Shimul *	#23 - Day *	Brisbane
10:00 - 10:20	#79 - Harrold	#159 - Elgort	#38 - Bennett	#25 - Cao *	Christchurch
					Hobart
10:20 - 10:40			Morning Tea		Melbourne
	High-Level Perception	**Response Strategies**	**High-Level Cognition**	**Clinical**	Newcastle
	Moderator: *Zeljko*	Moderator: *Sewell*	Moderator: *Matthews*	Moderator: *Apthorp*	Perth
10:40 - 11:00	#135 - Hinwar	#156 - Morgan	#42 - Fan *		Wellington
11:00 - 11:20	#128 - Rendell *	#198 - Cruz	#184 - Meier *	#24 - Messing *	Wollongong
11:20 - 11:40	#112 - Harris	#51 - Ghasemi *	#117 - Clarkson*	#47 - Bridgland	Zoom
11:40 - 12:00	#185 - Alais	#53 - Cooper *	#137 - Stephens	#14 - Higgins *	
12:00 - 12:20	#103 - O'Donohue *	#195 - Younan *	#101 - Keeping	#5 - McGreen	
12:20 - 13:20			Lunch		

	Cross Modal Perception	VR Research	Attention	Memory
	Moderator: *Zeljko*	Moderator: *McAnally*	Moderator: *Harris*	Moderator: *Lacherez*
13:20 - 13:40	#161 - Zeljko	#63 - Baumann	#102 - York *	
13:40 - 14:00	#111 - Nguyen	#91 - Doggett	#31 - Talipski	#162 – Killingly
14:00 - 14:20	#121 - O'Donohue	#21 - McIntosh	#114 - Wyche *	#201 - Sanderson *
14:20 - 14:40	#152 - Mursic *	#110 - Anastasiou *	#183 - Moerel *	#7 - Clarke *
14:40 - 15:00	#49 - Hewitson	#199 - Palmisano	#148 - Mazidi *	#81 - Stirling
15:00 - 15:20	#6 - O'Rielly	#107- Tsang *	#121 - Ventris *	#168 - Pritchard

15:20 - 15:40	Afternoon Tea			

	Eye Movements	VR Research	Trust in Information	Group Psychology
	Moderator: *Harrison*	Moderator: *Baumann*	Moderator: *Newall*	Moderator: *Kirkland*
15:40 - 16:00	#4 - Harris	#178 - Michalski *	#139 - Macfarlane	#9 - Kirkland
16:00 - 16:20	#89 - Stewart	#188 - Neumann	#131 - Griffiths *	#149 - Zinn *
16:20 - 16:40	#36 - Nelson	#186 - Muir *	#82 - Desai	#45 - Miles
16:40 - 17:00	#170 - Harrison	#76 - Macpherson *	#125 - Newall	#95 - van der Zant *

18:30…	Social Mixer

Sunday April 11

	Stream 1 – Abel Smith	Stream 2 – Rm 304/305	Stream 3 – Rm 203/204	Stream 4 – Rm 201/202	Site Legend
	Sensori-Motor	**Metacognition**	**Nudge - Decisions**	**Cognitive Models**	
	Moderator: *Keane*	Moderator: *Rangelov*	Moderator: *Robson*	Moderator: *Sewell*	
09:00 - 09:20	#67 - Keane	#55 - Salzman		#116 - Howe	Adelaide
09:20 - 09:40	#48 - Crone *	#40 - West *	#74 - Calabro	#13 - Nurse *	Auckland
09:40 - 10:00	#88 - Patil	#72 - Murphy	#127 - Kay *	#193 - Hayes	Brisbane
10:00 - 10:20	#94 - Nguyen	#169 - Thomson	#64 - Ross	#77 - Zhang	Christchurch
					Hobart
10:20 - 10:40	Morning Tea				Melbourne
	Imagery	**Language**	**Absorbing Information**	**Expertise**	Newcastle
	Moderator: *Rangelov*	Moderator: *Burt*	Moderator: *Lodge*	Moderator: *Pegna*	Perth
10:40 - 11:00	#56 - Pace		#142 - Apthorp		Wellington
11:00 - 11:20	#146 - Turnbull *		#192 - Brazil	#119 - Towler	Wollongong
11:20 - 11:40	#190 - Keogh	#140 - Burt	#133 - Deek	#191 - Dunn	Zoom
11:40 - 12:00	#33 - Shatek *	#126 - Davis	#164 - Gynell	#12 - Searston	
12:00 - 12:20		#108 - Kemp	#171 - Leggett	#150 - Robson *	
12:20 - 13:20	Lunch				
	Perception	**Decisional Processes**	**Learning**	**Re-Directing Attention**	
	Moderator: *Grove*	Moderator: *Mattingley*	Moderator: *Evans*	Moderator: *Becker*	
13:20 - 13:40	#166 - Horvath	#19 - Hughes *		#181 - Becker	
13:40 - 14:00	#129 - Watson	#189 - French *	#130 - Raut	#151 - Lawrence	
14:00 - 14:20	#1 - Siobhan Millard *	#173 - Wang-Ly *	#70 - Ney	#78 - Hamblin-Frohman *	
14:20 - 14:40	#92 - Renton *	#26 - McIntyre *	#68 - Bell	#175 - Prants	
14:40 - 15:00	#153 - Bellagarda *	#3 - Ng *	#80 - Lovibond	#93 - Williams *	
15:00 - 15:20	#118 - Phillips	#96 - Burton *	#172 - Embrey *	#157 - Greenwood	
15:00 - 15:40	Afternoon Tea				
	Image Statistics	**Clinical**	**Lifespan Development**	**Learning and Emotion**	
	Moderator: *Marlow*	Moderator: *Matthews*	Moderator: *Yamamoto*	Moderator: Stjepanovic	
15:40 - 16:00	#134 - McCauley *			#22 - Gandhi	
16:00 - 16:20	#44 - Marlow	#138 - Matson *	#20 - Davis	#35 - Siddique *	
16:20 - 16:40	#155 - Isherwood	#97 - Simister	#60 - Yamamoto	#50 - Sim *	
16:40 - 17:00	#43 - A-Izzeddin *			#165 - Green	
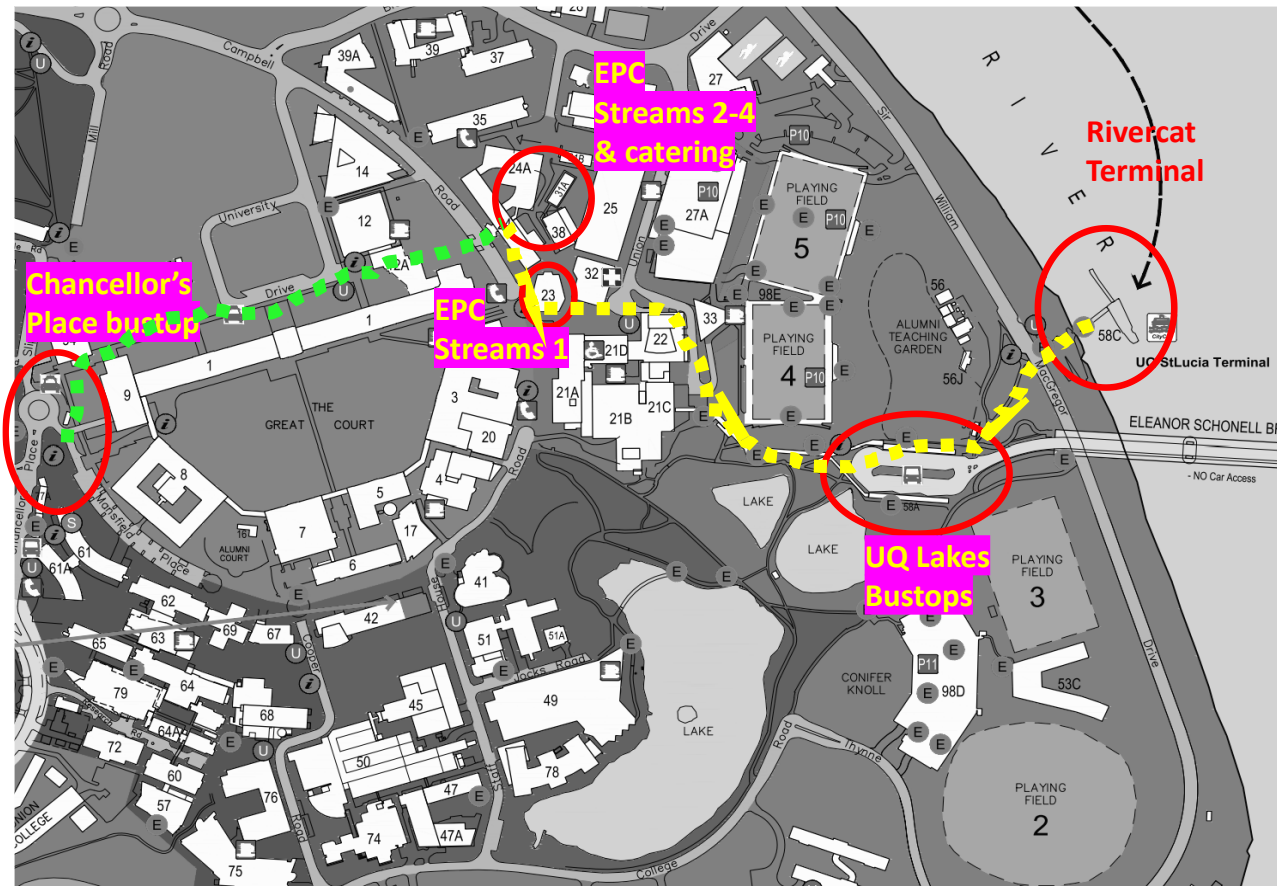
If travelling by public transport, you will arrive at one of the highlighted bus stops, or at the highlighted Rivercat terminal. From these points, you need to walk to the conference site.

Streams 2 to 4 are located in the McEllwain Bld (Bld 24a). Morning tea, lunch and afternoon tea will be served in the courtyard of this building.

Stream 1 is located in the Abel Smith lecture theatre (Bld 23)

Contents

Gandhi, V. M. (1), Thompson, M. B. (1,2), Campitelli, G. (1,2), Hewitt, C. (2), Loft, S. (3), Tartano, K. (1), Piola, R. (4), Campbell, M. (5), & Hambrick, Z. (6)

Crone, C.L. (1), Rigoli, L. M. (1), Patil, G. (1), Pini, S. (2,3), Sutton, J. (2,3), Kallen, R.W. (1,3), & Richardson, M.J. (1,3)

Christopher L Hewitson (1,2), David M Kaplan (1,2) Matthew J Crossley (1,2)

Sim, K.J.J. (1), MacLeod, C. (1), Notebaert, L. (1), & Ji, J.L. (1)

Omid Ghasemi (1), Simon Handley (1), Valerie Thompson (2), Stephanie Howarth (1), Ian Newman (2)

Afzali M.U. (1), Palmer, R.W. (2), Neumann, E. (1,3), Grace, A.P.S. (1), Makarious, S. (1), Wilson, D. (2) & Jones, R.D. (1,4,5,6)

Cooper G. & Hawkins G.E.

Knight E. (1), Ballard T. (2), Sanderson P. (3), Neal, A. (4)

Salzman, K. D. & Allen, K.

Pace, T.J ., Koenig-Robert, R. & Pearson, J.

Zhou, J. (1), Osth, A.F. (1) & Smith, P.L. (1)

Jefferies, L.N. (1, 2), Conlon, E. (1), & Lawrence, R. (1)

Sophie Smit (1), Regine Zopf (1,3), Anina N. Rich (1,2)

Yamamoto, N. (1, 2), Donaldson, M. J. (2), Allen-Davidian, Y. (1) & Lowe, B. (1)

Campbell, N.C., Dawel, A., Edwards, M. & Goodhew, S.

Purcell, K.R., Axelsson, E.L., Whalen, O., Karayanidis, F., Lane, A., Murphy, V., & Campbell, L.

Oliver Baumann[1], Jessica McFadyen[2,3], Christopher Nolan[2], Ellen Pinocy[1], & David Buteri[1]

Robert Ross (1), Gordon Pennycook (2), Neil Levy (3)

Lowe B. (1), Robinson, J. E. (2), Yamamoto, N. (1), & Johnston, P. J. (1)

Muehlebach B. M. Pegna A. J.

Keane, B. (1), Carroll, T. J. (1)

Bell, L. J. & Matthews, A.

Nicholas Prideaux-Brune (1), Carien van Reekum (1), Tom Johnstone (1,2)

Luke J Ney[1], Emma Nicholson[3], Allison Matthews[1], David Nichols[4], Chia-Ming K Hsu[1], Daniel Zuj[2], Trevor Steward[3], and Kim Felmingham[3]

Holwerda, J. & Newell, B. R.

Murphy, K. (1), Anderson, A. (2), & Smith, R. (3)

Jessie Georgiades, Kelly Cusworth, Colin MacLeod & Lies Notebaert

Ryan Calabro (1), Eva Kemps (1), Marika Tiggemann (1), Ivanka Prichard (2)

Paff, H. (1), Matthews, N. (1), Ross, J. (2) & Kritikos, A. (1)

Macpherson M.C. (1), Marie, D. (2), Richardson, M.J. (3), & Miles, L.K. (1)

Zhang L. & Osth, A. F.

Hamblin-Frohman, Z. Chang, S. Egeth, H. Becker, S.I.

Harrold, A.L. & Grove, P.M

Lovibond, P.F. (1), Lee, J.C. (1) & Le Pelley, M.E (1)

Stirling, N. S. J., Takarangi, M. K. T.

Connor Desai, S., Xie, B. & Hayes, B.K.

Hugh Riddell (1), Daniel Gucciardi (1), Ben Jackson (2), Cecilie Thogersen-Ntoumani (1), Constantine Sedikides (3), Nikos Ntoumanis (1)

Chen, H. & Osth, A. F.

Roodenrys, S., Miller, L.M. & Josifovski, N.

Osth, A. F. (1), Reed, A. (1), & Farrell, S. (2)

Badcock, D.R., Smith, A.C. & Dickinson J. E.

Gaurav Patil (1), Patrick Nalepka (1,2), Rachel W. Kallen (1,2), Michael J. Richardson (1,2)

Stewart, E.E.M. (1), Ludwig, C. (2) & Schütz, A.C. (1)

Hill, S. R. (1), Rozenberg, V. (1), & Peacock, M. (1)

Rachel Doggett[1], Elizabeth (Libby) J. Sander[2], James Birt[1], Matthew Ottley[3] & Oliver Baumann[*1]

Angela I. Renton1, David R. Painter2,3,4, & Jason B. Mattingley1,2,5

Williams, M.E. (1), Matthews, A.J. (1) & Honan, C. (1)

Nguyen, A.T.T. (1), Darda, K.M. (2,3) & Ramsey, R. (1)

Van Der Zant T. (1), Vanman, E.J. (1) & Nelson, N.L. (2)

Burton, O., Bodner, G.E. & Williamson, P.

Simister, E.T., Bridgland, V.M.E., Takarangi, M.K.T.

Little, Z. (1), Palmer, C.J. (2) & Susilo, T. (1)

Toraiwa, J., de Zubicaray, G, (1) (2) Meuter, R. (1) Gauvin, H. (3)

Ward, E.[1], Brownsett, S. L. E.[2,3], McMahon, K. L.[1,4,5], de Zubicaray, G. I.[1]

Bellagarda, C.A., Dickinson, J.E., Bell, J., & Badcock, D.R.

Introduction

Welcome to the listing of abstracts for the 2021 Annual meeting of the Australasian Experimental Psychology Society (EPC - 2021).

This is a living document that will be updated as details of the meeting (such as the scheduling of talks) become available.

The Experimental Psychology Conference provides an annual forum for Australasian and international researchers in experimental psychology to share their research, with an emphasis on postgraduate students and early career researchers.

We look forward to meeting with you, either in person here in Brisbane – or online!

Ross Day Plenary Lecture: The multi-tasking brain

Professor Paul Dux

School of Psychology, The University of Queensland

http://www.paulduxlab.org/

Stream 1 – Friday April 9, 16:00 – 17:00 - Abel Smith Lecture Theatre

Amongst earliest findings of cognitive psychology was the observation that when individuals attempt to perform multiple, simple sensory-motor tasks concurrently these typically interfere with one another; leading to at least one of them being performed more slowly, and with less accuracy (Telford, 1931; Welford, 1959). Interestingly, among these early observations, it was also shown that such multitasking performance costs could be attenuated with practice/training (Telford, 1931), suggesting there is malleability in how the constituent tasks are undertaken after they are learned. Understanding how practice pushes the boundaries of multitasking limitations remains a great mystery for both psychology and neuroscience, and carries consequence for both theory and application. Here, I present computational modelling work arguing that multitasking costs are inevitable in a non-random environment, and occur due to representational limitations in frontoparietal and subcortical (FP-SC) brain regions. I also show how training, brain stimulation and individual differences reveal a variety of factors that influence the efficacy of training interventions that seek to enhance multitasking performance. Collectively, the results shed light on the neuro-cognitive mechanisms of cognitive control limitations and those that underlie the enhancement of associated operations.

Bio: Prof Paul E Dux is a psychologist and neuroscientist who received his PhD from Macquarie University and then undertook a postdoctoral fellowship at Vanderbilt University. He has been faculty in the School of Psychology at The University of Queensland since 2009 where he leads a group that studies the cognitive and neural underpinnings of human information-processing capacity limitations. Specific interests are the mechanisms of attention and executive function and the efficacy and neural basis of cognitive training/learning. Dux employs psychophysics, modeling, brain stimulation and function imaging approaches and applies his work to health (ageing), military and education settings.

General Talks…

1. A Comparison Between the Use of Afterimages and Physical Stimuli in the Examination of Size Constancy

Amy Siobhan Millard (1), Irene Sperandio (2), Philippe A. Chouinard (1)

1. Vision and Action Lab, La Trobe University, Australia; 2. Department of Psychology and Cognitive Science, University of Trento, Italy

Via Zoom

Stream 1 – Sunday April 11, 14:00 – 14:20 *Student Talk*

Size constancy is the ability to perceive an object as having a fixed size regardless of viewing distance. Laws of geometry provide exact guidelines for how size-distance scaling should operate in humans under optimal viewing conditions. Most research on size constancy involves participants making size judgments about objects that exist in the external environment. However, some studies have found success in using afterimages as an alternative tool to these physical stimuli. Unlike physical objects, afterimages are a unique subjective experience, so it is unknown if these methodological approaches are comparable. Here, we provide data from the first direct comparison. This study (N=20) examined the size perception of physical objects and afterimages under binocular, monocular, and darkness viewing conditions across ten distances (for a total of 60 trials per participant). The procedures for presenting and measuring the two stimuli types were designed to be as identical as possible. We calculated the slope of the change in perceived size of the stimuli over viewing distance and then computed how much this slope deviated from the hypothetical slope predicted by a size-distance scaling equation from Emmert's law. Our findings show that perceived size closely reflected size-distance scaling predictions under ideal viewing conditions for both methods, indicating their comparability. However, data for observed distance, onset, duration, and colour was also collected and revealed subtle differences in the way these stimuli are perceived.

2. A comparison of tasks measuring basic and compound facial expressions of emotions

Keough E., Favelle S., Roodenrys, S. & Wood

Cognitive Basis in Atypical Behaviour Lab, School of Psychology, The University of Wollongong

In person at satellite site Wollongong

Stream 4 – Friday April 9, 10:00 – 10:20 *Student Talk*

The majority of studies testing recognition of facial expressions of emotion use forced-choice emotion labelling tasks. However, these types of tasks do not tap all of the processes involved in emotion recognition and may not be suitable for testing beyond the six basic emotion categories. In two experiments, we use two alternative methods to measure facial expression recognition of emotions that are not typically included in research but are common in everyday interactions. In Experiment 1, participants completed a free-labelling expression recognition task, and in Experiment 2, participants completed a same-different expression-to-label matching task. Stimuli in both experiments consisted of twenty-two basic and compound emotion categories from the Compound Facial Expression of Emotion database (Du et al., 2014). Results show that performance on the expression to label matching task showed a similar pattern on level of accuracy to that typically seen in emotion labelling tasks. In contrast, there was a wide range of unique responses in the free-labelling expression recognition task and accuracy depended largely on the criteria used to code the data. Notably, basic emotion labels were more frequently provided by participants, compared to compound emotion labels. Findings are discussed with respect to the advantages and disadvantages of multiple measures of expression recognition ability and data analysis strategies.

3.   Acquiring Causal Illusions without Learning

David W. Ng, Jessica C. Lee, Peter F. Lovibond

School of Psychology, University of New South Wales Sydney

In person at satellite site (Sydney)

Stream 2 – Sunday April 11, 14:40 – 15:00 *Student Talk*

Illusory causation is a phenomenon in which people mistakenly perceive a causal relationship between a cue and outcome, even though the objective contingency between them is actually zero (the probability of the outcome is the same in the presence and the absence of the cue). This phenomenon has commonly been used as an in-lab analogue of how people develop superstitious beliefs or endorse ineffective alternative medicines in the real world. Associative models have framed illusory causation as an association that is initially acquired but eventually normalises over extended training (i.e. associative strength returns to zero). Alternatively, evidence-weighting models posit that illusions arise from a biased interpretation of information. These models predict acquisition of the illusion during training by underweighting trials where the cue is absent. Empirical evidence regarding the trajectory of causal illusions over training however, has been lacking in the literature. We propose a third account in which rather than being neutral at the onset of a contingency task and then acquiring the causal illusion over training trials, participants start with strong prior beliefs that are maintained throughout training. Results from an experiment designed to test between these accounts will be presented, and implications for our understanding of how causal illusions develop will be discussed.

4.   Additive effects of theta and alpha phase in predicting the timing of pro- and anti-saccades

Harris A.M. (1), Mattingley J.B. (1,2,3)

1. Queensland Brain Institute, The University of Queensland; 2. School of Psychology, The University of Queensland; 3. Canadian Institute for Advanced Research (CIFAR)

In person in Brisbane

Stream 1 – Saturday April 10, 15:40 – 16:00

Neural oscillations have been suggested to coordinate many aspects of neural processing. In particular, the phase of oscillations in the local field potential influences the likelihood of neural firing, and thus influences perception and behaviour. Previous examinations of how phase impacts behaviour have typically focussed on examining the influence of one oscillatory frequency at a time. However, different nodes of the brain's various networks, as well as the cognitive functions they support, oscillate at a variety of different frequencies, each of which should contribute to the final behavioural outcome. We sought to quantify the unique contributions of phase effects in two distinct frequency bands for predicting the timing of eye movements. We had participants perform a saccade task with pro- and anti-saccade trials randomly intermixed, while we measured their brain activity with EEG. Using a multivariate regression-based analysis approach we show that the phase of oscillations in both the 3-7 Hz theta band and the 8-14 Hz alpha band contribute additively to the prediction of saccadic reaction times in both pro- and anti-saccades. Interestingly, however, the conditions were differentiated by their preferred frontal-midline theta phase, with optimal phase for pro-saccades at the opposite angle to that of anti-saccades. These results suggest that neural processing is impacted by the phase of oscillations in each node of an engaged brain network, but the relationship between phase and behavioural performance will depend on the particular task.

5.   A Dual-Process Models Perspective on Soft Drink Consumption

Joshua McGreen, Eva Kemps, Marika Tiggemann

Flinders University

Via Zoom

Stream 4 – Saturday April 10, 12:00 – 12:20

Global consumption of soft drinks has increased rapidly over the past 50 years. This increased consumption of sugar in the form of soft drinks has become a major public health problem. Accordingly, the present study investigated the mechanisms underlying soft drink consumption to inform potential methods for reducing such consumption through empowering individuals to regulate their own behaviour. Guided by dual-process models, we investigated the roles of cognitive biases for soft drink cues (evaluative, attentional, and approach biases) and self-regulatory control in soft drink consumption and choice. Participants were 128 undergraduate students (17-25 years). They completed computer-based measures of the three biases (Implicit Association Task, Dot Probe Task, and Approach Avoidance Task) and self-regulatory control (Go/no-go Task). Soft drink consumption and beverage choice were measured using a taste test and a take home beverage choice task, respectively. Evaluative bias for soft drink cues was positively associated with soft drink consumption. Self-regulatory control was also positively correlated with soft drink consumption, but only for men. The results support dual-process models in predicting soft drink consumption. Specifically, automatic processes (cognitive biases) and controlled processes (self-regulatory control) may each predict soft drink consumption, albeit independently and only for certain individuals. The findings provide an increased understanding of the roles of the three biases and self-regulatory in soft drink consumption, and could inform potential interventions for reducing soft drink consumption by reducing evaluative bias and/or strengthening self-regulatory control.

6.   Age-related changes to eye-hand coordination during the online control of movement

Dr. Jessica O'Rielly & Professor Anna Ma-Wyatt

The Active Vision Lab, University of Adelaide, North Terrace, Adelaide, 5000.

In person at satellite site (Adelaide)

Stream 1 – Saturday April 10, 15:00 – 15:20

As people age, various aspects of motor control and visual performance decline. For example, there is an age-related increase in saccade latencies (Munoz, Broughton, Goldring and Armstrong, 1998). However, it is not yet understood how these age-related changes to saccadic performance might

impact eye-hand coordination during online control. Since eye-hand coordination is critical for activities of daily living, it is important to understand how it changes with ageing. We investigated this question through use of a target perturbation paradigm, where changes in the target location could occur either 0ms (early) or 200ms (later) after reach onset. For younger and older participants, we analysed reach correction latencies and frequency of the reach correction, coupled with analyses of saccades across all stages of movement. Older participants had slower correction latencies and initiated corrections less frequently compared to younger participants, with this trend exacerbated in the later (200ms) target perturbation condition. Older participants also produced slower saccade latencies towards both the initial and perturbed target. For trials in which a correction occurred to a late perturbation, touch responses were more accurate when there was more time between the saccade landing and the touch. Altogether, our results suggest that these age-related effects may be due to the delayed acquisition of visual and oculomotor information used to inform the reaching movement, stemming from the increase in saccade latencies pre and post-target perturbation.

7.   A Hierarchical Temporal Context in Younger and Older Adults

Clarke, O. (1), Weinborn, M. (1) & Farrell, S. (1)

1. School of Psychological Science, The University of Western Australia

In person at satellite site (Perth)

Stream 4 – Saturday April 10, 14:20 – 14:40 *Student Talk*

The present study tested a key assumption in Farrell's (2012) model of episodic memory: that temporal context is hierarchically structured. We also aimed to determine whether a contributing factor to age-related decline in episodic memory is older adults finding it more difficult to differentiate one group context from another, therefore having greater difficulty accessing group-level information (Farrell, 2012). Younger (aged 18-25) and older (aged 60+) participants were asked to complete an immediate free recall task after being presented with lists of 12 words presented as three groups of four words. There was evidence for a hierarchically structured temporal context, with recall initiation more likely from the beginning of a group, and with recall proceeding in a forward serial order. Older adults showed a particular difficulty in accessing unique groups within a list (vs recalling further items from already accessed groups), consistent with Farrell's model.

8.   A layered network with spike-timing-dependent plasticity can localise a moving object in real-time despite neural delays

Sexton, C. (1), Burkitt, A.N. (2), & Hogendoorn, H. (1)

1. Melbourne School of Psychological Sciences, The University of Melbourne; 2. Department of Biomedical Engineering, The University of Melbourne

In person at satellite site (Melbourne)

Stream 1 – Friday April 9, 11:00 – 11:20

It takes time for visual information to pass from the retina to higher layers of the visual cortex. Because of this, visual representations at higher layers of the visual hierarchy become progressively outdated with respect to the true state of the world. This undermines our ability to interact with our environment in real-time, such as when tracking or reacting to fast moving objects. It has been proposed that the visual system compensates for these delays by extrapolating the position of moving objects along their trajectory. To investigate possible mechanisms underlying this extrapolation, Burkitt and Hogendoorn (2020, https://doi.org/10.1101/2020.08.01.232595) simulated a two-layer, feed-forward hierarchical network of velocity-tuned neurons with a neural transmission delay between layers, which learned its connections via spike-timing dependent plasticity. They showed that this caused the receptive fields of neurons to shift in the opposite direction to a moving stimulus, partially compensating for the lag imposed on the network by the neural transmission delay. Here, we extend this work by expanding the model to eight layers and assessing the cumulative contributions of the different layers. First, we replicate the previous finding that moving objects are represented further along their motion trajectory than stationary flashes, and that this effect increases with velocity. Importantly, we show that although extrapolation at each individual layer is a non-linear function of velocity, the cumulative extrapolation at the higher levels of the hierarchy approximates a linear dependence on velocity. This is precisely what would be required to accurately localise a moving object in real-time.

9.   A LEGO® wall between us: Examining compassionate and competitive behaviour when groups are unequal

Kirkland K. (1), Jetten, J. (2), Wilks, M. (3) & Kirby, J. (2)

1. The University of Melbourne; 2. The University of Queensland; 3. Yale University

In person in Brisbane

Stream 4 – Saturday April 10, 15:40 – 16:00

High economic inequality has been linked to a number of deleterious effects such as decreased compassionate behaviour and greater feelings of competitiveness. However, few lines of research have examined inequality between groups and instead focus on inequality individuals. In addition, little work has explored what factors may help facilitate compassionate responses under contexts of inequality. We created a novel experimental paradigm to address these gaps in the literature. Upon arrival, several participants were divided into two 'countries' – one which possessed a large amount of LEGO® (high resource group) and another which possessed a small number of LEGO® pieces (low resource group). Participants were asked to create as many food pieces as they can to assure no one starves, and this could be achieved by assembling LEGO® pieces in a particular way. Across three experiments, we measured the impact of a number of manipulations on compassionate responses: 1) we varied the inequality between the groups, 2) participants completed compassion training and 3) a compassionate norm was introduced by a confederate. Participant's compassionate responses (e.g., their sharing behaviour and the amount of food pieces created) and feelings of competitiveness were measured in response to these manipulations. Results revealed that only the introduction of a compassionate norm (Experiment 3) was successful in increasing compassionate responses and decreasing feelings of competitiveness. This suggests that the behaviour of others in our environment is a powerful influence on our behaviour, and this may help alleviate the negative effects of intergroup inequality.

10. A longitudinal investigation of children's early syntactic representations

Kumarage, S.J.C. (1), Donnelly, S. (2, 3) & Kidd, E. (1, 2, 3)

1. Language Development Department, Max Planck Institute for Psycholinguistics; 2. Research School of Psychology, The Australian National University; 3. ARC Centre of Excellence for the Dynamics of Language

In person at satellite site Sydney

Stream 2 – Friday April 9, 11:40 – 12:00 *Student Talk*

A core question in language development research concerns the degree to which early syntactic representations are abstract or lexicalised (i.e., tied to individual words). Syntactic priming is a method widely used to test the nature of underlying syntactic representations. Lexicalist theories of grammar (e.g. Tomasello, 2000) predict priming is initially dependent on shared vocabulary between a prime and target trial and only later based on abstract knowledge (i.e. shared grammatical structure). In contrast, one prominent computational model of priming that acquires syntactic representations via error-based learning (Chang, Dell, & Bock, 2006), predicts the opposite pattern. We present the first longitudinal study of syntactic priming across development. We tested a cohort of approximately 100 children every 6 months between 36 and 54 months on the active/passive structural alternation (e.g. *the mouse hugged the chicken/the chicken was hugged by the mouse*), resulting in four time points. Children played a 'snap' card game with an experimenter, in which both the structure of the prime sentence, and verb overlap (i.e. prime and targets either shared or did not share crucial lexical content) between prime and target sentence were manipulated. Our results were most consistent with the Chang et al. (2006) model, where priming was initially abstract and became more lexicalised with development. The results are consistent with an account of acquisition where children operate with abstract mappings between conceptual and grammatical structure from early in development, which increasingly incorporate the distributional preferences of verbs over time.

References;
Chang, F., Dell, G. S., & Bock, K. (2006). Becoming syntactic. http://dx.doi.org/10.1037/0033-295X.113.2.234
Tomasello, M. (2000). Do young children have adult syntactic competence? *Cognition*, *74*(3), 209-253.

11. A model-based approach to disentangling facilitation & interference effects in conflict tasks

Evans, N. J. (1) & Servant, M. (2)

School of Psychology, The University of Queensland; 2. Laboratoire de Psychologie, Université de Franche-Comté

In person in Brisbane

Stream 3 – Friday April 9, 13:20 – 13:40

Conflict tasks have become one of the most dominant paradigms within cognitive psychology, with their key finding being the conflict effect: that participants are slower and less accurate when task-irrelevant information conflicts with task-relevant information, compared to when these sources of information are consistent. However, the conflict effect can consist of two separate effects: facilitation effects, which is the amount of benefit provided by consistent task-irrelevant information, and interference effects, which is the amount of impairment caused by conflicting task-irrelevant information. While previous studies have attempted to disentangle these effects using neutral trials, these analyses rely on the assumptions of Donder's subtractive method, which are difficult to verify and may be violated in some circumstances. Here, we develop a model-based approach for disentangling facilitation and interference effects, which extends the existing diffusion model for conflict tasks (DMC) framework to allow for different levels of automatic activation in compatible and incompatible trials. Comprehensive parameter recovery assessments display the robust measurement properties of our model-based approach, which we apply to 9 previous data sets from the flanker (6) and Simon (3) tasks. Our findings suggest asymmetric facilitation and interference effects, where interference effects appear to be present for most participants across most studies, whereas facilitation effects appear to be small or non-existent. We believe that our novel model-based approach provides an important step forward for understanding how information processing operates in conflict tasks, allowing researchers to assess the convergence or divergence between experimental-based and model-based approaches when investigating facilitation and interference effects.

12. A multiple-task reduction approach to measuring perceptual expertise in fingerprint analysis

Searston R. A. (1), Tangen, J. M. (2) & Thompson, M. B. (3)

1. School of Psychology, The University of Adelaide; 2. School of Psychology, The University of Queensland; 3. School of Psychology, Murdoch University

Via Zoom

Stream 4 – Sunday April 11, 11:40 – 12:00

Single-trial measurements of human performance are notoriously poor indicators of an individual's overall performance on a given task. Similarly, we argue that single-task measurements are poor indicators of an individual's overall performance in a multifaceted expert domain. In this talk, we describe a novel multiple-task reduction approach to measuring expert performance in the domain of fingerprint analysis. Using an all-possible-combinations method, we reduced a series of ten domain-specific perceptual tasks down to three tasks that most optimally distinguished between trained fingerprint examiners and novices. We were able to explain a surprising amount of variance in participants' performance across the ten original tasks using just 34 trials from the top three most discriminating tasks. The resulting measurement tool — an Expertise Quotient (xQ) for fingerprints — also accounted for more variance in performance than any one task alone, including one highly face valid task that closely resembled examiners' daily work. We consider the use of the xQ as a robust and generalisable measure of fingerprint expertise in training, selection, and competency testing contexts. We also discuss the general applicability of this multiple-task reduction approach to capturing human performance in other complex domains of expertise in medicine, defence, and education.

13. Analytic thinking and COVID-19 misinformation beliefs and sharing intentions

Matthew S. Nurse (1), Robert M. Ross (2), Ozan Isler (3) & Dirk Van Rooy (4)

1. Australian National Centre for the Public Awareness of Science, Australian National University; 2. Department of Philosophy at Macquarie University; 3. Centre for Behavioural Economics, Society and Technology, Queensland University of Technology; 4. Research School of Psychology, Australian National University

Via Zoom

Stream 4 – Sunday April 11, 09:20 – 09:40 *Student Talk*

Understanding the factors that predict misinformation acceptance is now a greater priority in the context of the current COVID-19 pandemic. The classical reasoning account predicts that misinformation beliefs form due to a failure to override biased and intuitive reasoning. In a quota-matched Australian sample (N = 742), we found that a lack of analytic thinking is associated with both COVID-19 misinformation beliefs and COVID-19 misinformation sharing intentions. However, ideological biases may also play a role, as we found that people with right-wing identities were also more likely to believe or share COVID-19 misinformation. These psychological correlates may provide clues to reducing the severity of the current COVID-19 infodemic.

14. An Empirical Evaluation of the Reliability and Validity of the "Reading the Mind in the Eyes" Test

Higgins, W.C., Langdon, R (1)., Ross, R.M. (2) & Polito, V.

Department of Cognitive Science, Macquarie University; 2. Department of Psychology, Macquarie University

Via Zoom

Stream 4 – Saturday April 10, 11:40 – 12:00 *Student Talk*

The Reading the Mind in the Eyes Test (RMET) is a widely used measure of theory of mind (ToM) ability that was originally designed to detect ToM deficits in autistic adults and validated based on the performance of autistic individuals. Despite its popularity, there are questions regarding the test's psychometric properties, including its factor structure. In the first part of this talk I present results from an exploratory factor analysis (EFA) we conducted on RMET data from a US representative sample (n = 1,181). Similar to previous factor analyses of the RMET, we failed to identify a factor structure with good model fit. We also investigated whether inconsistencies in the factor structure of previous RMET factor analyses might be a consequence of individuals with higher levels of autistic traits applying different strategies to complete the RMET. We hypothesised that running separate EFAs on the data from individuals with high and low levels of autistic traits as measured by the autism spectrum quotient would lead to better model fit for both groups. However, model fit remained poor for both groups. In the second part of the talk I describe problems with the construction and validation of the RMET as a measure of ToM ability and argue that researchers should not use the RMET due to the test's weak psychometric properties and the lack of evidence to support its reliability and validity.

15. A new open psychophysiological emotion dataset: modelling emotional arousal over time

Eisenbarth, H.(1), Oxner, M. (1), Shehu, H.A. (1), Walsh, A. (2), Browne, W. (1) & Xue, B. (1)

1. Victoria University of Wellington, 2. Karolinska Institutet Stockholm

In person at satellite site (Wellington)

Stream 4 – Friday April 9, 10:40 – 11:00

Emotional experiences are not static, but change over time. To be able to investigate those changes moment-by-moment in relationship with (neuro-)physiological changes with various analysis methods, we created a new shared database of emotional responding. In this presentation, we share the characteristics of that new emotion mapping dataset (EMAP), descriptive aspects as well as pattern analyses. The following responses of 145 individuals to a variety of emotion-provoking film clips were recorded: EEG (64 channels), GSR, HR, blood pressure and respiration alongside of moment-by-moment ratings of emotional arousal. After transformation of the EEG signal into power spectra, feature selection was performed via a Particle Swarm Optimization approach. Based on a Decision Tree algorithm we developed a pattern of physiological activity that would most closely reflect the moment-by-moment variation in emotional arousal. The resulting reduction in prediction error showed that a focus on features selected for best performance within and across participants improved the model. The features that were selected using this method included peripheral as well as EEG features, spanning electrode sites across the scalp and all frequency bands. The relevance of appropriate feature selection and algorithm choice for moment-by-moment changes of physiological as well as emotion experiences will be highlighted comparing the results for different algorithms.

16. An observer model of tilt perception, sensitivity and confidence: Sensitivity and confidence differences can be caused by sensory processing

Derek H. Arnold[1], Blake W. Saurels[1], Natasha Anderson[1] & Alan Johnston[2]

Perception Lab, University of Queensland, Australia; 2. School of Psychology, The University of Nottingham, United Kingdom

In person in Brisbane

Stream 1 – Friday April 9, 15:00 – 15:20 - Abel Smith Lecture Theatre

The human brain is constantly self-evaluating. We automatically experience levels of confidence in our decisions, and in perception these feelings tend to be accurate. Moreover, people don't need feedback to know how well they are performing a perceptual task – so this is a form of metacognition, as the human brain evidently has insight into how well it has encoded sensory information, which it expresses as confidence. Arguably the most important first steps toward understanding perceptual metacognition have involved breaking the typical relationship between performance and confidence. For instance, having a large range of direction signals has a greater negative impact on confidence than perceptual precision. Such dissociations have led

researchers to assume confidence and perceptual precision are shaped by different types of information (e.g. perceptual and decisional). To assess this possibility, we used adaptation to adjust orientation processing, and examined the impact of a range of adaptors on perception, sensitivity and confidence. We found that some adaptors had a greater detrimental impact on confidence than precision, and we could account for this by a model of orientation processing that assumes confidence is indexed against magnitude criteria (i.e. inputs encoded as tilted > +/- 3 degrees from vertical might elicit high confidence, and smaller values low confidence). Our data show that a dissociation between decisional precision and confidence could ensue – not because these judgments rely on different *types* of information (e.g. perceptual and decisional), but because they rely on different magnitudes of perceptual information.

17. Anodal Bilateral Transcranial Direct Current Stimulation to the Dorsolateral Prefrontal Cortex Reduces Driving Hazard Perception Performance in Young Drivers

Kieseker, G. A, (1), Sale, M. V. (1, 2), Horswill, M. S. (3)

1. School of Health and Rehabilitation Sciences, The University of Queensland; 2. Queensland Brain Institute, The University of Queensland; 3. School of Psychology, The University of Queensland

In person in Brisbane

Stream 1 – Friday April 9, 10:40 – 11:00 - Abel Smith Lecture Theatre *Student Talk*

Young drivers aged 16-25 years have a 10-fold increase in crash risk as compared to any other age group of drivers. This increased crash risk can be explained by younger drivers having comparatively poorer hazard perception skills compared to older, more experienced drivers. That is, young drivers are poorer at recognising and responding to potentially dangerous driving situations. As such, we seek to modulate young drivers' performance on a hazard perception task by applying excitatory (i.e., anodal) transcranial direct current stimulation (tDCS) to the bilateral dorsolateral prefrontal cortices (DLPFC). The bilateral DLPFC were chosen as research has implicated these regions in executive functions recruited in hazard perception while driving (i.e., top-down attentional processing and impulse control). Forty participants attended two sessions of counterbalanced sham or active stimulation. Whilst receiving tDCS, participants watched videos of a driving scene with a hazard appearing at any point in the video. Participants responded to the hazard via a mouse click. We hypothesized that participants would be quicker and more accurate in identifying hazards while undergoing active stimulation as compared to sham stimulation. Results indicated findings contrary to the hypotheses, whereby participants were significantly slower and less accurate in identifying hazards while receiving active stimulation as compared to sham stimulation. A possible explanation may be a reversal of stimulation effects due to current dosage, and follow-up studies are planned to investigate this phenomenon. This is the first study to investigate the effects of non-invasive brain stimulation on a complex, higher-order task such as driving.

18. Anxiety in Autistic Children

Goulding, K. J. & Freeman, E. E.

School of Psychology, The University of Newcastle, Australia

Via Zoom

Stream 4 – Saturday April 10, 10:40 – 11:00

Anxiety disorders are one of the most commonly co-occurring conditions in autistic children and can cause significant distress and impairment. Despite the high rate of comorbidity, there has been little research focused on how this anxiety impacts the school experience of autistic children and their families. In particular, how this anxiety relates to school refusal behaviour and academic achievement, as well as the impact this has on parenting stress has not been sufficiently explored. While the main goal of our project is to explore the relationships between these factors, it is also unclear how to best measure anxiety within this population. While many existing standardized measures of anxiety adequately assess the typical symptoms of anxiety, they often fail to account for the atypical expressions of anxiety which may present in autistic individuals. Here, we discuss the preliminary findings of our first study which compares the use of an autism-specific anxiety measure (the Anxiety Scale for Children with Autism Spectrum Disorder; ASC-ASD), against a traditional anxiety measure (the Spence Children's Anxiety Scale; SCAS) as well as the implication of these findings for our future research.

19. Are more positive attitudes towards science associated with "better" decision-making? Endorsement of scientific inquiry and climate policy evidence.

Hughes, J. E. (1), Palmer, M. A. (1), Sauer, J. D. (1) & Drummond, A. (2)

1. School of Psychological Sciences, University of Tasmania, Tasmania, Australia; 2. School of Psychology, Massey University, Palmerston North, New Zealand

In person at satellite site (Hobart)

Stream 2 – Sunday April 11, 13:20 – 13:40 *Student Talk*

Public beliefs about climate change do not align with the consensus among scientists. One of the reasons this may occur is that individuals with more conservative worldviews can become less accepting of facts about climate change as scientific knowledge increases. The present study extended on previous research to investigate whether positive attitudes towards science, specifically Endorsement of Scientific Inquiry (ESI), help individuals evaluate information to be more consistent with scientific evidence, and whether ESI can be enhanced. Participants (N = 600) were randomly assigned to an experimental group where a short intervention designed to increase ESI was administered, or a control group. All participants rated their support for climate policies accompanied by scientific evidence of varying strength. It was hypothesised that higher levels of ESI would be associated with improved decision-making, independent of worldviews, and the intervention would increase ESI, further improving decision-making. Overall, ESI was associated with improved evaluation of evidence, such that, as ESI increased, the difference between ratings for stronger-evidenced compared to weaker-evidenced policies also increased. This effect was greater for participants who received the ESI intervention and was not moderated by worldviews. However, worldviews did moderate the effect of the ESI intervention: significant increases in ESI occurred among those with more conservative, but not progressive, worldviews. Our findings offer support for the view that individuals with higher ESI may have an improved ability to discern and reason with scientific information. This suggests public support for pro-environmental policies may be expedited through strategies to increase ESI.

20. Are older adults worse in recognising intentional attitudes?

Chris Davis, Juliana Soardi & Jeesun Kim

The MARCS Institute, Western Sydney University

Via Zoom

Stream 3 – Sunday April 11, 16:00 – 16:20

Studying differences in emotion recognition performance between older and younger adults has a long research history. The current study examined whether there is an age effect in recognizing a different type of expression – the expression of intentional attitude via facial and vocal prosody. Understanding the intention behind a talker's message is an vital part of communication, as such it is important to see if older adults have problems in recognizing differential intentional attitudes. To examine this, 20 younger and 20 older adults were presented with movies of 10 talkers uttering a short phrase while expressing criticism, suggestion, doubt, longing, warning or neutral intention; and asked to classify each (as one of the five attitutes or neutral). The results showed that older adults were less accurate than the younger adults and showed a different pattern of recognition strengths and weaknesses.

21. AR/VR Safety Implications for Training

Logan McIntosh[1], Guy Wallis[2], Philip Grove[1]

School of Psychology, University of Queensland; 2. School of Human Movement and Nutrition Sciences, University of Queensland

In person in Brisbane

Stream 2 – Saturday April 10, 14:00 – 14:20

Cybersickness is similar to motion sickness and affects many users in virtual reality environments. Currently, there is only a limited understanding of why cybersickness occurs, and particularly why there are large differences in onset and severity between individuals. This experiment investigated whether differences in basic binocular visual processes correlate with differences in severity of cybersickness. One hundred and sixteen participants completed a battery of tests for seven binocular processes including stereoacuity, fusion thresholds, vergence latency, speed, and range, before viewing a nauseogenic stimulus for up to 20 minutes. Participants gave a verbal rating of their symptoms every minute while viewing the stimulus and completed the Simulator Sickness Questionnaire (SSQ) several times during the experiment. A subset of SSQ items were also analysed as the Cyber Sickness Questionnaire (CSQ), a targeted measure of sickness in VR head-mounted displays. The stimulus elicited an overall increase in sickness, with 23 participants reaching the maximum rating of 7 out of 10. However, performance on the visual tasks was not predictive of this increase in sickness, with only two of the measurements correlating with the recorded sickness variables. Nevertheless, we observed several correlations between the sickness scales and between individual task thresholds. We also noted significant differences in performance on the tasks were also observed between the current VR-based experiment and a previous stereoscope-based experiment. These findings confirmed marked individual differences in basic binocular processes, and that the CSQ is an appropriate measure for sickness in VR and AR environments.

22. Assessing human perceptual expertise for the identification of biosecurity threats

Gandhi, V. M. (1), Thompson, M. B. (1,2), Campitelli, G. (1,2), Hewitt, C. (2), Loft, S. (3), Tartano, K. (1), Piola, R. (4), Campbell, M. (5), & Hambrick, Z. (6)

1. School of Psychology, Murdoch University; 2. Biosecurity and One Health Research Centre, Harry Butler Institute, Murdoch University; 3. School of Psychological Science, The University of Western Australia; 4. Maritime Division, Defence Science and Technology; 5. School of Life and Environmental Sciences, Deakin University; 6. Department of Psychology, Michigan State University.

In person at satellite site (Perth)

Stream 4 – Sunday April 11, 15:40 – 16:00

Perceptual expertise is often characterised by an ability to accurately categorise and identify complex stimuli in a particular domain. Limits and measures of perceptual expertise have been established in domains such as diagnostic medicine, fingerprint identification, and radiology. The task of identifying a dangerous invasive species on, for example, the hull of a submarine before it enters Australian waters, has not been established. We don't know how accurate lay people are at this task, let alone purported experts. Identification errors in this biosecurity domain can have disastrous environmental and economic consequences. Here we present a series of lab-based experiments to determine people's ability to tell the difference between invasive and noninvasive marine species. We display two images on screen, side-by-side, and ask people to rate them as being the same species or two different species. We separately test people's ability to discriminate species sourced from a government published marine pest identification guide, and sourced from our own large database. We found that participants could reliably discriminate species at above chance levels. They showed a liberal response bias, such that people were more likely to say that two species were the same regardless of whether they were the same or different. Our findings are consistent with other more established expert domains, and contribute to our understanding of the nature, development, and training of perceptual expertise. The findings may have implications for government and citizen-science approaches to mitigating biosecurity threats.

23. Attention to Affective Features Across Distance

Day, J.C., Pegna, A.J. & Kritikos, A.

Perception and Action Lab, The University of Queensland

In person in Brisbane

Stream 4 – Friday April 9, 09:20 – 09:40 *Student Talk*

Some evidence suggests that threatening facial expressions like anger can result in slowed responses to targets (Eastwood, Smilek, & Merikle, 2003). However, the way that attention is allocated across space is not uniform and space closer to the body is treated differently than space further away (e.g. Evans & Wener, 2007, Maravita & Iriki, 2004). Previous exploration of how space close to the body (i.e. Peripersonal space) is represented depending

on emotion has relied on self-report measures (Ruggiero et al., 2016). The current research examines how people spontaneously modulate their own distance from emotional expressions. Additionally, it considers how attention is altered based on distance from an emotional face both when given agency over one's own position or when positioned near or far from the face. Results suggest that when given agency, being exposed to an angry face confers an advantage at close distances but not far, however such was not true when participants were not given control over their own positioning.

24. Autistic traits are related to motor differences in the general population

Messing, A. (1), Bolbecker, M (2) & Apthorp, D. (1, 3)

1. School of Psychology, University of New England, Australia; 2. Department of Psychological and Brain Sciences, Indiana University, Bloomington, IN, USA; 3. School of Computer Science, Australian National University, ACT, Australia.

In person in Brisbane

Stream 4 – Saturday April 10, 11:00 – 11:20 *Student Talk*

Although social and cognitive deficits are core to the diagnosis of Autism spectrum disorder (ASD), and have been found to exist in the general population, a recent focus has been on motor functioning. Motor tasks, such as the finger Tapping Task, represent the behavioural output of known motor functions and can be mapped to regions of the brain which can provide vital information of neurological and structural underpinnings of ASD and other neurological conditions. Differences in motor function have been reported between those with ASD and controls. Since autistic traits are also present in the general population, is it possible that these traits map onto motor differences in this population? In an online study, we measured people's self-reported autistic traits using the AQ-10, and their motor functioning using the Finger Tapping Task; we also evaluated whether their age and sex impacted our results. Results showed that those with higher AQ-10 scores recorded lower tapping scores in both hands. There was an interaction with age, such that this effect was more pronounced in younger individuals. Male participants had higher tapping rates, but this did not interact with autistic traits. Since the motor tasks employed in this study represent the behavioural output of known motor functions which can be mapped to regions of the brain, these results support the theory that damage or changes to these areas may be responsible for the observed association of impaired motor performance and autistic traits.

25. Behavioural and mechanistic Responses to Hyper-realistic Digital Humans (Still Life)

Cao, S. HM, Corballis, P. M

School of Psychology, The University of Auckland

In person at satellite site (Auckland)

Stream 4 – Saturday April 10, 10:00 – 10:20 *Student Talk*

My project investigated whether differences in perceived realism level of faces would cause differences in trait evaluations. I conducted two large survey studies and one eye tracking study. Subjects rated various traits in a series of faces differing in realism level. When a face was perceived as less realistic, subjects had an increase judgement of negative trait ratings, compared to when they perceived a face as more realistic. Additionally, we found evidence of a social-context effect for differences between human and non-human trait ratings.   Subjects in a high-risk social context tended to rate faces less positively. Eye tracking further provided mechanistic insight: fixations directed to non-human faces were typically prolonged compared to human faces. These differences, however, did not reside in specific regions of the face. Together, this project showed that human observers have a default tendency to detect non-humanness during onsets of less realistic faces, which plays an important role in the formation of trait judgments across different social contexts.

26. Beyond simple perceptual decision making: an investigation of feature-based attention and motion integration in two-alternative decisions

Morgan E. McIntyre[1], Dragan Rangelov[1] & Jason B. Mattingley[1,2]

1 Queensland Brain Institute, The University of Queensland; 2 School of Psychology, The University of Queensland

In Person in Brisbane

Stream 2 – Sunday April 11, 14:20 – 14:40 *Student Talk*

The processes involved in accumulating sensory evidence from a single source in simple perceptual decision-making tasks have been extensively studied. In the real world, however, perceptual decisions often have more complex requirements, such as using selective attention as a means of filtering out irrelevant information when multiple sensory signals are present. To investigate perceptual decision-making with more complex requirements we used random-dot kinematograms comprising two spatially intermingled fields of moving dots. In one task, observers were cued to attend to one set of dots, identified by colour, while ignoring the other. In another task, observers were asked to report on the average motion direction of both dot fields. In baseline displays just a single field of dots was presented. Observers made speeded responses, and we used drift-diffusion modelling to fit parameters for drift rate, boundary separation and non-decision time in each task. For the attention task, we found an increase in non-decision time when participants had to ignore a superimposed distractor field of dots, as compared to a task with a single field of dots. Concurrent distractors also influenced the drift rate, suggesting that participants were accumulating evidence from distractor stimuli as well as the targets. For the averaging task, the rate of evidence accumulation was lower, and boundary separation higher, relative to decisions made on a single field of dots, suggesting that participants were more cautious. Taken together, the results suggest that mechanisms of attention and the requirement to average multiple stimuli alter the dynamics of perceptual decision-making.

27. Bilinguals' use of lexical stress in L1 Dutch and L2 English

Bruggeman, L. (1) & Cutler, A. (1,2)

1. The MARCS Institute for Brain, Behaviour and Development & ARC Centre of Excellence for the Dynamics of Language, Western Sydney University; 2. Max Planck Institute for Psycholinguistics

Stream 2 – Friday April 9, 12:00 – 12:20

Language-specificity determines which acoustic cues listeners use to distinguish between spoken words, so that even highly similar languages such as Dutch and English can show cue differences. Dutch listeners use suprasegmental stress cues to distinguish the first syllables of, for instance, OCtopus (octopus; capitals indicate primary stress) and okTOber (October). English listeners, on the other hand, rely more on segmental differences and largely ignore suprasegmental cues. In second-language (L2) spoken-word recognition, listening strategies from the native language (L1) are often used, irrespective of their appropriateness. Dutch L2 listeners thus outperform Australian L1 listeners of English in identifying the source words of English syllables differing in stress (e.g., car- from CARton versus carTOON). Here a group of bilingual emigrants in Australia – with Dutch as L1 and high proficiency in L2, English – completed this task in both of their languages. In the L1 task, the emigrants' identification accuracy did not differ from that of a group of Dutch L1 listeners residing in the Netherlands. Accuracy in the L2 task was no different from that of Australian English L1 listeners; the emigrants did not outperform them. Taken together, these findings indicate that to optimise listening efficiency the bilingual emigrants flexibly apply appropriate language-specific strategies to both of their languages. During L1 listening the use of suprasegmental stress cues improves processing efficiency, so the emigrants exploit these cues. During L2 listening, however, this strategy is useless and the emigrants have thus abandoned it.

28.   Blinded by and stuck in negative emotions: Are distinct measures of emotional disengagement related?

Moeck, E. K. (1), Mortlock, J. (1), Most, S. (2), Onie, S. (3) & Koval, P. (1)

1. Melbourne School of Psychological Sciences, The University of Melbourne; 2. School of Psychology, The University of New South Wales; 3. The Black Dog Institute

In person at satellite site Melbourne

Stream 2 – Friday April 9, 15:00 – 15:20

Negative emotions can be functional—by alerting us to potential environmental threats—and dysfunctional—if they persist once a threat has ceased. Indeed, disengaging from negative emotions when they are no longer functional is crucial to maintaining psychological health. Researchers have developed reliable emotional disengagement measures. Emotion-induced blindness (Most et al., 2005), defined as the degree to which emotional stimuli capture attention and impair people's ability to notice subsequent neutral stimuli, represents a deficit in short-term disengagement. Emotional inertia (Suls et al., 1998), defined as the degree to which feelings carry over from moment-to-moment, represents a deficit in longer-term disengagement. Both emotion-induced blindness (Onie & Most, 2017) and emotional inertia (Koval et al., 2016) have been independently linked to persistent negative thought, defined as the tendency to repeatedly engage in negative self-focused thoughts (rumination, worry). But how all three of these constructs relate to one another has yet to be examined; the current study aim. Participants (N = 196) completed tasks assessing emotion-induced blindness and emotional inertia and global self-reports of persistent negative thought. We estimated correlations between emotion-induced blindness and persistent negative thought and used multilevel modelling to estimate their associations with emotional inertia. We found very strong evidence for the null hypothesis for the emotion-induced blindness and persistent negative thought models (both BF10 = .018) and strong evidence of no correlation between emotion-induced blindness and persistent negative thought (BF10 = .096-.099). Inconsistent with previous research and theory, our findings suggest these measures of emotional disengagement capture distinct processes.

29.   Bodily cues of sex and emotion can interact symmetrically

Craig B.M. (1, 2)

1. School of Psychology, the University of New England; 2. Faculty of Health Sciences and Medicine, Bond University

In person in Brisbane

Stream 4 – Friday April 9, 09:00 – 09:20

Although much research has investigated how multiple sources of social information in faces are processed an integrated, few studies have extended this investigation to the body. The aim of the current study was to do so by investigating the nature of the interaction between bodily cues of sex and emotion. Using the Garner paradigm, participants categorised the sex or the emotional expression (happy and angry in Experiment 1 or angry and sad in Experiment 2) present on bodies across two block types. In the orthogonal task of the Garner paradigm, participants categorised bodies on one dimension while the other dimension was varied (e.g., categorising the sex of happy and angry bodies). In the control task participants categorized bodies along one dimension while the other dimension was held constant (e.g., categorising the sex of only happy or angry bodies). Responses were analysed in two ways. Comparing response times across tasks revealed Garner interference (faster overall response times in the control block than in the orthogonal block) of sex on emotion perception and emotion on sex perception in Experiment 1 but not Experiment 2. Comparing condition level responses in the orthogonal tasks indicated that sex cues moderated emotion categorization and emotion cues moderated sex categorization in both Experiments 1 and 2. Results suggest that a symmetrical interaction between sex and emotion cues in the body can be observed in timed categorization as well as in the Garner paradigm, though the presence of Garner interference depends on the expressions used.

30.   Body Image and Body Imagery: Aftereffects of seeing, remembering and imagining extreme body shapes on perceived body size

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In person at satellite site (Sydney)

Abstract Withdrawn

Visual imagery is phenomenologically similar to the actual viewing of a stimulus, leading to an assumption that the two involve similar neural activation. Indeed, brain scanning studies have shown excitation of the same structures when viewing or imagining stimuli with several visual properties. Another technique used to probe the neural mechanisms is adaptation. Similar aftereffects of perception and imagery have been used to infer similar neural activation for stimulus properties such as orientation, motion and the identity and gender of faces. The present study is the first to investigate this issue for the size of human bodies. Prolonged viewing of bodies with low (high) adiposity causes subsequently seen bodies to appear more (less) adipose than they truly are. We replicated these aftereffects, comparing them with aftereffects of visualising bodies a) remembered from a previous visual presentation, and b) imagined from a verbal description. While adaptation to high adiposity bodies caused smaller aftereffects for remembered bodies than for visual presentation, the opposite was true following low adiposity adaptation. However, visualisation induced by verbal description caused the largest aftereffects from both high and low adiposity bodies. Given that visual adaptation has been implicated in real-world examples of body size and shape misperception (e.g. in anorexia nervosa or obesity), and that rumination concerning body shape and the thin ideal is common amongst those with eating disorders and high body dissatisfaction, we discuss the implications for the development of body image distortion.

31. Can attention impair temporal resolution? A spatiotemporal confusion account of observed temporal impairments.

Talipski L.A., Goodhew S.C. & Edwards, M.

The Australian National University

Via Zoom

Stream 3 – Saturday April 10, 13:40 – 14:00

It has been well established that attention enhances many aspects of visual perception. It is interesting, then, that there is evidence of attentional cueing by a briefly presented stimulus harming temporal resolution (i.e., the ability to perceive variation in luminance across time). In this study, we examined the possibility that this temporal impairment is the product of "spatiotemporal confusion" rather than attention: that is, participants confusing the temporal signals that are generated by both the cue and the target. We used four attentional cues that differed in their spatial proximity to the target, as well as their temporal properties—small and large peripheral cues, and centrally presented arrow and gaze cues—and examined their effects on temporal gap-detection performance. Despite all of the cues eliciting a shift of attention (Experiment 1), only the two peripheral cues—the cues that were most spatially proximal to the target—generated a temporal impairment (Experiment 2). When the peripheral cues remained visible until response—which had the effect of minimizing the temporal energy in the cue, and hence the likelihood of temporal confusion with the target—we observed no effect of cueing on temporal resolution (Experiment 3). These results provide strong evidence that involuntary attention does not, in fact, impair temporal resolution.

32. Can Eye Give You a Hand? The Influence of Social Gaze during Hand Coordinated Joint Attention.

Caruana, N.*[1][2], Inkley, C.*[1], Nalepka, P.[2][3][4], Kaplan, D. M.[1][2][4], & Richardson, M. J.[2][3][4]

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In person at satellite site (Sydney)

Stream 4 – Friday April 9, 12:00 – 12:20

Joint attention is the process of two people aligning their attention, as one person initiates a shared experience by looking at or signalling towards an object, and the other responds by attending to the same thing. The current study developed a novel virtual reality paradigm to investigate the extent to which initiator gaze information is used by responders to guide joint attention responsivity in the presence of more visually salient and spatially precise manual pointing gestures. Twenty-one participant dyads used pointing gestures to complete a cooperative joint attention task in a virtual environment. Eye movement and motion tracking enabled real-time interaction and provided objective measures of gaze and pointing behaviours. Initiators displayed gaze behaviours that were spatially congruent with the subsequent pointing gestures. Responders overtly attended to the initiator's gaze during the joint attention episode. However, both these initiator and responder behaviours were highly variable across individuals. Critically, when responders did attend to their partner's face, they were faster to respond when the initiator's gaze was congruent with their pointing gesture, and thus predictive of the joint attention location. These results indicate that humans attend to and process gaze information to facilitate joint attention responsivity, even in contexts where gaze information is implicit to the task and joint attention is explicitly cued by more spatially precise and visually salient pointing gestures. Our findings and new methods have implications for future cognitive neuroscience research on non-verbal interactions, and for testing theories of social communication in autism.

33. Capacity for movement drives behavioural and neural measures of aliveness

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1. School of Psychology, University of Sydney; 2. The MARCS Institute for Brain, Behaviour and Development, Western Sydney University

In person at satellite site (Sydney)

Stream 1 – Sunday April 11, 11:40 – 12:00 *Student Talk*

Is an apple alive? Aliveness is a biologically relevant categorical distinction made by humans to organise knowledge about the world. This distinction appears early in childhood and has robust neural correlates. But how do we know if something is alive? One potential factor is an object's capacity for movement: adults under time pressure mistake moving natural things (e.g., clouds, lava, rivers) for being alive, and often neglect to designate plants as alive (Goldberg & Thompson-Schill, 2009). The current study investigates the impact of movement on judgements of aliveness. Behavioural models of

aliveness, movement and naturalness were generated based on online responses to naturalistic image stimuli. These models were compared to electro-encephalography (EEG) recordings of adult participants rapidly categorising images by whether they are alive, as well as passively viewing these same stimuli. Results showed that adults under time pressure classify plants (compared to animals) and moving natural stimuli (compared to other non-alive stimuli) more slowly and less accurately. Neural data revealed clear brain activity patterns reflecting capacity for movement, aliveness and naturalness, suggesting that these factors are used in both automatic perceptual processing, as well as decision-making about aliveness. These results shed new light on the organisation of knowledge in the human visual system.

34. "Caress the Detail": A high resolution brain MRI reference dataset

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Affiliations: 1. School of Psychology, University of Wollongong. 2. Neuroscience Research Australia, Randwick. 3. Department of Psychology, University of Nevada, Reno. 4. School of Information Technology and Electrical Engineering and Centre for Advanced Imaging, University of Queensland 5. School of Psychology, UNSW Sydney.

In person at satellite site (Wollongong)

Abstract Withdrawn

Virtually all major discoveries in neuroscience for the last 100 years have been underpinned by an increasingly detailed understanding of the architecture and connectivity of the central nervous system. Introducing "Caress the Detail" an initiative aiming to provide a new generation of high-resolution, open-access brain atlases combining histology-derived annotation detail of human brain anatomy with cutting edge in vivo MRI imaging. We present the first step of this initiative: a comprehensive dataset of two healthy volunteers (males) reconstructed to a 0.25 mm isotropic spatial resolution for T1w, T2w and DWI contrasts. Multiple acquisitions were collected for each contrast for each participant (20 T1w, 12 T2w, 10 DWI), and were averaged using symmetric group-wise normalisation (Advanced Normalisation Tools). T1w and T2w data were acquired using a 7T human research scanner (Siemens MAGNETOM) at the Centre for Advanced Imaging, University of Queensland. T1w scans were recorded using a MP2RAGE sequence (WIP944) at 0.4mm3 isotropic resolution using: TR=4300ms, TE=1.8ms, TI1=830ms, TI2380ms, GRAPPA=2. T2w scans were recorded using TSE sequence (WIP692) at 0.4 mm3 isotropic resolution with the parameters: TR=1330ms, TE=118ms, GRAPPA 3. DWI scans were recorded with a human 3T MRI (Philips Achieva CX) (NeuRA Imaging Centre) using an inverse blip corrected SPIR sequence at 1.25 mm3 isotropic resolution, with 32 directions, 5 b-factor averages, B-val=1000, TE=60ms, TR=26.5s, SENSE=3. The high-resolution datasets, the analysis protocols and the annotations will be made available via the OSF platform. We invite the community to caress the detail and contribute annotations and analysis.

35. Children's impressions of facial trustworthiness in a repeated-interactions trust game

Siddique, S. (1), Jeffery, L. (1), Sutherland, C.A.M. (2), Palermo, R. (1), Collova, J.R. (1)

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In person at satellite site (Perth)

Stream 4 – Sunday April 11, 16:00 – 16:20 *Student Talk*

We form impressions of how trustworthy a person is from a single glance at their face, and use these impressions to guide our social behaviour from a young age. However, facial impressions of trust are not always accurate, and so it is critical that we use other sources of information, such as a person's behaviour, when deciding whether to trust them. While research suggests that adults are able to do this, it is unclear if children can. Investigating children's ability to discriminate between trustworthy and untrustworthy individuals is of critical importance, because they are one of society's most vulnerable groups. The current study examined whether children, like adults, rely on behavioural information over facial appearance when making trust decisions, when both sources of information (facial appearance and behaviour) are available. Eight to 10-year old children (N = 42) played an economic trust game with partners (represented by images of faces) who varied in terms of how trustworthy they looked and how trustworthily they behaved. We found that both children and adults invested more with partners who looked trustworthy, as compared with those who looked untrustworthy. Furthermore, after learning about how trustworthily their partners behaved, both children and adults relied less on facial appearance and based their latter investment decisions in the game on partners' behaviour in previous trials instead. Findings indicate that the effect of facial-appearance based, and experience-based impressions on guiding trust behaviour matures early, and supports the capacity for complex social cognition from a young age.

36. Children's Visual Attention to Violent Interactions

Nelson, N.L. (1) & Millwood, C. (2)

1. The University of Adelaide; 2. The University of Queensland

In person at satellite site (Adelaide)

Stream 1 – Saturday April 10, 16:20 – 16:40

When viewing violent interactions, adults look less to the face than they do for non-violent interactions, suggesting that visual attention to emotional interactions is influenced by the emotions being conveyed (Scrivner et al, 2019). Whether this inattention to angry faces is learned or a function of the kinds of actions observed during violent interactions is unclear. Thus, this study examined children's visual attention to (age appropriate) examples of violent vs non-violent interactions. Adults (N=33) and 7-8-year-olds (N=37) viewed cartoon clips in which characters made physical contact with each other. Some of the contact was violent (angry) and some was non-violent (happy, sad, or scared). Using eye-tracking, we examined whether the proportion of time attending to the faces of the characters varied with age group (children vs adults), emotion (happy, sad, scared, angry), or with direction of contact (giver vs receiver of contact). Supporting previous research, children and adults made fewer fixations on the face when stimuli were violent, suggesting that participants sought information from the contextualising body and environmental cues. In addition, both adults and children attended more to the character giving physical contact during happy, sad, and angry interactions. However, during fearful interactions, adults looked more to the face of the receiver of contact and children looked similarly to all faces. Children may be gathering additional information about the feelings of both characters. This study highlights the development of visual attention during violent and non-violent interactions and informs future research examining the cues children find most informative.

37. Cognitive variability in adolescent poor readers

Ashcroft, E. & Wilshire, C.E.

School of Psychology, Victoria University of Wellington

In person at satellite site (Wellington)

Stream 2 – Friday April 9, 09:20 – 09:40

Many poor readers exhibit particular difficulty with tasks that require phonological analysis (e.g., nonword reading and phonological segmentation tasks). However, some poor readers perform well on these tasks, but nonetheless read poorly. This study assessed the reading performance of 43 adolescent poor readers. We obtained scores that expressed how accurately these participants read irregular words and nonwords, relative to regular words. We also examined the effect of lexical status, spelling regularity, word length, frequency and imageability on their reading latencies, and created indices expressing the magnitude of these effects. Correlation and principal component analysis were used to explore the associations between these various measures. We identified two distinct patterns of performance. The first was characterised poor nonword reading accuracy and exaggerated effects of word frequency on reading latencies, but an insensitivity to spelling regularity. This pattern is suggestive of a primary difficulty with the phonological reading procedure. The second pattern was characterised by abnormally marked effects of word length and imageability on reading latencies. We suggest this pattern might reflect a visual-perceptual difficulty. Interestingly, neither of these patterns was associated with poor irregular word reading accuracy, which was not found to be associated with any of our other measures. We discuss the implications of these results for models of developmental reading difficulties.

38. Cognitive Workload and Performance of Collaborative and Competitive Teams

Bennett, M., Eidels, A., McGoldrick, C.

Newcastle Cognition Lab, The University of Newcastle

In person at satellite site Newcastle

Stream 3 – Saturday April 10, 10:00 – 10:20

Many safety-critical jobs are conducted by teams to improve task performance and minimize risk of error by sharing task requirements. Cognitive workload is also acutely related to task performance whereby increased workload is associated with poorer task performance and low levels of workload associate with greater performance. Where the relationship between workload and performance is well understood at the individual level, less research has focused on the workload of individuals within team environments. Our experiment investigated whether (i) groups benefit individual performance via group interaction or statistical facilitation, and (ii) how teamwork affects cognitive workload. We designed a dual task that required participant dyads (n=50) to collaborate or compete together to prevent a set of virtual balls from hitting the ground whilst concurrently completing the detection response task. We found that group type had little effect on primary measures of player performance or of cognitive load in both collaborative and competitive groups. Assessment of behavioral data indicated differences in load sharing strategy between group types. Finally, we utilized Systems Factorial Technology to describe group performance and found that, although collaborative and competitive dyads outperformed individuals, both groups were limited by the group environment from achieving their maximum potential performance.

39. Combining computational and psycholinguistic evidence on the phraseological continuum: A methodological issue

Fioravanti I. (1), Senaldi M. S. G. (2), Lenci A. (3), Siyanova-Chanturia A. (4, 5)

1. Università per Stranieri di Perugia; 2. McGill University; 3. Università di Pisa; 4. Te Herenga Waka – Victoria University of Wellington; 5. Ocean University of China

Via Zoom (Wellington, N.Z.)

Stream 2 – Saturday April 10, 09:40 – 10:00

Phraseological units (i.e., word combinations) are often distinguished in terms of lexical fixedness and compositionality. The former refers to whether or not a word within a phrase can be substituted with a synonym, while the latter indexes how much the individual meanings of individual words contribute to the overall meaning of a phrase. Word combinations are usually placed on a continuum from free combinations (e.g., to watch a movie) to idiomatic expressions (e.g., to break the ice), with collocations (e.g., to keep a promise) being somewhere in the middle. Given the pervasiveness of phraseological units in language production and the specific challenges they pose in language processing, can corpus-based and psycholinguistic methodologies be successfully combined to shed light on the linguistic and cognitive aspects of the phraseological continuum? As a first step, we tested the cognitive plausibility of computational measures, by comparing human-elicited ratings of compositionality and lexical fixedness on a set of word combinations with corpus-based indices of compositionality computed for the same expressions. Corpus-based indices used distributional semantic spaces to model lexical variability. As a second step, offline (acceptability and cloze probability judgements) and online (eye-movement data) methodologies were used to assess the psychological reality of the phraseological continuum. Overall, speakers perceived differently the three types of phraseological units (i.e., free combinations, collocations, and idioms). Participants' processing was affected by the degree of lexical fixedness and compositionality. Together, this evidence suggests that computational and psycholinguistic methodologies can be combined to better understand how the phraseological continuum is perceived.

40. Comparing confidence across sensory modalities

West, R. (1), Matthews, N. (1), Mattingley, J. B. (1,2) & Sewell, D. K. (1)

1. School of Psychology, The University of Queensland; 2. Queensland Brain Institute, The University of Queensland

In person in Brisbane

Stream 2 – Sunday April 11, 09:20 – 09:40 *Student Talk*

The ability to introspect on the quality of one's own cognitive processes, a form of metacognition, allows individuals to evaluate how confident they feel in their own decisions. This metacognitive ability is fundamental to decision-making as it allows individuals to monitor their own performance and optimise future choices. What remains unclear, however, is the nature of the cognitive computations that transform decisional information into a confidence estimate, and whether these computations operate in a similar way across tasks in different domains. Our study aims to address this ambiguity by investigating how two stimulus features, stimulus strength and sensory uncertainty, are transformed into confidence estimates in vision and audition. We trained participants to learn categorisation rules applied to visual stimuli (drifting Gabors), and auditory stimuli (pure tones) in separate sessions. Across trials, visual and auditory stimuli were presented at different strengths and uncertainty levels and participants were asked to report both a category decision and their confidence in that decision. We observed that stimulus strength and sensory uncertainty had a similar effect on categorisation accuracy and confidence for vision and audition, providing evidence for the generalisability of confidence computations across sensory modalities. Ongoing computational modelling will further investigate and compare different theoretically motivated models of how stimulus information is transformed into a confidence estimate and whether the same model can account for confidence estimates across modalities.

41. Compressed representation of familiar face image variability in super-recognisers

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Affiliation – School of Psychology, UNSW Sydney

Via Zoom

Stream 4 – Friday April 9, 14:40 – 15:00

Accurately recognising faces is fundamental to daily life but accuracy differs markedly depending on viewer's familiarity with the face and their individual skill. We examined cognitive representations underlying these sources of accuracy differences by asking people to judge similarity between different faces (between-face variation) and between photos of the same face (within-face variation). Modulation of within-face variation, rather than between-face variation, was associated with high accuracy in face recognition. First, similarity of within-face variation was compressed for familiar faces relative to unfamiliar faces. Second, viewers that are extremely accurate in face recognition – 'super-recognisers' – showed enhanced compression of within-face variation that was most marked for familiar faces. This contrasts with prevailing accounts of human face recognition abilities that emphasise the representation of differences between unfamiliar faces. Instead, we conclude that differences in face recognition ability arise primarily from the way in which people acquire representations of familiar faces.

42. Consistency effect in Level-1 visual perspective-taking and cue-validity effect in attentional orienting: Distinguishing the implicit mentalising account from the submentalising account

Cong Fan, Tirta Susilo, Jason Low

School of Psychology, Victoria University of Wellington

Via Zoom (Wellington N.Z.)

Stream 3 – Saturday April 10, 10:40 – 11:00 *Student Talk*

Adults are slower to judge the number of discs they can see when an avatar sees a different number of discs. This consistency effect is interpreted as evidence of implicit mentalising – adults track others' visual perspective in a fast, relatively automatic manner even when it is task-irrelevant. The submentalising account, however, argues the effect may arise from domain-general attentional orienting. In Experiment 1, using a real human face, the consistency effect was elicited for eyes-opened but not eyes-covered faces with head direction, suggesting participants implicitly tracked the agent's mental state. Experiment 2 manipulated how much direction cuing (head-front-gaze-averted vs. head-turned-gaze-maintained) was available and measured implicit mentalising (via consistency effect) and attentional orienting (via cue-validity effect). Neither effect was modulated by directional cue. However, the directional cue's dynamic property appeared to be relevant for the generation of cue-validity effect but not the consistency effect. Overall, implicit mentalising as revealed in consistency effect cannot be purely reduced to submentalising processes.

43. Contextual influences of perceptual inferences

A-Izzeddin E. J. (1), Mattingley J. B. (1,2) & Harrison W. J. (1,2)

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In person in Brisbane

Stream 1 – Sunday April 11, 16:40 – 17:00 *Student Talk*

Humans have well-documented priors for many features present in nature. These priors are thought to be learned, at least in part, from statistical regularities in our environment. In a series of experiments, we investigated the influence of such priors on peoples' interpretations of the orientation of naturalistic images. Specifically, we determined how long-term priors (innate expectations, or expectations that develop over the lifespan) for low-level features (such as orientation and lighting) influence participants' ability to infer the "upright" orientation of naturalistic targets. To force observers to rely on low-level features when making perceptual judgements, targets were cropped to eliminate semantic content giving explicit clues about "true" target orientations. When individual patches were presented with no additional contextual information, participants' inferences of "upright" were well-approximated by an ideal-observer model incorporating heuristics based on known perceptual priors for orientation and lighting direction. This suggests participants use priors from natural environments to make interpretations about novel scenes when no contextual information is given. Additionally, in separate experiments, we investigated the influence of short-term priors (context-dependent expectations) by pre-cueing target patches with relevant naturalistic context (i.e., the surrounding image from which the target was cropped). When relevant naturalistic context was provided, observers' performance improved, suggesting people incorporate and use contextual information as short-term priors to inform their judgements. Taken together, our findings suggest that the long-term priors that support perceptual inference can be moderated by relatively short-term expectations, highlighting the importance of contextual information in shaping our interpretations in naturalistic settings.

44. Co-specification of apparent three-dimensional (3D) surface shape and material

Marlow P.J. & Anderson, B. A.

The University of Sydney; School of Psychology,

In person in Brisbane

Stream 1 – Sunday April 11, 16:00 – 16:20

The problem of extracting the three-dimensional (3D) shape and material properties of surfaces from images is considered to be inherently ill-posed. It is thought that a priori knowledge about either 3D shape is needed to infer material properties, or knowledge about material properties are needed to derive 3D shape. Here, we show that there is information in images that co-specify both the material composition and 3D shape of light permeable (translucent) materials. Specifically, we show that the intensity gradients generated by subsurface scattering, the shape of self-occluding contours, and the distribution of specular reflections covary in systematic ways that are diagnostic of both the surface's 3D shape and its material properties. These sources of image covariation emerge from being causally linked to a common environmental source: the 3D surface curvature of surfaces. We show that these sources of covariation take the form of photogeometric constraints, which link variations in intensity (photometric constraints) to the sign and direction of 3D surface curvature (geometric constraints). We experimentally demonstrate that this covariation generates emergent cues that the visual system exploits to derive the 3D shape and material properties of translucent surfaces, and demonstrate the potency of these cues by constructing counterfeit images that evoke vivid percepts of 3D shape and translucency. The concepts of covariation and co-specification articulated herein suggest a principled conceptual path forward for identifying emergent cues that can used to solve problems in vision that have historically been assumed to be ill-posed.

45. Coupled – for better or worse? Exploring how coordination dynamics shape collective behaviour.

Miles, L. K. (1), Macpherson, M. C. (1), Allsop, J. S. (2), & Marie, D. (3)

School of Psychological Science, University of Western Australia; 2. School of Psychology, University of Aberdeen, UK; (3) ORS Group, Perth, Australia.

In person at satellite site (Perth)

Stream 4 – Saturday April 10, 16:00 – 16:20

More than ever before, teamwork is critical to achieving fundamental societal goals. Although the subject of debate, psychologists have typically considered collective performance as a product of individual contributions. While profitable, this approach neglects a key ingredient of social exchange in terms of the interactions that unfold between people. In group settings, behaviour is typically interdependent whereby each individual's actions are reciprocally coupled to those of their co-actors, demanding some degree of coordination to ensure effective performance. This raises the possibility that factors that govern how people coordinate their behaviour with others may also shape action at the collective level. The current research investigated this possibility by quantifying the relationship between interpersonal coordination and group productivity. In pairs, participants (n = 136) performed an object movement task while their behaviour was captured using high-resolution motion-tracking. We varied task-relevant affordances that restricted the potential for coordination, along with the social context (i.e., competitive or cooperative) in which participants performed. Results indicated that both manipulations shaped between-person coupling, which in turn impacted the emergence of coordination, and ultimately group performance. Examination of the underlying dynamics revealed that key parameters that reside exclusively at the collective level account for unique variance in group performance that cannot be reduced to individual level behaviours. Implications are discussed with respect to the effects of lawful patterns of coordination dynamics on collective social behaviour, and the utility of employing the group as the unit-of-analysis when considering the complex dynamics of teamwork.

46. Cross-language influences in the processing of binomials: From the first language to the second and back

Lingli Du1*,2, Irina Elgort1, Anna Siyanova-Chanturia1,3

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In person at satellite site (Wellington)

Stream 2 – Friday April 9, 09:40 – 10:00 *Student Talk*

The present study investigated cross-language influences in the processing of binomial expressions (knife and fork), from a first language (L1) to a second language (L2) and from L2 to L1. Two groups of unbalanced bilinguals (Chinese/L1-English/L2 and English/L1-Chinese/L2) and a control group of English monolinguals performed a visual lexical decision task that incorporated unmasked priming. To assess cross-language influences, we used three types of expressions: congruent binomials (English binomials that have translation equivalents in Chinese), English-only binomials, and Chinese-only binomials translated into English. Lexical decision latencies to the last word (fork) in a binomial (knife and fork) were compared with response latencies to the same word in a matched control phrase (spoon and fork). We found that (1) Chinese-English bilinguals showed a significant priming effect for congruent binomials but no facilitation for English-only binomials, (2) English-Chinese bilinguals showed a trend toward priming for congruent binomials, which did not reach statistical significance, and no priming for English-only binomials, (3) English monolinguals showed comparable priming for congruent and English-only binomials. With respect to the Chinese-only binomials, none of the three participant groups showed priming for translated Chinese-only binomial over controls. These findings suggest that L1 influences the processing of L2 binomials, and that there may be some cross-linguistic influence in the opposite direction, i.e., from L2 on L1, although to a lesser extent.

47. Curiosity disturbed the cat: Instagram's Sensitive Content Screens do not deter vulnerable users from viewing distressing content

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In person at satellite site (Adelaide)

Stream 4 – Saturday April 10, 11:20 – 11:40

Social media facilitates exposure to traumatic imagery that people would not otherwise encounter. In an attempt to mitigate negative impact, Instagram has introduced sensitivity screens—distressing images are covered with a blur and accompanied by a warning: "Sensitive Content: This photo may contain graphic or violent content." The primary purpose of sensitivity screens is to allow people, and in particular "vulnerable people" with mental health concerns, to avoid potentially distressing content. However, there is currently no research assessing whether or not sensitivity screens operate as intended. To address this gap in knowledge, we examined whether people, including vulnerable users (operationalized in our study as people with more severe psychopathological symptoms, e.g., of anxiety, depression, and Posttraumatic Stress Disorder etc.), use the sensitivity screens as a tool for avoidance. In two studies we found that the majority of participants (80-86%) indicated a hypothetical desire (Study 1) or made an actual behavioural choice (Study 2) to uncover a screened image. Furthermore, we found no evidence that "vulnerable users" were any more likely to use the screens to avoid sensitive content. In fact, in Study 1 we found that the desire to uncover a muted image was associated with a number of vulnerability factors, including depression, poorer wellbeing, and Posttraumatic Stress Disorder symptoms. Therefore, warning screens appear to be an ineffective way to deter vulnerable users from viewing negative content.

48. Dance, Interpersonal Coordination, and Observational Learning: The Role of Synchronous Imitation

Crone, C.L. (1), Rigoli, L. M. (1), Patil, G. (1), Pini, S. (2,3), Sutton, J. (2,3), Kallen, R.W. (1,3), & Richardson, M.J. (1,3)

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In person at satellite site (Sydney)

Stream 1 – Sunday April 11, 09:20 – 09:40 *Student Talk*

Observational learning involves synchronous (i.e., concurrent physical practice) and non-synchronous (i.e., delayed physical practice) training strategies. While such training is thought to optimise the learning of complex motor skills and movement sequences, as in dance, sport, and gymnastics, little research has assessed whether these approaches differentially influence end-state performance quality. The dynamical systems theoretical approach to coordinated behaviour suggests that spontaneous or intentional synchrony enhances interpersonal coordination, but these phenomena have not yet been investigated during the learning of coordinated movement. Accordingly, we investigated the differential effects of synchronous and non-synchronous observational training on the learning rate and post-learning proficiency of a novel dance sequence for novice dancers. Participants either synchronised with (n = 22) or observed and then imitated (n = 20) an expert dancer who performed a 16-count dance sequence. Following 20 training trials, participants performed the sequence unassisted by the expert. Movement data were recorded using full-body motion-capture technology, and the temporal and spatial characteristics of resulting movement time-series were evaluated using multidimensional cross-recurrence quantification analysis. Greater accuracy, but not timing, of movement reproduction at end-state was predicted by better imitative performance quality across training trials. A significant decline in performance quality at end-state was shown for synchronous learners, whereas a non-significant but positive trend in performance accuracy was shown for non-synchronous learners. However, end-state performance quality did not significantly differ between groups. Taken together, results suggest that merely synchronising with an expert demonstrator does not ensure the lasting motor representations required for learning advanced movement sequences.

49. Decomposing Bayesian integration in sensorimotor learning: Contributions from feedback control and feedforward adaptation

Christopher L Hewitson (1,2), David M Kaplan (1,2) Matthew J Crossley (1,2)

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In person at satellite site (Sydney)

Stream 1 – Saturday April 10, 14:40 – 15:00

Feedforward planning and feedback control processes are essential for generating accurate, adaptive motor behaviour. Both are hypothesised to follow Bayesian principles when incoming sensory information possesses uncertainty. When sensory information indicates that an ongoing movement is errant, feedback control mechanisms modify motor commands to counter the sensed error. The degree to which such sensory information is integrated and the ongoing movement is modified has been shown to scale with the uncertainty of the sensory signal. Movement errors also cause adaptation in feedforward planning such that, all else being equal, upcoming movements will be more accurate. The degree to which a movement error drives adaptive changes in feedforward planning has also been shown to scale with the uncertainty of the sensory signal. However, there are questions as to (1) the timescale at which these effects are manifest, and (2) the sensitivity of these effects to the size of movement errors. Our results indicate that both feedforward and feedback processes roughly conform to Bayesian principles on a trial-by-trial timescale, but the degree of this conformity depends on the magnitude of movement errors.

50. Depression-linked deficits in reward-seeking behaviour: The role of reward expectancy and state emotion

Sim, K.J.J. (1), MacLeod, C. (1), Notebaert, L. (1), & Ji, J.L. (1)

School of Psychological Science, University of Western Australia

In person at satellite site (Perth)

Stream 4 – Sunday April 11, 16:20 – 16:40 *Student Talk*

Depression is often characterised by a loss of interest in previously rewarding activities, resulting in a deficit of engagement in emotionally rewarding activities that can be beneficial to a person's well-being. One plausible hypothesis is that people with depression anticipate future activities to be less enjoyable and/or more effortful than healthy individuals. Furthermore, biases in one's expectancies can arise as the result of trait-like vulnerabilities that make certain individuals more prone to experiencing depression, or result from the more frequent experience of sad emotions that is often observed in people with depression. A novel paradigm was designed to accommodate the measurement of anticipated future enjoyment and future effort when undergraduate students were induced either a sad or happy emotional state, and provided them with an opportunity to choose to engage in a rewarding gameplay activity or do nothing, all within the same experimental session. As expected, individuals with elevated depression vulnerability were less likely to choose reward activity engagement than those with low depression vulnerability, irrespective of their state emotion condition. Elevated depression vulnerability was associated with reduced anticipated enjoyment, as predicted, but not anticipated effort. Exploratory mediational analysis indicated that depression vulnerability-linked deficits in reward engagement behaviour were mediated by reduced anticipated enjoyment. These findings suggest that the deficient reward-seeking observed in depression is likely driven by dampened anticipated enjoyment of potentially rewarding future activities.

51. Detecting A Conflict When There Is None

Omid Ghasemi (1), Simon Handley (1), Valerie Thompson (2), Stephanie Howarth (1), Ian Newman (2)

1. Department of Cognitive Science, Macquarie University; 2. Department of Psychology, University of Saskatchewan

Via Zoom

Stream 2 – Saturday April 10, 11:20 – 11:40 *Student Talk*

Contrary to traditional views on human's reasoning architecture, the "logical intuition" account of reasoning argues that individuals are able to draw logical inferences relatively intuitively and automatically. Consistent with this theoretical framework, conflict detection studies have shown that in conflict arguments, in which there is a conflict between conclusion's believability and logical validity, reasoners have lower confidence and higher response latency compared to non-conflict arguments. This "conflict detection" effect indicates that logic rules are so accessible and automatic that they consistently interfere with simple belief judgments. However, a key question is whether true logic conflicts with judgments of believability, in cases of logical intuitions, or whether conflict detection arises from other superficial structural features that aligns with logic? To answer this question, we pooled the data of two experiments in which participants were presented with logical (e.g., MP conditionals) and pseudo-logical (e.g., AC conditionals) arguments. Whilst logical arguments had either valid or invalid conclusions, pseudo-logical arguments were all logically invalid, but were labelled as pseudo-valid and pseudo-invalid. The results revealed that the conflict detection effect was present for both logical and pseudo-logical arguments. In other words, the conflict between logic and belief affected participants' responses in the same way that the conflict between pseudo-logic and belief did. Altogether, these findings suggest that whilst people are able to draw inferences intuitively, and these inferences impact on belief judgments, they are not "logical intuitions." Rather, the intuitive inferences are driven by the processing of more superficial structural features that happen to align with logical rules.

52. Detection of concealed knowledge via the ERP-based technique *Brain Fingerprinting*: Real-crime scenarios

Afzali M.U. (1), Palmer, R.W. (2), Neumann, E. (1,3), Grace, A.P.S. (1), Makarious, S. (1), Wilson, D. (2) & Jones, R.D. (1,4,5,6)

1. School of Psychology, Speech and Hearing, University of Canterbury; 2. School of Law, University of Canterbury, 3. New Zealand Institute of Language, Brain, and Behaviour, 4. School of Electrical and Computer Engineering, University of Canterbury, 5. School of Medicine, University of Otago, Christchurch, 6. New Zealand Brain Research Institute

In person at satellite site (University of Canterbury – N.Z.)

Stream 1 – Friday April 9, 09:40 – 10:00 *Student Talk*

Brain Fingerprinting (BFP) is an ERP-based forensic brainwave analysis system that is used to detect whether or not a subject possesses information about a real-life episodic memory (e.g., a crime). With the help of BFP, a potential crime suspect could be classified as Information Present (possessing crime-related information), Information Absent (not possessing crime-related information), or Indeterminate (BFP being unable to classify a subject). Although being around for almost 30 years, the accuracy of BFP has not been independently assessed and no published studies tested the technology on real-life criminals. In this pursuit, we tested 17 male parolees on their own or another parolee's crime scenarios using the BFP technology. Consistent with previously reported findings, we found that BFP correctly classified two Information Present and six Information Absent subjects. However, we also report one false positive classification and three Indeterminates; and, moreover, we identified five subjects who could not complete the BFP test. Such findings have not been reported in the previous BFP publications. We posit that BFP is not yet at a stage to be considered a robust and accurate crime detection tool as claimed in previous articles. Nevertheless, after addressing the limitations, BFP has considerable potential as an information detection tool in forensic investigations, especially for detecting idiosyncratic crime-relevant knowledge in a perpetrator, in addition to helping to determine the accuracy of a suspect's claim of innocence.

53. Determining Preference Thresholds in Discrete Choice Experiments

Cooper G. & Hawkins G.E.

School of Psychology, The University of Newcastle

Via Zoom

Stream 2 – Saturday April 10, 11:40 – 12:00 *Student Talk*

Previous work has manipulated levels of attribute values in relation to criteria in a consumer-like experiment. The manipulated values provided a way to discriminate between the processing architectures involved in the choices. One issue with this work is the criteria is set externally, making the participants' choices veridical rather than preferential. I will present an experiment where we gathered real consumer stimuli in the form of hotel prices and ratings and mapped the relationship between these two attributes. I will also describe two methods used in a between-subject design to determine individual participants thresholds for the trade-off between price and quantity. Data presented will show the consistency of subsequent responses in a consumer choice task with the determined thresholds and the results of the attribute value manipulation. I will also discuss alternative methods of threshold determination and future directions for the research.

54. Developing a Model of the Complex Interruption Process Between Clinicians in a Hospital Ward

Knight E. (1), Ballard T. (2), Sanderson P. (3), Neal, A. (4)

School of Psychology, The University of Queensland.

In person in Brisbane

Stream 3 – Friday April 9, 13:40 – 14:00 *Student Talk*

Interruptions in healthcare have frequently been studied as they are associated with increased medical errors, which can be detrimental for patient safety. However, attempts to reduce interruptions have not been widely successful as there is still much to learn about the complexity of interruptions. While interruptions can be problematic for the interruptee, they may be necessary for the interrupter to maintain patient safety, so both perspectives must be considered. We developed a computational model representing the role that interruptions play for clinicians within the hospital system. The processes of deciding to interrupt and deciding to respond to interruptions were represented. We ran simulations of the model to see how different decisions affect the efficiency of the interrupter, the interruptee and the team. The simulation predictions suggest that deciding to interrupt detracts from the efficiency of the interruptee but maintains the efficiency of the interrupter. However, deciding to not immediately interrupt detracts from the efficiency of the interrupter but maintains the efficiency of the interruptee. Experimental studies to test these predictions are currently being developed. These will assess how pairs of participants interact through interruptions and will examine the factors that influence decisions to interrupt and respond. The model will then be updated with the experimental findings, to ensure that it accurately represents the complexity of interruptions in healthcare. As a result, the computational model can be used to guide well-informed suggestions for future interventions.

55. Differences in the Detail: Metacognition has Comparable Access to Implicit and Explicit Processing

Salzman, K. D. & Allen, K.

School of Psychology, The Southern Cross University

In person in Brisbane

Stream 2 – Sunday April 11, 09:00 – 09:20

Cognition is comprised of both implicit and explicit processes, but the relative contributions of these inputs to higher order metacognition are unclear. Aly and Yonelinas (2012) developed a paradigm that separated these processes in vision which we used to explore implicit and explicit processes in metacognition. We conducted a change detection experiment where images were manipulated to promote explicit recall by locally altering one element of a scene, or implicit "feelings-of-knowing" by globally distorting the scene. A within-subjects design was used to investigate how 79 participants, presented with a change detection task, performed and made metacognitive (confidence) judgements. Confidence ratings were collected to construct receiver-operating characteristics (ROCs) that were then fitted with a dual process model comprised of threshold (discrete) and signal detection (continuous) components. Analysis of type-2 ROCs revealed that metacognition was comparably sensitive to the detection of local and global changes, however differences existed in the pattern for rating confidence. In the local change condition, a greater proportion of accurate responses was made with high confidence. This demonstrate that metacognition assigns confidence differentially to explicit and implicit processes. The finding that metacognition is similarly sensitive to implicit and explicit information suggests that both processes are effective in guiding behaviour.

56. Different representational mechanisms for imagery and perception: modulation vs excitation.

Pace, T.J ., Koenig-Robert, R. & Pearson, J.

Future Minds lab – University of New South Wales

In person at satellite site (Sydney)

Stream 1 – Sunday April 11, 10:40 – 11:00

The fundamental differences between the qualia of perception and mental imagery have long remained a mystery. Research suggests imagery is functionally equivalent to a weak form of visual perception. Here we report novel evidence that perception and imagery are represented in fundamentally different ways: perceptual representations are formed via increases in excitatory activity related to the perceived features, whereas imagery is largely represented via down-regulating or modulating representations related to non-imagined features. We developed two novel behavioural techniques which allowed us to first put the visual system into a state of adaptation, then probe the additivity of perception and imagery. If

imagery drives similar excitatory visual activity to perception, pairing imagery with perceptual adapters should increase the state of adaptation. While pairing weak perception increased measures of adaptation (additive), pairing imagery had the opposite effect, reducing the state of adaptation. Further experiments demonstrated that these non-additive effects were due to imagery weakening representations of non-imagined features. These effects were stronger for more vivid episodes of imagery, were liable to irrelevant sensory disruption, and not shown for catch trials or false alarms, ruling out response bias. Together these data provide novel evidence that the brain represents imagery and perception in categorically different ways (modulation vs driving), providing a candidate mechanism for their fundamentally different qualia.

57.   Diffusion Modelling of Intrusions in Continuous-Outcome Source Memory

Zhou, J. (1), Osth, A.F. (1) & Smith, P.L. (1)

Melbourne School of Psychological Sciences, The University of Melbourne

In person at satellite site (Melbourne)

Stream 3 – Friday April 9, 11:40 – 12:00 *Student Talk*

Source memory is memory for the source or the origin of material stored in memory. Traditionally, models of source memory have attempted to differentiate between competing characterisations of source memory retrieval as a thresholded or continuous process using data from two-choice source tasks. However, the high degree of model mimicry in two-choice data has made differentiating between competing accounts difficult. Previously, Zhou et al. (2021) used a continuous-outcome task, where responses are made on a continuous scale, which offered the advantage of more diagnostic data in the form of entire distributions of response precision rather than response proportions. In addition, we used the circular diffusion model to provide an account of both response times (RT) as well as response error in the task, and in doing so found support for a thresholded view of source memory retrieval. Notably, we found the presence of heavy tails in the distribution of response errors that was well characterised by a uniform distribution in the thresholded model that represented guessing in a no-information state. Here, we build upon that work by introducing systematic intrusion errors, such that instead of attributing imprecise responses to a uniform distribution, we assume that errors arise due to interference between items studied in the same list. The theoretical importance of this work is that if errors are attributable to intrusions between items rather than responses in the absence of information, then the underlying memory retrieval process may not be thresholded despite the heavy tails observed in response error data.

58.   Disengaging from the forest versus the trees: The spatial extent of focused attention modulates the rate of attentional disengagement

Jefferies, L.N. (1, 2), Conlon, E. (1), & Lawrence, R. (1)

1. School of Applied Psychology, Griffith University; 2. Menzies Health Institute Queensland

In person in Brisbane

Stream 3 – Friday April 9, 14:20 – 14:40

Spatial attention can be flexibly changed to optimize visual processing: it can be moved between objects via a three-step process of disengaging, shifting, and engaging attention (attentional orienting) or it can be resized to match the size of an attended object (attentional resizing). Although much is known about orienting and resizing individually, little is known about how they interact with one another. In the present study we examined whether the size of the attentional focus modulates the efficiency of the first component of attentional orienting, attentional disengagement. To test this, we used a small or large abrupt-onset central square to trigger the reflexive resizing of attention (Castiello & Umiltà, 1990) and a gap task to assess the rate of attentional disengagement (Mackeben & Nakayama, 1993). In the gap task, observers were cued to orient attention to a peripheral location. Prior to the onset of the orienting cue, the central fixation cross either disappeared (Gap condition) or remained visible (No-Gap condition). Removing the fixation cross allowed attention to be disengaged early in the Gap condition. The task was to make a speeded discrimination response to a target. The rate of disengagement was estimated by subtracting average RT in the Gap condition from that in the No-Gap condition. The results showed that the RT difference was significantly greater when the focus of attention was small than when it was large (51.4 ms and 26.6 ms, respectively), indicating that the rate of disengagement was significantly slower when the focus of attention was small.

59.   Do affective properties of observed touch influence the frequency, intensity and phenomenology of mirror-touch perception? New findings and a validated touch video database.

Sophie Smit (1), Regine Zopf (1,3), Anina N. Rich (1,2)

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In person at satellite site (Sydney)

Stream 2 – Friday April 9, 13:40 – 14:00 *Student Talk*

It has been proposed that we mirror other people's sensations to allow for a kind of 'tactile empathy'. Video-questionnaire studies show that a substantial percentage of the population reports feeling touch when seeing touch to others. We investigated how affective properties of observed touch affect the frequency, intensity and phenomenology of these reported "mirror-touch" experiences. We created a database of 90 videos and had 160 participants rate the type of touch, level of threat and arousal in each. We then used the 40 most clearly categorised videos (neutral, pleasant, unpleasant, painful) plus five additional object-touch videos to create a mirror-touch questionnaire (presented to a new sample, N = 412). Results show that painful videos evoked the most mirror-touch sensations (36%), followed by pleasant (31%), unpleasant (22%) and neutral (11%) videos. Observed painful touches were also felt as most intense. This could be due to the level of arousal as this strongly correlated with both frequency and intensity. Many touches were mirrored with the same valence (e.g., an observed pleasant touch felt pleasant) for neutral (79%), pleasant (48%) and unpleasant (44%) touch, but painful touch was more often felt as unpleasant (61%). The proportion of reported sensations were tingling (20.6%), pressure (18.4%), touch (15.0%), pain (14.4%), ticklish (12.3%), cold (6.6%), warm (5.2%), scratching (5.1%) and other (2.4%), which was differently

distributed amongst the four categories. Our findings therefore show that variation in the affective aspects of observed touch modulates the frequency, intensity and the specificity of the reported mirror-touch experience.

60. Does change detection change with age?

Yamamoto, N. (1, 2), Donaldson, M. J. (2), Allen-Davidian, Y. (1) & Lowe, B. (1)

Affiliations – 1. School of Psychology and Counselling, Queensland University of Technology (QUT); 2. Department of Psychology, Cleveland State University

In person in Brisbane

Stream 3 – Sunday April 11, 16:20 – 16:40

It has been demonstrated that young adult observers tend to be particularly efficient at noticing abruptly appearing new objects in the surroundings, as compared to identifying other kinds of visual change such as sudden elimination of existing objects. However, it is unclear whether this tendency continues throughout the lifespan because major theories of cognitive aging make divergent predictions. The present study was designed to empirically investigate this issue by having younger and older adults locate object appearance (onset) and disappearance (offset) in visual scenes. Younger participants detected onsets more quickly than offsets while responding to the two types of change with equivalent accuracy, replicating the well-established previous finding. Some older participants performed the task in the same manner, except that they were overall slower than the younger participants. By contrast, other older participants showed dissimilar performance, finding onsets and offsets with comparable speed and locating offsets more accurately than onsets. Thus, the effect of aging in this task was observed not only as a general slowdown of task execution but also as less differentiated reaction to object onset and offset. These results were consistent with the processing speed and dedifferentiation theories of aging, which postulate that relative to the younger brain, the older brain processes information with generally slower speed and also with a more diffuse pattern of neuronal activation.

61. Does Motivational Intensity Exist Distinct from Valence and Arousal?

Campbell, N.C., Dawel, A., Edwards, M. & Goodhew, S.

The Research School of Psychology, The Australian National University (Canberra, ACT).

In person at satellite site Sydney

Stream 2 – Friday April 9, 13:20 – 13:40 *Student Talk*

It is well-established that emotion influences cognition, but different models espouse that different aspects of emotion determine the influence on cognition. The motivational intensity model proposes that the strength of one's urge to approach or avoid a stimulus is the primary driver of cognitive broadening/narrowing (Gable & Harmon-Jones, 2010; Harmon-Jones et al., 2012). However, it is unclear whether motivational intensity is truly distinct from well-established dimensions of valence and arousal. Here we found an overwhelmingly strong relationship between motivational intensity and valence across multiple studies. In Study 1, we operationalised motivational intensity on two response rating scales and had multiple groups of participants (total 150) rate their response of motivational intensity, valence, and arousal to 300 pictures. There was a very strong relationship between motivational intensity and valence (r_s in excess of .9, in studies 1a and 1b), which challenges the idea that these two constructs are distinct. In contrast, motivational intensity ratings were not consistently positively related to arousal ratings, with only a moderate relationship found with avoidance motivation. In Study 2 we used an implicit measure of motivational intensity and valence and asked participants to classify their motivational intensity and valence in response to 100 pictures from Study 1. A high degree of correspondence was found between motivational intensity and valence on this measure. These findings suggest that the cognitive effects attributed to motivational intensity in previous literature are best explained by valence.

62. Does Performance on Early Cognitive Tasks Predict Later Language Development in Infants?

Purcell, K.R., Axelsson, E.L., Whalen, O., Karayanidis, F., Lane, A., Murphy, V., & Campbell, L.

FIND Lab, School of Psychology, The University of Newcastle

In person at satellite site (Newcastle)

Stream 2 – Saturday April 10, 09:20 – 09:40

Many factors can impact infants' vocabulary acquisition, but there has been little research on the relationship between infants' early cognitive capacities and later language development. We used two measures of early cognition: a familiarisation/novelty preference task, measuring infants' ability to discriminate stimuli, and a visual expectation paradigm, measuring infants' ability to anticipate events. We sought to investigate whether these measures of cognition at 6 months were predictive of expressive vocabulary and receptive language at 12 months. The greater an infants' ability to discriminate stimuli at 6 months was predictive of larger expressive vocabulary sizes, but it did not significantly predict receptive language at 12 months. Additionally, infants who were faster at anticipating events at 6 months had larger expressive vocabularies at 12 months. Contrastingly, the slower infants were at anticipating events at 6 months, the larger their receptive language at 12 months. Overall, the results suggest that infants' early cognitive skills play a role in their developing language skills in the first year of life and the results support a small number of findings from previous research. However, the results suggest that early cognitive skills have differing effects on the type of language skill, namely expressive or receptive language. Alternatively, the findings might reflect the tools used to measure expressive (vocabulary size) and receptive language (performance on a standardised tool). The results indicate a need to replicate the findings using alternative vocabulary and language measures.

63. Doorways do not always cause forgetting: A multimodal investigation

Oliver Baumann[1], Jessica McFadyen[2,3], Christopher Nolan[2], Ellen Pinocy[1], & David Buteri[1]

[1]School of Psychology, Bond University, Robina, QLD 4226 : [2]Queensland Brain Institute, University of Queensland, Brisbane, QLD 4072 Australia : [3]Max Planck UCL Centre for Computational Psychiatry and Ageing Research, London, United Kingdom Australia

In person in Brisbane

The 'doorway effect', or 'location updating effect', claims that we tend to forget items of recent significance immediately after crossing a boundary. Previous research suggests that such a forgetting effect occurs both at physical boundaries (e.g., moving from one room to another via a door) and metaphysical boundaries (e.g., imagining traversing a doorway, or even when moving from one desktop window to another on a computer). Here, we aimed to conceptually replicate this effect using virtual and physical environments. Across four experiments, we measured participants' hit and false alarm rates to memory probes for items recently encountered either in the same or previous room. Experiments 1 and 2 used highly immersive virtual reality without and with working memory load (Experiments 1 and 2, respectively). Experiment 3 used passive video watching and Experiment 4 used active real-life movement. Across this series of experiments, we observed no significant effect of doorways on forgetting. In Experiment 2, however, signal detection was impaired when participants responded to probes after moving through doorways, such that false alarm rates were increased for mismatched recognition probes. Thus, under working memory load, memory was more susceptible to interference after moving through doorways. This study presents evidence that is inconsistent with the location updating effect as it has previously been reported. Our findings call into question the generalisability and robustness of this effect to slight paradigm alterations and, indeed, what factors contributed to the effect observed in previous studies.

64. Do people provide sincere belief reports about politically contentious factual issues?

Robert Ross (1), Gordon Pennycook (2), Neil Levy (3)

1. Department of Psychology, Macquarie University; 2. Hill/Leven Schools of Business, University of Regina; 3. Department of Philosophy, Macquarie University

Via Zoom

Public opinion surveys have found that many more Democrats than Republicans report believing that George Bush purposefully allowed the 9/11 attacks to happen, while many more Republicans than Democrats report believing that Barack Obama was not born in the United States. Findings such as these are frequently interpreted as demonstrating that political partisans live in competing realties with their own "alternative facts". However, this isn't the only possible interpretation. In particular, it has been proposed that people frequently engage in "expressive responding" – providing insincere beliefs reports in order to express support for their political group. This hypothesis is challenging to test because expressive responding is notoriously difficult to measure – how can we know what people really believe if their belief reports might be insincere? In this talk I first summarize studies that have been used to study expressive responding and highlight their limitations. Next, I present new research by my colleagues and I which examines whether offering a monetary incentive for making a correct prediction about a future event can be used to detect expressive responding. This research suggests that some Donald Trump voters who claimed to believe that Trump would be inaugurated president of the United States on the 20th of January 2021 (despite all major news outlets declaring Joe Biden the winner) were not providing sincere belief reports. Finally, I argue that this research has implications for how we interpret public opinion surveys about factual issues on politically partisan topics.

65. Doubly Dissociating Attribute Specific Prediction Error of the Same Visual Stimulus

Lowe B. (1), Robinson, J. E. (2), Yamamoto, N. (1), & Johnston, P. J. (1)

1. School of Psychology and Counselling, Queensland University of Technology; 2. Cognition and Philosophy Lab, Monash University

In person in Brisbane

Any object within the visual world is constructed of multiple attributes (colour, shape, orientation, etc.), all of which the brain must encode from sensory data in order to make perceptual inferences of the outside world. Moreover, experimental psychophysical evidence consistently points to notions of such encoding occurring at asynchronous relative latencies, with neuropsychological and imaging studies further suggesting that orthogonal attributes are processed within distinct regions of cortex (i.e., functional specialisation). The present study is a continuation of this body work, however, from a prediction coding approach. Specifically, we evoke prediction error corresponding to different visual attributes of the same stimulus by violating one of three simultaneously implied trajectories of change across three attributes: colour, shape, and orientation. This is done in a manner whereby there are no differences in the physical presentation between conditions when a trajectory is violated, meaning any differences recorded within the corresponding EEG signals *must* reflect prediction error and not bottom-up processing of sensory input. Using multi-variate pattern analysis (a linear support-vector machine [SVM]), we not only show that the brain is behaving differently during violation and control (fully [un]predictable) trials; but also that an SVM's learned parameters for dissociating one type of attribute-specific prediction error from controls do not generalise to another, even when accounting for latency differences in prediction testing. Thus, these findings suggest that prediction hierarchies are not domain general within visual cortex.

66. Dynamics of Social Hormones: An investigation of Oxytocin using Electroencephalography

Muehlebach B. M. Pegna A. J.

Experimental Neuropsychology Lab, School of Psychology, The University of Queensland.

In person in Brisbane

Abstract Withdrawn

In recent decades a staggering amount of research has been conducted investigating the impact of the neuropeptide oxytocin on social cognition. However, evidence regarding the dynamic effects of oxytocin on neural activation is still unclear and, to date, few electrophysiological investigations have addressed this issue. The current investigation therefore aimed at determining the timing of the neural modulation caused by oxytocin. In a double-blind trial using intranasal oxytocin and electroencephalography (EEG), we measured the electrical brain response to faces of adult actors expressing different emotions. Oxytocin was shown to have a modulatory effect on a wide variety of facial stimuli, beginning at around 200ms at the

P200, and continuing for several hundreds of milliseconds in a late positive potential. The findings provide the very first evidence of a sustained effect of oxytocin that appears over a large spectrum of socially-meaningful stimuli.

67. EEG decoding reveals neural processes underlying visuomotor adaptation.

Keane, B. (1), Carroll, T. J. (1)

1. School of Human Movement and Nutrition Sciences, The University of Queensland

In person in Brisbane

Stream 1 – Sunday April 11, 09:00 – 09:20

Successful goal-directed movements require accurate and precise spatial mappings of the relationship between our body and our environment. Novel sensory information continuously updates these mappings, allowing for adaptive motor behaviour. Here we investigated the neural processes underlying the transformation of sensory input into effective motor output. Participants made ballistic reaching movements toward (virtual) static visual targets while their arm was occluded from view. We recorded finger position using motion capture technology, and brain activity using EEG. Participants received online visual feedback of their movement via a virtual cursor. Following a period of veridical cursor feedback, we introduced a 30-degree cursor rotation (direction counterbalanced between participants), followed by another period of veridical cursor feedback. Participants adapted to the cursor rotation by rotating their reach directions counter to the perturbation. We used multivariate decoding to extract the target location from EEG data on rotated- and veridical-feedback trials. We found that the neural representation of target location reliably rotated counter to the cursor rotation, and that the extent of this neural rotation was correlated with participants' behavioural adaptation. Decoded target locations did not reliably differ from veridical target locations until ~300ms post-stimulus, at which time they became reliably rotated counter to the cursor perturbation. These results indicate that participants' neural representation of visual target location rapidly adapts to facilitate effective motor planning and output.

68. Effects of High Engagement with Social Networking Sites on Inhibitory Control

Bell, L. J. & Matthews, A.

School of Psychological Sciences, University of Tasmania

In person at satellite site (Hobart)

Stream 3 – Sunday April 11, 14:20 – 14:40

Social networking sites (SNSs) such as Facebook, Twitter, and Instagram are online platforms that allow users to interact with one another through semi-public profiles. Previous research has indicated that excessive usage of SNSs relates to the experience of addiction-like symptoms, though has not consistently detected inhibitory control deficits, a known cognitive feature of addiction disorders. The present study utilised the Parametric Go/No-Go paradigm to examine differences in inhibitory control – as indexed by response accuracy (%) on no-go trials – between participants with low and high engagement with SNSs. Additionally, the study investigated the predictive utility of SNS-related addictive symptomatology as opposed to SNS usage for inhibitory control function. The sample consisted of 157 participants aged 18-75, including 39 high engagement SNS users and 43 low engagement SNS users. Participants completed questionnaire measures, then a battery of cognitive tasks including the Parametric Go/No-Go. As compared to low engagement SNS users, high engagement SNS users had lower accuracy on no-go trials, indicating lower inhibitory control. This effect did not fit a linear relationship, however. Further, the results indicated that addiction-like symptoms relating to SNS usage are a more useful predictor of inhibitory deficits than degree of SNS engagement. Further research is required to replicate these findings and determine the causal direction of the observed effects.

69. Emotion regulation: Should we listen to our body?

Nicholas Prideaux-Brune (1), Carien van Reekum (1), Tom Johnstone (1,2)

1. School of Psychology, University of Reading, UK; 2. School of Health Sciences, Swinburne University of Technology

In person at satellite site (Melbourne)

Stream 2 – Friday April 9, 14:20 – 14:40

The relationship between interoception and emotion has been debated, investigated and repudiated since at least as far back as the inception of modern psychology. However, little research has looked at how sensitivity to interoceptive cues may impact the regulation of emotional states. If sensitivity to interoceptive cues enables individuals to be aware of their emotions at an early stage of their unfolding, can they utilise this information to support affective reappraisal or do they become overwhelmed by it? In this study, participants (N = 35) took part in an n-back visuospatial working memory task, with and without threat of mild electric shock to induce state anxiety, and their task accuracy scores were used to generate individual scores of emotion regulation. Measures of psychophysiology (heart rate and skin conductance) were used to supplement this measure. A heartbeat discrimination task was employed to measure interoceptive sensitivity. We hypothesised that the relationship between interoception and emotion regulation would not be linear, but would involve individual personality differences reflecting how interoceptive information is used. A pilot questionnaire was developed to assess this, which we call Affective Symbolization (AffSym). Our results indicate that interoceptive sensitivity interacted with AffSym to explain emotion regulation success. Specifically, at high levels of interoceptive sensitivity, high AffSym scores were related to an increase in emotion regulation scores but low AffSym scores corresponded to a decrease in emotion regulation. AffSym was less influential as interoceptive sensitivity decreases. We discuss these results in the context of recent studies of interoception and emotion.

70. Endocannabinoids, stress, emotional memories, and fear extinction in PTSD and healthy humans

Luke J Ney1, Emma Nicholson3, Allison Matthews1, David Nichols4, Chia-Ming K Hsu1, Daniel Zuj2, Trevor Steward3, and Kim Felmingham3

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In person at satellite site Hobart

Stream 3 – Sunday April 11, 14:00 – 14:20

Endocannabinoids form a profuse signalling system that not only controls the effects of cannabis intake, but also many biological and psychological processes. The endocannabinoid system has been proposed to have a role in posttraumatic stress disorder (PTSD), but this view has mainly been formed on the basis of animal models. In this translational project, we tested the association between cannabinoid receptor (CB1) and FAAH (endocannabinoid degrading enzyme) polymorphisms, as well as endocannabinoid plasma levels, with performance on fear extinction and emotional memory tasks in healthy and PTSD participants. Negative intrusive memories were more likely to be reported in minor allele carriers of a CB1 polymorphism in the PTSD sample only. Higher endocannabinoid plasma levels and minor allele carriers of the FAAH polymorphism were associated with poorer memory of negative images. Minor alleles in a CB1 polymorphism were also associated with poorer fear extinction learning, but unexpectedly, the minor allele of the FAAH polymorphism was associated with worse extinction learning in PTSD participants. This finding was potentially explained by the sub-analysis of healthy participants, where the FAAH genotype effect was found to be dependent on plasma endocannabinoid level. Specifically, higher but not lower endocannabinoid levels in conjunction with the minor allele of FAAH rs324420 were associated with better extinction learning. These findings provide multiple lines of translational evidence suggesting that CB1 is involved in extinction learning and emotional memory in humans. Larger PTSD samples are critically needed to assess whether existing cannabinoid theory translates to psychiatric populations.

71. Epistemic and aleatory uncertainty in decisions from experience

Holwerda, J. & Newell, B. R.

School of Psychology, UNSW Sydney

In person at satellite site (Sydney)

Stream 3 – Friday April 9, 11:00 – 11:20

People intuitively distinguish between uncertainty they believe is potentially resolvable and uncertainty that arises from inherently stochastic processes. Most experiments investigating decisions based on experience, however, have focused exclusively on scenarios that promote a stochastic interpretation by representing options as images that remain identical each time they are presented. In the current research, we contrasted this method with one in which the visual appearance of options was subtly differentiated each time participants encountered them. We found that introducing variability to the appearance of options influences the way people interpret uncertainty and examined whether interpreting uncertainty as potentially resolvable leads to increased exploration of available options. We will discuss the implications of these findings for the generalisability of decision-making experiments to real-world choices in which people rarely come across options that remain identical each time they are encountered.

72. Examining the association between error awareness task performance and media multitasking

Murphy, K. (1), Anderson, A. (2), & Smith, R. (3)

School of Applied Psychology, Gold Coast campus, Griffith University; 2. School of Applied Psychology, Gold Coast campus, Griffith University; 3. School of Applied Psychology, Gold Coast campus, Griffith University.

In person in Brisbane

Stream 2 – Sunday April 11, 09:40 – 10:00

Media multitasking (using multiple forms of media or devices simultaneously or swapping between media quickly) utilises Executive Functions (EFs) for successful task performance. This study examined the link between media multitasking and the EF, inhibition. Participants completed the Error Awareness Task (EAT; Hester et al., 2007), the Media Multitasking Inventory (media multitasking measure based on Ophir et al., 2009) and several control measures. It was expected that participants with higher media multitasking scores would perform more poorly on the EAT due to attending and responding to multiple information streams during media multitasking (e.g., all information is task relevant during media multitasking and therefore little inhibitory control practice occurs). Scores on the Media Multitasking Inventory were not associated with performance on any of the EAT outcome measures (response times to Go trials and Go trials after No-Go trials, Repeat and Stroop No-Go errors, and awareness of Repeat and Stroop No-Go errors). Associations between media use hours and EAT outcomes were also investigated. More hours of media use were associated with better inhibitory control, shown by reductions in both Repeat and Stroop No-Go errors. The results of this study suggest that hours of media use, in addition to the measurement of media multitasking, should be considered in studies examining the link between media multitasking and performance on measures of EFs.

73. Examining the attentional mechanism differentiating disruptive versus non-disruptive worry: A novel Dual Probe Attentional Bias Alignment Task

Jessie Georgiades, Kelly Cusworth, Colin MacLeod & Lies Notebaert

School of Psychological Science, Centre for the Advancement of Research on Emotion, University of Western Australia

In person at satellite site Perth

Stream 3 – Friday April 9, 15:00 – 15:20 *Student Talk*

People vary in the frequency with which they experience worry, and the degree to which this worry disrupts their everyday functioning. Heightened frequency to experience worry which disrupts everyday functioning (disruptive worry) and worry which does not disrupt everyday functioning (non-disruptive worry) is characterised by an attentional bias to threat. This attentional bias is often considered maladaptive, however, it can be adaptive when it concerns threats predicting dangers that can be controlled. Therefore, depending on the focus, this attentional bias may drive worry that is disruptive or non-disruptive. The current study proposes that disruptive worry may be characterised by an inability to calibrate attentional bias to factors that determine whether it is adaptive to attend to threat. Specifically, while non-disruptive worry may be characterised by allocation of attention only to those threats predicting dangers that can be controlled, disruptive worry may be characterised by an attentional bias to threats predicting both

controllable and uncontrollable dangers. Participants to show low worry, high non-disruptive worry, or high disruptive worry completed a novel Dual Probe Attentional Bias Alignment Assessment Task assessing their attention to threat cues signalling a future danger that could be controlled on some blocks, but not on others. The results showed that the Dual Probe Attentional Bias Alignment Assessment Task had high internal consistency. The data did not support the hypothesis, however revealed findings of interest in the further pursuit of research on the processes underlying disruptive vs non-disruptive worry and provides a new methodological framework for future research.

74. Experimental Manipulations of Vending Machine Artwork to Promote Healthier Beverage Choices

Ryan Calabro (1), Eva Kemps (1), Marika Tiggemann (1), Ivanka Prichard (2)

(1) School of Psychology, Flinders University, Australia, (2) School of Health Sciences, Flinders University, Australia

Via Zoom

Stream 3 – Sunday April 11, 09:20 – 09:40

Strategies targeting unhealthy beverage consumption have mostly been explicit, involving policy change or regulation (introducing a sugar tax, restricting access or using plain packaging), which have had limited success. Instead, the present study investigated whether implicit interventions based on nudging principles could promote healthier beverage choices from a vending machine. Two experiments manipulated the artwork on a vending machine display. Study 1 (n = 144) and Study 2 (n = 235) compared the effect of 7 artwork displays (beverage branded, red, blue or black coloured, or featuring a glass of water or coke) on beverage choice. Participants also indicated how much they liked the beverages and how often they consumed them (Study 1), or rated the taste, healthiness, energy and refreshing value of each beverage (Study 2). The black vending machine significantly influenced caffeine-based choices in Study 2. Other significant predictors of beverage choice are how much participants liked the beverage and how often they consumed it (Study 1), as well as their perception of the health and taste of the beverage (Study 2). Colour and artwork nudges have been shown to be effective in previous food research. Study 2 showed that colour may also influence beverage choices. The colour of the black machine may have implicitly led participants to think of coffee, causing them to choose caffeine-based beverages. These findings suggest that subtle changes such as the colour of the vending machine can influence beverage choices, and thus is an important factor to consider in promoting healthy choices.

75. Explicit and incidental self-reference effect in adolescence

Paff, H. (1), Matthews, N. (1), Ross, J. (2) & Kritikos, A. (1)

1. The University of Queensland, School of Psychology; 2. The University of Dundee, School of Social Sciences

Abstract Withdrawn

Stream 3 – Sunday April 11, 15:40 – 16:00

The self-reference effect (SRE) refers to the more accurate recall of self- compared with other-relevant information. It is suggested that an individual's self-concept provides an autobiographical framework and organising principle for newly learned information. The SRE has been found at both higher (explicit SRE) and lower (incidental SRE) levels of cognition. During explicit SRE trials, participants view a picture of their face or an other person's face (e.g., Harry Potter) concurrently with an object (e.g., ball) and explicitly judge whether the presented face likes the object. Conversely, during incidental SRE trials, participants judge object location on the screen in relation to the self- or other-face (left or right of face). Following this, a surprise recognition memory test occurs. Typically, in younger adults, the explicit SRE has a larger mnemonic boost compared with the incidental SRE. Conversely, young children show an equivalent explicit and incidental SRE. Therefore, the explicit and incidental SRE may be modulated by age. Interestingly, adolescence is characterised by intense self-focus – egocentrism, which may cause an increase in the explicit SRE. We aim to investigate explicit and incidental SRE differences in adolescence. Trials will consist of the above explicit and incidental methodology being tested with adolescence. We expect the explicit SRE to show a larger mnemonic boost for adolescent populations, as intense self-focus occurs. Data collection is currently ongoing. Results and implications will be discussed.

76. Exploring the association between social anxiety and interpersonal synchrony.

Macpherson M.C. (1), Marie, D. (2), Richardson, M.J. (3), & Miles, L.K. (1)

1. School of Psychological Science, The University of Western Australia; 2. ORS Group, Perth, Australia; 3. Department of Psychology, Macquarie University.

In person at satellite site (Perth)

Stream 2 – Saturday April 10, 16:20 – 16:40 *Student Talk*

The ability to coordinate our movements with others is integral to our daily lives. Interpersonal synchrony promotes valued social outcomes including enhanced social cognition, rapport and group efficacy. However, previous literature has documented deficits in the emergence of interpersonal coordination for individuals with diagnoses of social anxiety disorder (SAD). Contemporary theories of mental health posit the distribution of symptomology associated with SAD across a spectrum, yet the majority of the relevant work concerning interpersonal synchrony has been conducted in clinical populations. To extend this literature, across two experiments we examined the influence of subclinical variation in social anxiety on the dynamics underpinning interpersonal coordination. In Study 1, we used a dyadic pendulum swinging task, and found that increasing levels of social anxiety were predictive of disruption to the patterns of coordination dynamics that characterise effective social exchange. In Study 2, we utilised virtual reality (VR) to examine whether the mechanisms underlying differences in interpersonal coordination may have a basis in patterns of social attention. Participants performed a simple coordination task with a virtual avatar, whilst the attentional patterns of the avatar were manipulated such that she appeared to either engage or avoid the gaze of the participant. The results revealed that participants adapted their behaviour based on the actions of the avatar and self-reported symptoms of social anxiety. These studies will be discussed relative to the functional role of interpersonal coordination and mental health in the context of effective social exchange.

77. Exploring the Mechanism and Functional Form of Learning over Study Time in Recognition Memory

Zhang L. & Osth, A. F.

School of Psychological Sciences, The University of Melbourne.

Via Zoom

Stream 4 – Sunday April 11, 10:00 – 10:20

While it is well established that performance in episodic memory tasks improves with increased study time, the nature of this learning process remains unexplored. The current study aimed to explore two fundamental questions regarding the nature of learning over increased study time in episodic recognition memory tasks: (i) the precise functional form, and (ii) the mechanism of learning (i.e., whether learning occurs in an incremental manner, an all-or-none manner, or a combination of both). Two experiments were conducted whereby Experiment 2 was conducted to replicate results from Experiment 1. We employed a single-word recognition memory task and within-subject design in both experiments with 11 study-time conditions (ranging from 50 ms to 4000 ms). Experiment 2 only deviated from Experiment 1 in the incorporation of a 50 ms visual mask after the presentation of each study item. Different learning mechanisms and functions were implemented with the Linear Ballistic Accumulator to jointly model recognition accuracy and latency at individual-subject level. A 3 x 2 factorial model comparison was conducted, varying learning mechanism (incremental, all-or-none, or hybrid account) and function (exponential or power function). Results from two experiments showed consistent support for the all-or-none mechanism and power function. However, given the best-fitting model still misfit the data and the close predictions between exponential and power functions, converging evidence are required in future investigations in order to draw conclusive inference about all-or-none learning and better distinguish between different functions.

78. Eye-movement analysis of feature suppression in visual search

Hamblin-Frohman, Z. Chang, S. Egeth, H. Becker, S.I.

School of Psychology, The University of Queensland

In person in Brisbane

Stream 4 – Sunday April 11, 14:00 – 14:20 *Student Talk*

It is well-known that visual search is influenced by both goal-driven enhancement of a known target feature and stimulus-driven salience. Recent studies suggest that the visual system is also able to supress certain features if they are known to be task-irrelevant. This inhibition mechanism has been supported by the following pattern of results: in visual search, faster response times when a singleton distractor is present and, in probe trials, lower accuracy for reporting distractor-coloured compared to neutral coloured items. Both indicate less attentional allocation to distractor-colored items. However, as noted by Chang and Egeth (2019), the design cannot distinguish between target enhancement and distractor inhibition. Using a new, improved design, they found that both distractor feature suppression and target feature enhancement modulate probe responses. In the current study we used the new design together with eye-movement data to examine whether distractor inhibition is due to early, attention-guiding processes, or later decisional processes. We find that in both search and probe trials, eye-movements are more likely to be directed to target-coloured items and less likely to be attracted to distractor-coloured items (in comparison with neutral items), establishing that distractor inhibition influences early, attention-guiding processes. In visual search, we found evidence for both early and late inhibition effects, as the target item is both fixated earlier and responded to faster (after target localisation) when the distractor is present. Thus, inhibition influences both early, attentional processes as well as later stages of perceptual decision-making.

79. Factors impacting the disparity gradient

Harrold, A.L. & Grove, P.M

School of Psychology, The University of Queensland

In person in Brisbane

Stream 1 – Saturday April 10, 10:00 – 10:20

Humans view the world via two laterally separated forward facing eyes, yet we perceive most objects as single. Several factors determine whether a given object in our binocular field of view is seen as single or double. For example, relative depth, separation from other objects, or a combination of these two factors. The disparity gradient is a metric that captures the relative disparity and angular separation between two objects. The critical disparity gradient is the boundary value between single and double vision for a given object. The current study investigates, in two experiments, potential factors affecting the value of the critical disparity gradient. In experiment 1 we examined stimulus duration and stimulus size. The results of experiment 1 found no consistent effect of stimulus duration on the critical disparity gradient but did, find that the critical disparity gradient was larger for larger stimuli. In experiment 2 we examined stimulus duration and eccentricity. The results of experiment 2 demonstrated no effect of stimulus duration but did demonstrate an increase in the critical disparity gradient with increasing eccentricity, explained by the size-disparity correlation. Both experiments allowed for the investigation of different definitions of stimulus separation, finding that the definition of stimulus separation gives rise to differential patterns of findings. We suggest that it is important to define how separation is measured in any investigations of the disparity gradient and that longer durations may still impact the critical disparity gradient.

80. Flying blind: The effect of withholding feedback in causal learning

Lovibond, P.F. (1), Lee, J.C. (1) & Le Pelley, M.E (1)

School of Psychology, University of New South Wales

Via Zoom

Stream 3 – Sunday April 11, 14:40 – 15:00

Learning of cue-outcome relationships in predictive and causal learning experiments is often assessed by presenting cues without feedback about the outcome, and informing participants to expect no outcomes to occur. The rationale is that this "no-feedback" testing procedure prevents new learning during testing that might contaminate the later test trials. In other words, after a period of "flying blind", things will still be as they were. We tested this assumption in three causal learning experiments where participants were tasked with learning which foods (cues) were causing allergic reactions (the outcome) in a fictitious patient. We found that withholding feedback for a block of trials (Experiment 1) or for individual trials (Experiment 2) had no effect on predictive or causal ratings when it was attributed to the experimenter. However, withholding feedback led to regression towards intermediate ratings when it was incorporated into the causal scenario (Experiment 3). We conclude that testing without feedback is an appropriate, non-reactive method for assessing learning, as long as the missing data are seen as unbiased.

81. Forgetting to Remember: An investigation of stress and prospective memory

Stirling, N. S. J., Takarangi, M. K. T.

School of Psychology, Flinders University

In person at satellite site (Adelaide)

Stream 4 – Saturday April 10, 14:40 – 15:00

 Forgetting to remember intentions to be completed in the future (e.g., taking medication) is a common way our memory fails (Kliegel et al., 2005). One factor that may influence these prospective memory (PM) failures is stress (Piefke & Glienke, 2017). Emerging research suggests that particular types of PM may be more vulnerable to stress because of the controlled, cognitively demanding processes involved (e.g., Cona et al., 2015). Intentions retrieved from memory when an event occurs (e.g., seeing a colleague) that are not part of the ongoing task (e.g., working on a computer)—known as non-focal event-based PM—is one such type. While research indicates that stress does influence PM, it remains unclear whether stress (acute or chronic) improves or impairs non-focal event-based PM. Therefore, we sought to clarify this relationship. We measured MTurk participants' (N = 300) chronic stress and randomly allocated them to an acute stress (i.e., preparing for an online interview) or control condition (i.e., viewing neutral images and describing them). Next, we collected acute stress ratings and objectively measured participants' PM performance by asking them to monitor for target syllables while completing a Lexical Decision Task. Contrary to there being a relationship between stress and PM, we found strong evidence for the null hypothesis (acute: $BF_{01} = 13.66$, chronic: $BF_{01} = 13.77$). One possible explanation is that our PM measure was too cognitively demanding, leading to increased stress in the control condition. These findings inform the methodology for future investigations of the stress and PM relationship.

82. Getting to the source of the 'illusion of consensus'

Connor Desai, S., Xie, B. & Hayes, B.K.

Sydney Thinking and Reasoning Lab, The University of New South Wales

In person in Brisbane

Stream 3 – Saturday April 10, 16:20 – 16:40

Consensus between informants is a valuable cue to a claim's epistemic value when informant's beliefs are developed largely independently of each other. For instance, independent verification of a scientific claim from multiple scientists has more epistemic warrant than the same claim repeated multiple times by an individual scientist. While the former can be described as a true consensus the latter constitutes a false consensus. Previous research has demonstrated an "illusion of consensus" such that people are often equally convinced by true consensus and false consensus (Yousif et al., 2019). An alternative explanation for this illusion is that people do not place more weight on true relative to false consensus when they believe that the primary sources are causally dependent. In three experiments, participants rated their confidence in a claim after reading multiple text reports based on the same or different sources, the majority of which supported the claim. We implemented measures to reinforce the independence of sources in the case of true consensus. In two experiments, we replicated the illusion of consensus and found that explaining the causal independence of sources had a marginal impact on confidence ratings. In a third experiment, we presented participants with a scenario which simplified the relationship between the primary source and the data and found a greater increase in confidence in a claim when there was a true consensus than a false consensus. Results suggest people can distinguish true from false consensus when the causal independence of the sources is made explicit.

83. Goal Motives And Metacognitive Strategies Predict Persistence With Difficult Goals And Disengagement From Unattainable Goals

Hugh Riddell (1), Daniel Gucciardi (1), Ben Jackson (2), Cecilie Thogersen-Ntoumani (1), Constantine Sedikides (3), Nikos Ntoumanis (1)

1. School of Population Health, Curtin University; 2. School of Psychology, The University of Western Australia, 3. School of Psychology, The University of Southampton

In person at satellite site Perth

Stream 3 – Friday April 9, 14:40 – 15:00

When striving for an attainable goal, persistence is necessary to ensure attainment. However, persisting with an unattainable goal is draining and can negatively impact psychological wellbeing. Disengagement from unattainable goals allows individuals to conserve their resources and reengage with the goal at a later stage or in a different way, thus limiting potential negative outcomes. In two experimental studies, we examine how goal motives and the metacognitive strategy of Mental Contrasting with Implementation Intentions (MCII) predict goal persistence when pursuing difficult but attainable goals (Study 1), and goal disengagement/reengagement when pursuing unattainable goals (Study 2). Study 1 demonstrates that autonomous motives are linked to appraising a difficult but attainable goal as a positive challenge, which facilitates persistence. Controlled motives are related to threat appraisals and lead to cognitive disengagement from striving, however MCII can partially buffer these negative effects. Study 2 shows that MCII can promote strategic goal pursuit by helping individuals to decide to disengage from a task in which the goal is unachievable. Additionally, both MCII and autonomous goal motives positively predict reengagement with the goal in a subsequent achievable task. The results of both studies support predictions made by the Tripartite Model of Goal Striving.

84. How Does Strength Affect Decision-Making in Free Recall? A Linear Ballistic Accumulator Approach

Chen, H. & Osth, A. F.

Melbourne Computational Memory Lab, The University of Melbourne

Via Zoom

Stream 3 – Friday April 9, 14:00 – 14:20 *Student Talk*

Free recall initiation is usually modelled as a decision-making process where each item competes to be retrieved during recall. The list-strength effect (LSE) states that repeatedly presented and thus strengthened items would impair recall of weaker items (Ratcliff et al., 1990), and a key question is how exactly strengthened items interfere with non-strengthened items? Two experiments were conducted where participants were presented with 6-item/10-item study lists followed by distractor tasks and post-cued to recall as many items as possible in any order. The linear ballistic accumulator model (LBA: Brown & Heathcote, 2008) was subsequently applied using Hierarchical Bayesian techniques to investigate what kinds of manipulations were needed to model the LSE. Various assumptions were constructed around the nature of the strengthening process. Specifically, we varied whether strengthening one memory would affect the strength of another memory, and whether additional presentation of one memory would strengthen its original representation or create copies of it. While clear support was found for incremented strength in original accumulator of an item when it was presented repeatedly, the model selection did not favour the assumption of inhibition between items. Meanwhile, the statistical analyses showed that LSE was found in complete free recall sequences but not in first recalls. The results suggest a possibility that LSE may not be due to recall-based inhibition but output interference.

85. How do phonemes interfere with each other in short-term memory?

Roodenrys, S., Miller, L.M. & Josifovski, N.

School of Psychology, University of Wollongong

In person at satellite site (Wollongong)

Stream 2 – Friday April 9, 10:40 – 11:00

There has been an ongoing debate about whether information is lost from short-term memory due to interference or decay. Almost all the evidence for interference comes from studies in which the interference is created by presenting additional information that does not need to be recalled, such as distracting speech during list presentation or additional items to be read after the list has been presented but before it is recalled. A series of studies are reported which look at whether items within the list interfere with each other by strictly controlling the repetition of phonemes across different words in the list. The studies clearly identify a bias in the direction of such interference within the list and test predictions from different models of STM as to whether the effect of interference occurs during list presentation or list output.

86. How do recall requirements affect decision-making in free recall initiation? A linear ballistic accumulator approach

Osth, A. F. (1), Reed, A. (1), & Farrell, S. (2)

1. The University of Melbourne 2. University of Western Australia

In person at satellite site (Melbourne)

Stream 3 – Friday April 9, 12:00 – 12:20

Models of free recall describe free recall initiation as a decision-making process in which items compete to be retrieved. Recently, Osth and Farrell (2019) applied evidence accumulation models to complete RT distributions and serial positions of participants' first recalls in free recall which resulted in some novel conclusions about primacy and recency effects. Specifically, the results of the modeling favored an account in which primacy was due to reinstatement of the start-of-the-list and recency was found to be exponential in shape. In this work, we examine what happens when participants are given alternative recall instructions. Prior work has demonstrated weaker primacy and greater recency when fewer items are required to report \cite{WardTan19}, and a key question is whether this change in instructions qualitatively changes the nature of the recall process, or merely changes the parameters of the recall competition. We conducted an experiment where participants studied 6 or 12 item lists and were post-cued as to whether to retrieve a single item, or as many items as possible. Subsequently, we applied LBA models with various assumptions about primacy and recency, implemented using hierarchical Bayesian techniques. While greater recency was observed when only one item was required for output, the model selection did not suggest there were qualitative differences between the two conditions. Specifically, start-of-list reinstatement and exponential recency functions were favored in both conditions.

87. How do we see shapes in the dark?

Badcock, D.R., Smith, A.C. & Dickinson J. E.

School of Psychological Science, University of Western Australia, Perth WA

In person at satellite site (Perth)

Stream 1 – Friday April 9, 13:20 – 13:40

Our vision switches its input from cone to rod photoreceptors when it gets dark but the task of detecting and recognising objects remains the same. When light levels are high and cones are functional (photopic) we can process some shapes globally, integrating information around their contours. It has recently been suggested that this global processing does not occur in rod-only, scotopic, vision. Since global processing depends on cortical processes, this suggests a change in object processing at points beyond the retina in scotopic vision. The current study determines whether global processing of shape occurs in scotopic vision. Two psychophysical methods are employed to test for global processing. First, the rate of improvement in shape-change detection is assessed as a function of the amount of deformed contour. An increase faster than that predicted by local analysis of

contour segments is evidence of global processing. Second, thresholds for detecting which of two temporal intervals contains a distorted shape are compared with those required to identify which of two possible distorted shapes were presented. Failure to identify the shape at the same deformation threshold as required to say in which interval it was presented, indicates common processing of the two shapes but identical thresholds suggests different coding for each shape, requiring global shape processing. A group of 4 practiced observers are employed in the experiments and they are tested in both high light level and low light level conditions. The results support the existence of global shape processing in low-light, scotopic, vision.

88. How to train your Artificial Agents to be more human-like?

Gaurav Patil (1), Patrick Nalepka (1,2), Rachel W. Kallen (1,2), Michael J. Richardson (1,2)

 (1) Department of Psychology, (2) Centre for Elite Performance, Expertise and Training

(CEPET), Macquarie University, Sydney, Australia

In person at satellite site (Sydney)

Stream 1 – Sunday April 11, 09:40 – 10:00

Deep reinforcement learning (Deep RL) methods can be used to train artificial agents (AAs) to reach or exceed human-level performance in various task contexts. This provides a potential opportunity for researchers and practitioners to augment and enhance individual and team functioning with the use of AAs as teammates or opponents. However, although AAs may exceed human-level performance, this does not guarantee that AA behaviours are representative of human-like behaviours. This talk will present findings comparing the differential behaviours of AAs and human experts across several perceptual-motor task contexts, as well as explore methods to augment the training of AAs with the use of human-inspired models. We demonstrate how the use of hybrid, human-inspired Deep RL methods can ensure the effective realization of human-like behaviours in AA agents.

89. Humans retain a representation of information acquired across fixations

Stewart, E.E.M. (1), Ludwig, C. (2) & Schütz, A.C. (1)

1. Experimental & Biological Psychology, University of Marburg, Germany 2. School of Psychological Science, University of Bristol, UK

In person at satellite site (Adelaide)

Stream 1 – Saturday April 10, 16:00 – 16:20

Humans execute multiple saccades every second to sample information from the environment, creating complex scanpaths across many objects and locations. There is divergent evidence as to whether humans are aware of the locations and objects they have fixated across these sequences of saccades. Instead of explicitly asking participants to report the locations or objects of their fixations, we used a measure of perceptual confidence to investigate whether people know how much information they have about objects in the world. If people retain a representation of how much information they have acquired about objects across fixations, there should be a link between fixations, perceptual confidence and perceptual performance. Participants viewed an array of five real-world, everyday objects, presented at a random angle from 360° of possible viewpoints. After 1500ms, participants were asked to choose two objects from a list to make a perceptual report on: choice was a proxy for perceptual confidence. Participants then made a perceptual report by rotating a presented object to match the remembered viewpoint. Participants were more likely to choose fixated objects, and they reported the orientation of these objects more accurately than non-chosen or non-fixated objects. This demonstrates they had more perceptual confidence for items they had more information about. Participants additionally considered the inherent perceptual value (report difficulty) of the heterogenous objects, and chose items that were easier to match in the report task. Overall, this study suggests that humans retain a representation about the precision, and inherent perceptual value of information gained during fixations.

90. Illusions of Understanding in Distributed Cognitive Systems

Hill, S. R. (1), Rozenberg, V. (1), & Peacock, M. (1)

1. School of Psychology, Massey University

In person at satellite site (Wellington)

Stream 3 – Friday April 10, 10:00 – 10:20

People typically overestimate their ability to explain how artefacts and other complex phenomena work – this is known as the illusion of understanding (IOU). We examined whether the IOU also exists when people collaborate on an explanation-related task as it has been suggested that the illusion arises because people mistakenly confuse their ability to understand complex phenomena when they are embedded in distributed cognitive systems with their 'in-the-head' understanding. Participants completed an online experiment at the same time as their self-selected partner. Individuals rated their own, partner's, and combined knowledge of bicycles before and after completing individual and collaborative tasks that drew on their bicycle knowledge. Results showed a strong IOU for individuals, but not for partners or pairs. Thus, participants' acknowledgement of the overestimation of their individual knowledge was not generalised to ratings of their partner's knowledge or the pair's combined knowledge. We do not succumb to an IOU when judging the knowledge of others or of groups of which we are members.

91. Impact of room acoustics on cognitive performance and well-being.

Rachel Doggett[1], Elizabeth (Libby) J. Sander[2], James Birt[1], Matthew Ottley[3] & Oliver Baumann[*1]

[1]Faculty of Society and Design, Bond University; [2]Business School, Bond University; [3]Marshall Day Acoustics, Australia

In person in Brisbane

Stream 2 – Saturday April 10, 13:40 – 14:00

Irrelevant ambient noise can have profound effects on human performance and wellbeing. Acoustic interventions (e.g., installation of sound absorbing materials) that reduce intelligible noise (i.e., sound unrelated to the relevant speech, including noise from other talkers within the space) by reducing room reverberation, have been found to be an effective means to alleviate the negative effects of noise on cognitive performance. However, these

interventions are expensive, and it is difficult to evaluate their impact in the field. Virtual reality (VR) provides a promising simulation platform to evaluate the likely impact of varied acoustic interventions before they are chosen and installed. This study employed a virtual classroom environment to evaluate whether an intervention to reduce reverberation can be simulated successfully in VR and mitigate the effects of ambient noise on cognitive performance, physiological stress, and mood. The repeated-measures experimental design consisted of three acoustic conditions: no ambient noise, typical open-plan classroom ambient noise without acoustic treatment, and the same ambient noise with acoustic treatment to reduce reverberation. Results revealed that ambient noise negatively affected participants' cognitive performance but had no measurable effect on physiological stress or self-reported mood. Importantly, the negative effect of ambient noise was completely ameliorated by the acoustic treatment (i.e. indistinguishable from performance in the no noise condition). The study shows that VR provides an effective and efficient means to evaluate the cognitive effects of acoustic interventions.

92. Implicit neurofeedback training of feature-based attention promotes biased sensory processing during integrative decision-making

Angela I. Renton[1], David R. Painter[2,3,4], & Jason B. Mattingley[1,2,5]

1. The University of Queensland, Queensland Brain Institute, St Lucia 4072, Australia; 2. The University of Queensland, School of Psychology, St Lucia 4072, Australia; 3. Menzies Health Institute Queensland, Griffith University, Gold Coast, Queensland, Australia; 4. Hopkins Centre, Menzies Health Institute Queensland, Griffith University, Queensland, Australia; 5. Canadian Institute for Advanced Research (CIFAR), Toronto, Canada

Via Zoom

Stream 1 – Sunday April 11, 14:20 – 14:40 *Student Talk*

Complex perceptual decisions in which information must be integrated across multiple sources of evidence are ubiquitous but are not well understood. Such decisions are vulnerable to bias if sensory processing resources are disproportionately allocated amongst visual inputs. To investigate this, we developed an implicit neurofeedback protocol embedded within a complex decision-making task to bias sensory processing in favour of one source of evidence over another. Participants (N = 30) were asked to report the average motion direction across two fields of oriented moving bars. Bars of different orientations flickered at different frequencies, thus inducing SSVEPs. Unbeknownst to participants, neurofeedback was implemented to reward them for attending to a specific "trained" orientation. As attentional selectivity for this orientation increased, the motion coherence of both fields of bars increased, making the task easier without altering the relative reliability of the two sources of evidence. Critically, these neurofeedback trials were alternated with "test" trials which allowed us to assess the efficacy of training in the absence of neurofeedback. The protocol was successful in biasing sensory processing, resulting in earlier and stronger encoding of the trained evidence source. In turn, both the neural representation, as well as the distribution of behavioural reports of the integrated average, were skewed toward the motion direction of the trained orientation. Remarkably, despite this training effect, mean behavioural responses accurately represented the unweighted average of the two motion directions, suggesting that integrative decision-making processes are robust to inequalities in the allocation of sensory processing resources across sources of evidence.

93. Individual differences in attentional bias to threat: An online investigation of psychological predictors

Williams, M.E. (1), Matthews, A.J. (1) & Honan, C. (1)

School of Psychological Sciences, University of Tasmania

In person at satellite site (Hobart)

Stream 4 – Sunday April 11, 14:40 – 15:00 *Student Talk*

Attentional bias to threat (ABT) refers to the tendency to more rapidly orient attention to threatening stimuli, as compared to neutral or pleasant stimuli. ABT may be particularly pronounced in individuals with high anxiety. However, attention has been drawn to issues with the reliability of this phenomenon and little is currently known about individual differences that may contribute to the expression of ABT. This study aimed to identify psychological predictors of ATB using a dot probe task and a flanker task which comprised threatening, neutral and pleasant images. A sample of undergraduate students (N=122) completed an online study including questionnaire measures of mood, psychological symptoms, abilities, and personality, followed by the ABT tasks. Evidence of ABT was observed in reaction times for the flanker task but not the dot probe task. Contrary to hypotheses, participants who scored with high (n=31) and low (n=38) levels of trait anxiety did not differ in reaction time performance. Regression analyses were run using the whole sample. State levels of stress, calmness and anxiety were significant predictors of a flanker ABT score. Lifetime meditation hours, as well as facets of attentional control, trait mindfulness and personality were significant predictors of a dot probe ABT score. Trait anxiety did not significantly predict additional variance beyond these measures for either ABT score. Findings highlight the unreliability of ABT in anxious populations and suggest other psychological factors may play a predictive role in the indicidence of ABT. Limitations include the online mode of delivery.

94. Individual differences in automatic imitation: a comparison of multi-level modelling and summary statistics approaches

Nguyen, A.T.T. (1), Darda, K.M. (2,3) & Ramsey, R. (1)

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Via Zoom

Stream 1 – Sunday April 11, 10:00 – 10:20

People tend to spontaneously copy each other's behaviours, body posture and gestures, a phenomenon known as automatic imitation. To probe the cognitive processes underpinning imitation, a stimulus response compatibility (SRC) paradigm has been devised. The SRC task has subsequently been used to study factors that modulate imitation such as ingroup biases, as well as individual differences in sex and dimensions of personality, such as narcissism. Recently, however, a "reliability paradox" has been found across a range of similar SRC tasks whereby robust group-level effects are accompanied by low test-retest reliabilities, thus limiting the utility of individual difference analyses (Hedge et al. 2017). In response, an approach to

increase test-retest reliabilities in these tasks has been put forward using Bayesian multi-level modelling (Haines et al. 2020). In the present study, we apply Bayesian multi-level modelling to existing automatic imitation data (N>600; Darda et al. 2020). Preliminary results suggest that the multi-level approach provides more robust support for the claims made by Darda et al. (2020) using the summary statistics approach. In particular, in contrast to prevailing theoretical accounts, the results reinforce the view that imitative compatibility is largely invariant to participant sex and ingroup biases, and ongoing analyses are currently probing imitation as a function of personality variables. By taking into account both group-level and trial-level uncertainties, this work thus highlights the value of multi-level modelling approaches for understanding aspects of social cognition, particularly in relation to studying individual differences using SRC paradigms.

95.   Influence of social presence on emotion expressions varies across emotion categories

Van Der Zant T. (1), Vanman, E.J. (1) & Nelson, N.L. (2)

1. School of Psychology, The University of Queensland; 2. School of Psychology, The University of Adelaide

In person at satellite site (Adelaide)

Stream 4 – Saturday April 10, 16:40 – 17:00 *Student Talk*

The effect of emotion on emotion expressive behaviour has been studied in various contexts and cultures, finding coherence between emotion and expression can vary greatly. One of the factors that has been found to influence emotion expressions is whether the person is in the presence of others. Research has determined that the presence of others can inhibit and enhance emotion expressions. In this study we sought to explore further how the effect of social presence interacts with the effect of experienced emotion on expressive behaviour. To do this we surreptitiously filmed 128 participants as they watched emotion eliciting stimuli with a friend, with a stranger, or alone. Each participant answered items regarding their emotional experience for each stimulus (emotion valence, arousal, category, and intensity). We showed the 728 resulting expressions to naïve perceivers (397 participants) to guess the emotion felt for each clip. We found that the effect of social presence differs across emotion categories. For example, happiness and amusement was better recognised when the expression was made in the company of a friend, rather than alone or with a stranger. Also, valence was more accurately perceived for fear expressions from participants on their own, rather than with a friend or stranger. We hope this research provides a basis for better understanding how social context alters expressive behaviour.

96.   Initial judgements of a problem's solvability: Are they accurate and trainable, and do they predict problem-solving success?

Burton, O., Bodner, G.E. & Williamson, P.

College of Education, Psychology and Social Work, Flinders University

In person in Brisbane

Stream 2 – Sunday April 11, 15:00 – 15:20 *Student Talk*

Deciding whether a problem is solvable is an important step in the problem-solving process. Recent research suggests that rapid, initial judgements of solvability can discriminate solvable from unsolvable problems. Using anagrams, we explored whether judgements of solvability are discriminating when anagrams that were solved during the initial assessment are excluded, whether discrimination improves with training, and whether judgements predict later problem-solving success. In Experiment 1, training occurred by presenting longer duration anagrams at first, which halved across anagram blocks (16 s, 8 s, 4 s, 2 s). Judgements of solvability were discriminating in each block, even after excluding already-solved anagrams. In Experiment 2, anagram duration was 2 s in each block. Judgements of solvability were discriminating, but less so. Discrimination in the final 2 s block was better after training (Experiment 1) than after practice alone (Experiment 2). After making judgements of solvability, participants attempted to solve the solvable anagrams. In both experiments, anagrams that received "solvable" judgements were more likely to be solved than not solved, even after excluding already-solved anagrams. However, for anagrams in the 2 s block, judgements of solvability did not become more predictive of anagram-solving success following training. In sum, judgements of solvability were discriminating and trainable, and they predicted subsequent problem-solving success—but their predictiveness did not improve with training.

97.   Instagram's Sensitive Screens: Are they protecting vulnerable users?

Simister, E.T., Bridgland, V.M.E., Takarangi, M.K.T.

College of Education, Psychology, and Social Work, Flinders University

In person at satellite site Adelaide

Stream 2 – Sunday April 11, 16:20 – 16:40

Instagram introduced sensitive screens to protect users against the potential harm of viewing sensitive content online (Crawford, 2019). In blurring out or screening sensitive images and providing an accompanying "Sensitive Content" warning, sensitive screens seek to reduce "surprising or unwanted experiences" (Systrom, 2017), and to assist "vulnerable users" (e.g., people with poor mental health) in making decisions about what content to approach or avoid. But do sensitive screens actually function as intended? We know trigger warnings—similar to sensitive screens—are ineffective and possibly even harmful (e.g., Bellet et al., 2020; Bridgland et al., 2019). In addition, emerging data from our lab suggests that most people—and particularly those with mental health vulnerabilities (e.g., depression)—say they would uncover (or 'approach') sensitive content if it appeared on their Instagram feed. To examine actual behaviour we presented 262 participants with neutral, positive, and negative images, with sensitive screens covering all negative images. During a 5-minute Instagram task, participants viewed images at their own pace and, at their discretion, uncovered sensitive screens to reveal the negative image underneath. Overall, "vulnerability" characteristics (e.g., depression symptoms and poor wellbeing) were not associated with using the screens to avoid repeated exposure to graphic material. Furthermore, state anxiety and negative affect increased from pre- to post-task irrespective of uncovering behaviour, suggesting the mere presence of sensitive screens may be harmful to users. Our findings raise the possibility that sensitive screens may not function as intended and that sensitive screens themselves may contribute to negative outcomes.

98. Intact gaze processing in developmental prosopagnosia

Little, Z. (1), Palmer, C.J. (2) & Susilo, T. (1)

1. School of Psychology, Victoria University of Wellington; 2. School of Psychology, University of New South Wales

In person at satellite site (Wellington, NZ)

Stream 4 – Friday April 9, 11:20 – 11:40 *Student Talk*

The eyes of other people subserve two core functions in human social cognition: gaze perception and facial identity recognition. Here we report four experiments that investigate whether various aspects of gaze processing can be intact when identity processing is impaired in developmental prosopagnosia (DP). Experiment 1 (N = 102 DPs, 97 controls) measured perception of strabismus, which requires judgment of gaze direction from the two eyes. Experiment 2 (N = 101 DPs, 97 controls) measured the Wollaston illusion (whereby perceived eye gaze is pulled by head rotation), which requires perceptual integration of eye and head direction. Experiment 3 (N = 45 DPs, 45 controls) measured gaze discrimination and gaze adaptation, which reflects sensitivity to gaze direction and its sensory representations. Experiment 4 (N = 18 DPs, 22 controls) measured serial dependence in gaze perception, which reflects temporal integration of gaze direction and its perceptual stability. Despite their severe and lifelong deficits at recognising identity, DPs showed normal gaze processing across all experiments. These results demonstrate the functional specificity of gaze processing and imply that gaze perception is carried out by dedicated mechanisms not used for processing identity. Our findings align with models of face processing that posit distinct pathways for gaze and identity analysis, and further clarify the selectivity of face processing dysfunctions in developmental prosopagnosia.

99. Spoken word production in a shared task context: Evidence for a lexical locus for carryover effects between speakers.

Toraiwa, J. (1,2), Gauvin, H. (3)., de Zubicaray, G, (1,2) Meuter, R. (1)

Affiliations 1. School of Psychology and Counselling, Faculty of Health, The Queensland University of Technology, Brisbane, Queensland, Australia 2. Language, Cognition and Brain Sciences Laboratory, Brisbane, Queensland, Australia 3. Radbound University, Donders Institute for Brain, Cognition and Behaviour, Nijmengen, Netherlands

In person in Brisbane

Stream 2 – Friday April 9, 09:00 – 09:20 *Student Talk*

Conversation requires speech production, yet this interactive context is relatively under-investigated from a production perspective. Semantic interference (SI) is a well-documented effect occurring within speakers in which naming of an item typically slows after naming another from the same semantic category (e.g., *dog* after *horse*) compared to an unrelated item (e.g., *dog* after *violin*). Recent studies have demonstrated a carryover of SI across two speakers in continuous naming, interpreting the effect as originating at the conceptual level of the language system (Hoedemaker et al., 2017; Kuhlen & Abdel Rahman, 2017). However, such studies cannot confirm that the carryover is *selectively* conceptual in nature without also testing speakers in an unrelated context. Here, we investigated whether a similar carryover of SI across different speakers could be observed in the block cyclic naming paradigm in which participants repeatedly name sets of objects either in semantically related (homogeneous) or unrelated blocks (heterogeneous). In Experiment 1, we replicated the SI effect within a single speaker. In Experiment 2, naming latencies for unrelated blocks differed significantly between speaker transition cycles, but carried over (i.e., did not differ between) speakers for related blocks. To determine whether this latter result originated at the conceptual level or was due to a more general attentional mechanism, we introduced a monitoring task in Experiment 3 to direct participants' attention equally to both related and unrelated items, which resulted in similar carryover effects in both conditions. Together, these findings suggest that observations of carryover effects from listening to speaking may be due to activation of shared lexical rather than conceptual representations in the language system.

100. Intersubject variability in spoken verb production: Effects of hierarchy and transitivity

Ward, E.[1], Brownsett, S. L. E.[2,3], McMahon, K. L.[1,4,5], de Zubicaray, G. I.[1]

[1] Faculty of Health, Queensland University of Technology; [2] School of Health and Rehabilitation Sciences, The University of Queensland; [3] NHMRC Centre of Research Excellence in Aphasia Recovery and Rehabilitation, Melbourne VIC; [4] School of Clinical Sciences and Institute of Health and Biomedical Innovation, Queensland University of Technology; [5] Herston Imaging Research Facility, Royal Brisbane & Women's Hospital, Brisbane, Australia

In person in Brisbane

Stream 2 – Friday April 9, 10:00 – 10:20 *Student Talk*

In two experiments employing the picture-word interference (PWI) paradigm, we explored how a verb's hierarchy and transitivity influences its retrieval during spoken production. Experiment 1 involved transitive (*i.e.* object-oriented, *e.g. eat*) action pictures accompanied by a to-be-ignored distractor word that was either a related coordinate ('*drink*') or troponym ('*devour*'), while Experiment 2 employed intransitive (*e.g. walk*) stimuli. Assuming these relationships operate similarly for verbs and object nouns, we expected to observe faster naming times for troponyms, and slower naming times for coordinates. Conventional group-level analyses of the null average hypothesis revealed no significant effects in either experiment. However, analyses of the global null hypothesis revealed significant interindividual variability for troponym distractors in Experiment 1, with a similar trend in Experiment 2. These results indicate verbs may have a different conceptual-lexical organisation to object nouns in the mental lexicon, less constrained by hierarchical categories, with their processing more influenced by subject-specific variables.

101. Intrusions with and without meta-awareness: Do they differ

Keeping, C. & Takarangi, M. K.

College of Education, Psychology, and Social Work, Flinders University

In person at satellite site (Adelaide)

People who experience trauma sometimes re-experience the event through intrusions: thoughts and memories that spontaneously and unintentionally intrude into consciousness. Sometimes these intrusions can be experienced without explicit awareness (i.e., without meta-awareness; e.g., Takarangi et al., 2014). However, research has yet to show whether intrusions with and without meta-awareness differ in terms of how people experience them (e.g., their characteristics), or react to them via maladaptive responses (e.g., suppression, negative interpretations). Here we investigated whether people phenomenologically experienced, suppressed, or interpreted the meaning of intrusions differently, according to meta-awareness of those intrusions. Mechanical Turk participants watched a trauma analogue film and—during a subsequent unrelated reading task—were intermittently probed to capture and assess one film-related intrusion per participant. Participants who reported an involuntary film-related intrusion (n = 262) then rated meta-awareness and other aspects of their intrusion (i.e., phenomenological characteristics, suppression effort, and negative interpretation of intrusion). Intrusion meta-awareness positively correlated with intrusion negativity, re-experiencing, and suppression effort, though effects were small. Meta-awareness was not associated with how people interpreted the meaning of their intrusion (e.g., my intrusion means there is something wrong with me). Our findings suggest intrusions with and without meta-awareness differ in terms of how they are experienced and are related to the maladaptive response of thought suppression, highlighting the importance of considering both types of intrusions in theory and practice.

102. Investigating bottom-up versus top-down effects across cortical depth in human somatosensory cortex using 7T fMRI.

York, A. A. (1), Condon, C. (1), Bollmann, S. (2), Barth, M. (3), Cunnington, R. (1), Puckett, A. M. (1)

1 School of Psychology, The University of Queensland, Brisbane, Australia; 2 Centre for Advanced Imaging, The University of Queensland, Brisbane, Australia; 3 Information Technology and Electrical Engineering, The University of Queensland, Brisbane, Australia

In person in Brisbane

Functional MRI at ultra-high field (7T) is more frequently being used to resolve fine detail on and across the cortex. Here, by leveraging advances in imaging techniques we probe activation across the depth of the human cortex; this layered organisation, a hallmark of cortical grey-matter. Until recently the investigation of these different layers has been restricted to electrophysiology studies. However, here we begin to assess whether, in human S1, the middle layers are associated with feed-forward (bottom-up) processes; conversely, cells in the superficial and deep portions are associated with feed-back (top-down) functions. High resolution anatomical (MP2RAGE; 0.5mm) and functional BOLD (3D-EPI; 0.8mm) imaging data were acquired on a Siemens Magnetom 7T scanner. Fingertips were stimulated independently via piezoelectric simulators with (top-down condition), or without (bottom-up condition) concurrent attention to the stimulated finger. A set of precise laminar surface models were then used to extract and examine data across cortical depths. Activation patterns were successfully extracted at multiple cortical depths for both sensory and attention conditions, with both successful in eliciting significant activation across cortical depths. Our findings in S1 are in line with previous work in visual cortex examining how gradient echo EPI responses vary across depth, the strongest and most spatially spread responses are found most superficially, down deep it becomes much more difficult to identify individual fingertips. While this pattern was present for both experimental conditions, the differences in activation profiles across depth speak are consistent with signals being primarily top-down driven, or bottom up driven.

103. Investigating Links Between Musicality, Temporal Acuity, and Multisensory Integration via the Ambiguous Stream/Bounce Display

O'Donohue, M.P. & Lacherez, P.

School of Psychology and Counselling, QUT.

In person in Brisbane

Musical training is associated with greater temporal acuity, as musicians are better at detecting whether stimuli are presented simultaneously or a small distance apart. This has been linked to more accurate multisensory integration in musicians. However previous studies have typically musicianship categorically in terms of years of formal musical training only. We assessed whether a broader definition of musicality might better predict temporal acuity. We then investigated whether musicality influenced perception of an ambiguous multimodal display (stream/bounce illusion). First, participants (N = 25) took the Goldsmiths Musical Sophistication Index (GOLD-MSI) questionnaire. The temporal acuity of participants was then assessed via a task in which participants judged whether a flash and a click were presented simultaneously or asynchronously. Next, we explored whether musicality predicted perception in the stream/bounce task. Participants completed the task once at baseline, and again after a period of adaptation to -200ms (audio-leading) and 200ms (visual-leading) asynchronous flash-click stimuli. Greater musicality predicted enhanced temporal acuity in the flash-click task. After controlling for this relationship, greater musicality also predicted more auditory- and flash-induced bouncing in the stream/bounce display. However, no change was found after audiovisual adaptation. We speculate that the relationship between musicality and increased bouncing in the stream/bounce display could be explained by general cognitive enhancements in those with greater musicality, such as better selective attention. These findings have implications for understanding how certain types of experience can influence multisensory integration.

104. Investigating the Effects of Self-Monitoring, Goal Setting and a Group Contingency for Increasing Physical Activity Among Adults with an Intellectual Disability

Jason Kozica

Affiliations – University of Auckland, School of Psychology (masters student completed November 2020)

In person at satellite site (Melbourne)

Frequent physical activity at a moderate intensity has been linked to improved physical and mental health outcomes. The current study investigated the effects of self-monitoring, goal setting and a group contingency program on increasing physical activity among four adults with an Intellectual

Disability (ID). A Garmin Vivosmart HR fitness tracker was used to measure steps and active calories per day. Previous studies that have used behavioural interventions to increase physical activity have primarily targeted individuals without disabilities and have not incorporated motivating operations into the goal setting sessions nor considered the relationship between anxiety and physical activity. The current study aimed to address these gaps in the research. The self-monitoring and goal setting intervention improved mean step count for three of four participants and the addition of an interdependent group contingency program resulted in further increases in mean step counts and active calories burned for three of the four participants. Results from the social validity survey and Beck Anxiety Inventory (BAI) conveyed that all participants benefited from the different physical activities and three of four participants reported to experience less anxiety following completion of physical activity.

105. Investigating the reproducibility of executive function and implicit learning effects across sample sizes

Garner, KG (1,2,3), Nydam, A. (1), Nott, Z. (1), Nolan, CR. (4), Bowman, H. (3), & Dux, PE (1)

1. School of Psychology, The University of Queensland (UQ); 2. Queensland Brain Institute, UQ; 3. School of Psychology, University of Birmingham; 4. School of Psychology, University of New South Wales

In person in Brisbane

Stream 3 – Friday April 9, 09:00 – 09:20

Precise effect size estimates are essential for motivating both theory and appropriate statistical power in future research endeavours, yet a quantification is lacking in multiple experimental psychology fields (among others) including in the study of executive function and implicit learning. Moreover, recent simulations have implied that failing to appropriately model sources of randomness in the data may artificially attenuate the range of observed effect sizes (fixed effects [ffx] vs random effects [rfx] approach). Using a large behavioural dataset (N=313) where participants completed tasks tapping executive function (multitasking [MT], attentional blink [AB]) and implicit learning (contextual cueing [CC], serial reaction time [SRT] task), combined with a bootstrapping approach, we simulated experiments of increasing N (13-313) and asked the following questions; 1) what range of effect sizes is observed for each level of N using the standard ffx approach? 2) to what extent does the range of observed effect sizes increase when an rfx model approach that accounts for individual baseline differences is used? and 3) how often would the null hypothesis be rejected, given each N, under each approach? For MT, AB and SRT, applying an rfx approach revealed a greater range of effect sizes for smaller Ns, but demonstrated reduced likelihood of type II error across all N. For CC, the range of effect sizes was reduced by the rfx approach, suggesting that previous published observations may be conflating individual baseline differences with an experimental effect.

106. Investigations of Prediction: Opposite neural consequences of different types of predictions

Blake W. Saurels[1], Derek H. Arnold[1], Ottmar V. Lipp[2], Kielan Yarrow[3], & Alan Johnston[4]

1. Perception Lab, University of Queensland, Australia; 2. School of Psychology and Counselling, Queensland University of Technology, Australia; 3. Department of Psychology, City, University of London, United Kingdom; 4. School of Psychology, The University of Nottingham, United Kingdom

In person in Brisbane

Stream 1 – Friday April 9, 12:00 – 12:20 - Abel Smith Lecture Theatre *Student Talk*

We are interested in the neural and perceptual consequences of visual predictions. In a first line of research, we examined neural processing while viewing naturalistic scenes, that either support high-levels of predictive performance (upright basketball movies) or diminished levels of predictive performance (inverted basketball movies). We find that the former condition promotes a greater intensity of alpha-band activity in occipital brain regions, which we argue is a neural marker of inhibited information processing in conditions where the brain is better able to predict what information will be relevant in the next moment. In a second line of research, we constructed a paradigm that isolates the influence of expectations generated via repetition and probability, and which allows us to compare these two effects to expectations that are explicitly declared (e.g., "I think I will see X"). We find that the oft reported exaggerated P300 response following repetition violations (changes) is instead reduced for violations of declared prophecies (incorrect guesses). This is consistent with contemporary psychophysical work, showing that the temporal oddball effect – the apparent extension in time of repetition breaking 'oddballs' – is reversed for declared predictions, with incorrectly guessed events seeming relatively contracted in time. This finding dispels the notion of a uniform mapping between prediction outcomes and neural consequences.

107. Judging the congruence of auditory and visual stimulation within virtual reality scenes: a potential role for vision in coping with reverberation

Tsang, K.Y. & Mannion, D.J.

School of Psychology, The University of New South Wales

In person at satellite site (Sydney)

Stream 2 – Saturday April 10, 15:00 – 15:20 *Student Talk*

Auditory signals that reach the ear consist of both the acoustic energy arriving directly from a source and indirectly via reflections from surfaces in the environment (reverberation). To perceptually separate the sound source, we could potentially derive relevant information about how the environment affects auditory signals by considering its spatial and compositional structure using vision. Here, we investigated the ability to judge whether a given sound was produced within a location that was depicted by vision. We obtained auditory and visual measurements (impulse response recordings and panoramic images) from 10 real-world locations (via http://www.echothief.com). To represent the auditory environments, we convolved the impulse response of each location with anechoic recordings of a word utterance. To represent the visual environments, we presented the panoramas via an immersive virtual reality display. Participants (n = 56) judged whether an utterance was produced within the environment they saw, for each pairwise combination of auditory location and visual location. We found that participants were more likely to judge that the environments matched when the auditory and visual stimulation was congruent. Furthermore, participants seemed more likely to judge incongruent pairings as matching if the locations were similar in their inferred reverberation. Overall, this study indicates that humans can have an awareness of the expected relationship between

visual and auditory aspects of an environment. This suggests that vision can provide useful information for the disentangling of contributing influences on auditory signals, and the human perceptual system may capitalise on this availability during perception.

108. Let's hear it 4 the grlz 😊 Gender differences in the language of digital communication

Kemp, N. (1) & Shilling, E. (1)

School of Psychological Sciences, University of Tasmania

In person at satellite site (Hobart)

Stream 2 – Sunday April 11, 12:00 – 12:20

A common feature of digital communication is the use of "textese": informal spellings that represent changes to standard writing that are contractive (e.g., "txt msg"), expressive (e.g., "pleeeease!!"), or other (e.g., "lol", "skool"). We assessed suggestions that textese use, like language use more generally, differs between males and females. We also went beyond the male/female dichotomy to investigate whether textese use varies as a function of self-perceived masculinity/femininity. In Study 1, we examined approximately 3,500 naturalistic text messages sent by 682 first-year Psychology students (75% female) across three cohorts (2018, 2019, 2020). In contrast to previous findings that females use more textese than males, we saw no gender differences in overall textese use. However, in line with previous research, females used more expressive textisms than males. In Study 2 (the 2020 student cohort), 278 participants (75% female) contributed approximately 1400 of their sent text messages. They also completed the Open Sex Role Inventory and the Traditional Masculinity and Femininity Scales. The use of expressive textisms correlated positively with both measures of femininity, and negatively with both measures of masculinity. These results extend, to the digital realm, the general finding that women use language in a more emotionally expressive way than men. Further, individuals who identify as more masculine use less emotion in digital messages, whereas individuals who identify as more feminine use more (perhaps to soften a statement, or to establish rapport). These results contribute to the literature on digital communication, and to theoretical views on gender differences in language.

109. Linking the dynamics of cognitive control to individual differences in working memory capacity: Evidence from reaching behavior

Erb, C.D. (1), Welhaf, M.S. (2), Smeekens, B.A. (2), Moreau, D. (1), Kane, M.J. (2), and Marcovitch, S. (2)

1. School of Psychology, The University of Auckland; 2. Psychology Department, The University of North Carolina at Greensboro

In person at satellite site (University of Auckland)

Stream 3 – Saturday April 10, 09:00 – 09:20

This study used a technique known as reach tracking to investigate how individual differences in working memory capacity (WMC) relate to the functioning of two processes proposed to underlie cognitive control: a threshold adjustment process that temporarily inhibits motor output in response to signals of conflict and a controlled selection process that recruits top-down control to guide stimulus-response translation. Undergraduates (N = 135) performed two WMC tasks (Updating Counters and Symmetry Span) and a reach-tracking version of the Eriksen flanker task. Consistent with previous research using button-press flanker tasks, WMC significantly correlated with response time (RT) performance, with higher WMC scores corresponding to smaller congruency effects. Given that RTs reflect the combined functioning of multiple processes underlying cognitive control, we interpreted this effect to reflect a general link between WMC and both the threshold adjustment process and controlled selection process. We also found a significant association between WMC and participants' reach trajectories, with higher WMC scores corresponding to more direct reach movements on incongruent trials involving stimulus-response overlap with the preceding trial. We interpreted this effect to reflect a more specific link between WMC and the functioning of the controlled selection process. We discuss the observed links between WMC and cognitive control in relation to the unity and diversity of executive functions framework and in relation to the role of prefrontal and striatal dopamine in supporting adaptive cognitive control. The preregistration for this project is available here: https://osf.io/qae49. The data and analysis files for this study are available here: https://osf.io/6hz3a/.

110. Localisation Without The Use of External Cues

Anastasiou, C. (1), Bradshaw, N. (1), Nolan, C. (2), Baumann, O. (3), Cheung, A. (2) & Yamamoto, N. (1)

School of Psychology and Counselling, Queensland University of Technology (QUT); 2. Queensland Brain Institute, The University of Queensland; 3. School of Psychology and the Interdisciplinary Centre for the Artificial Mind, Bond University

In person in Brisbane

Stream 2 – Saturday April 10, 14:20 – 14:40 *Student Talk*

External and internal spatial cues provide information for finding one's location in an environment. Current literature has demonstrated how external stimuli are utilised for localisation. However, the extent to which internal mechanisms such as path integration contribute to localisation remains unclear. Due to the heavy reliance on external (i.e., visual, auditory and tactile) input for localisation, path integration has been viewed as a primitive localisation mechanism. The current study aims to show that there may be more value to the path integration system than previously assumed. Following from Cheung et al.'s (2014, PLOS Computational Biology) theorisation of internal localisation mechanisms known as the particle filter model, it was hypothesised that humans would be able to localise without external input in an environment with one-fold rotational symmetry, provided that humans had memorised and are aware of the layout of the environment. Fifty participants were exposed to L-shaped and square environments (one- and four-fold rotationally symmetric, respectively), and subsequently disoriented and guided along non-structured paths without visual, auditory and tactile cues. To test their localisation, they were repeatedly queried as to which segment of the environments they believed they were located. Consistent with the hypothesis, despite following the identical paths in the two environments, participants found their locations above chance level only in the L-shaped environment. Furthermore, these participants improved their localisation accuracy as they walked farther, suggesting that their localisation resulted from spatial cues that they accumulated through path integration. These findings demonstrate that the internal mechanisms can make a significant contribution to localisation.

111. Loud acoustic stimulation reveals that divided attention delays preparation of anticipated motor actions.

Nguyen A.T. (1), Mowatt, B. (1), Vallence, A. (2), Tresilian, J.R. (3), Lipp, O.V. (1), Marinovic, W. (1)

(1) School of Population Health, Curtin University; (2) School of Psychology and Exercise Science, Murdoch University; (3) Department of Psychology, University of Warwick

In person at satellite site (Perth)

Stream 1 – Saturday April 10, 13:40 – 14:00

Divided attention has been shown to affect both the control of goal-directed actions and reflexes. The literature, however, has typically investigated these effects isolation. Here, we examined how divided attention affects voluntary and involuntary behaviours by presenting loud acoustic stimulus (LAS) probes at different times before participants were required to make a voluntary movement. Participants were asked to make a finger movement in synchrony with the last of a sequence of four Gabor patches that flashed on a monitor. In one block, participants ignored the orientation of the Gabor patches and simply performed the motor action (undivided attention). On another block, they performed the motor action while also remember whether the orientation of the flashed Gabor patches changed for the last stimulus of the sequence (divided attention). Voluntary responses were largely facilitated by LAS, and responses to LAS were differentially modulated by un/divided attention, block order and LAS timing. Movement onset data suggested that motor preparation was delayed during divided attention, but only in the first block. Despite this delay, peak force showed an overall enhancement during divided attention, reflecting an increase in arousal. Involuntary responses, however, were not modulated by attention, but did reveal differential effects of LAS timing on blink amplitude and latency measures. Collectively, the results demonstrate that divided attention can alter the time-course of preparation for simple actions when participants are relatively inexperienced with the task. The absence of attention-related effects on blink reflexes highlights limits in the influence of cortical processes on sub-cortically mediated responses.

112. Lower and Higher Visual Processing in the Poggendorff Illusion.

Harris, J. W. C., Yildiz, G. Y., & Chouinard, P. A.

Department of Psychology and Counselling, School of Psychology and Public Health, La Trobe University, Melbourne

Via Zoom

Stream 1 – Saturday April 10, 11:20 – 11:40

We aimed to determine if the Poggendorff illusion could be attributed to lower-level sensory or higher-level cognitive processing, or a combination of both. We utilised a dual-task interference paradigm which enabled us to examine the degree to which the illusion taps into cognitive processes. Participants (N = 16) reported their perception of the illusion, which varied according to the presence of the occluder (with or without) and task demands, either single (illusion by itself) or dual while reading aloud the time displayed on an analogue (dual-analogue) or digital (dual-digital) clock. The method of constant stimuli was used which allowed data collection on the point of subjective equality (PSE), a measure of illusion magnitude, and bistability width values, indicative of perceptual variability. The results indicated that participant's perception of illusion magnitude as per PSEs did not vary between single, dual-analogue, and dual-digital conditions $F(1, 20) = 0.42$, $p = .66$, supporting lower-level sensory processing, and were greater with the presence of the occluder $F(1,15) = 32.7$, $p < .001$, confirming the presence of the illusion. Participants' perceptual variability as per bistability width values were influenced by task manipulations with more variability for the dual-analogue compared to single or dual-digital conditions $F(1, 21) = 21.9$, $p < .001$ suggesting a cognitive component to the illusion and were not influenced by the presence of the occluder $F(1,15) = 0.01$, $p = .991$. Overall, the results provide evidence suggesting the illusion is largely mediated by lower-level sensory processing with some higher-level cognitive processing.

113. Mapping the body in the brain with the mind

Puckett, A.M. (1,2), York, A. (1), Bollmann, S. (3), Barth, M. (4) & Cunnington, R. (1)

1. School of Psychology, The University of Queensland; 2. Queensland Brain Institute, The University of Queensland; 3. Centre for Advanced Imaging, The University of Queensland; 4. School of Information Technology and Electrical Engineering, The University of Queensland

In person in Brisbane

Stream 1 – Friday April 9, 09:00 – 09:20 - Abel Smith Lecture Theatre

Our body is continuously sampling the environment using a variety of receptors tuned to different features, and this information is routed up to primary somatosensory cortex. Strikingly, the spatial organization of the peripheral receptors in the body are well maintained, with the resulting, orderly representation of the body in the brain being referred to as the somatosensory homunculus. Recent years have seen considerable advancements in the field of high-resolution fMRI, which have enabled an increasingly detailed, non-invasive examination of the organization and properties of this homunculus. Here I will review a series of experiments in which we have used advanced imaging techniques at ultra-high field (7T) to map the topographic organization of the somatosensory homunculus (i.e., of the body in the brain). Not only have we shown that it is possible to map primary somatosensory cortex via bottom-up, sensory driven signals – but we have also found that it is possible to map the body in the brain using top-down, attention related signals. We have successfully derived these maps from cortical activity associated with (1) sensory stimulation, (2) attention to applied sensory stimulation, and most recently, (3) attention without applied sensory stimulation (i.e., the "mind alone").

114. Measuring attentional breadth: is there a common underlying construct?

Wyche N.J., Edwards M. & Goodhew S.C.

Visual Cognition Lab, Australian National University

Via Zoom

Stream 3 – Saturday April 10, 14:00 – 14:20 *Student Talk*

Attentional breadth refers to the spatial extent of attention: attention can be focussed narrowly or spread broadly. This influential construct is core to several major theoretical models, including about how emotion affects attention (e.g., broaden-and-build hypothesis) and how attention affects perception (e.g., zoom-lens model). A diverse array of tasks have been claimed to measure attentional breadth, including responses to global versus local elements of hierarchical Navon stimuli, the magnitude of interference from irrelevant flankers, the spatial distribution of inhibition-of-return across different cue-target spatial separations, and whether lag-1 sparing is observed in spatially-separated dual-stream rapid serial visual presentation streams. Despite claims that these different tasks all gauge the same underlying construct of attentional breadth, validating evidence for such claims is notably absent in the literature. Here, we tested whether attentional breadth manipulated via a common induction procedure (Navon figures) could produce measurable changes in attentional breadth on a common measure of attentional breadth (flanker effects). Across three experiments (total $n = 97$), Navon figures were used to induce large and small breadths of attention, and the effect of this induction was measured via interspersed flanker-task trials. Despite a manipulation check indicating that the induction of specific breadths of attention was successful in all experiments, the experiments produced mixed results, which were inconsistent with the notion that the flanker task clearly measured attentional breadth as induced by the Navon task. Implications for the measurement and conceptualisation of attentional breadth are discussed.

115. Mind meets machine: Towards a cognitive science of human-machine interactions

Emily S. Cross (1, 2, 3) & Richard Ramsey (1,4)

1. Social Brain in Action Lab, Macquarie University; 2. Department of Cognitive Science, Macquarie University; 3. Institute of Neuroscience and Psychology, University of Glasgow; 4. Department of Psychology, Macquarie University

In person in Brisbane

Stream 3 – Friday April 9, 09:40 – 10:00

As robots advance from the pages and screens of science fiction into our homes, hospitals, and schools, they are poised to take on increasingly social roles. Consequently, the need to understand the mechanisms supporting human-machine interactions is becoming increasingly pressing, and will require contributions from the social, cognitive and brain sciences in order to make progress. In this talk, we introduce a framework for studying the cognitive and brain mechanisms that support human-machine interactions, leveraging advances made in social cognition and cognitive neuroscience to link different levels of description with relevant theory and methods. Also highlighted are unique features that make this endeavour particularly challenging (and rewarding) for brain and behavioural scientists. Overall, the framework offers a way to conceptualize and study the cognitive science of human-machine interactions that respects the diversity of social machines, individuals' expectations and experiences, and the structure and function of multiple cognitive and brain systems.

116. Modelling belief polarisation in a population of rational agents

Howe, P.D.L, Perfors, A. & Ransom, K.J.

Melbourne School of Psychological Sciences, University of Melbourne

Via Zoom

Stream 4 – Sunday April 11, 09:00 – 09:20

Many of the information environments in the world today can be characterised as ``echo chambers'' in which people neither speak to nor trust a substantial proportion of the other people in the environment. Why does this occur? Previous work has demonstrated that belief polarisation can emerge even when all agents are completely rational, as long as their beliefs are heterogeneous and they do not automatically know who to trust. In this work, we used agent-based simulations to further investigate the mechanisms for belief polarisation, exploring what factors might act to decrease or increase it. We found that while it was difficult to eliminate polarisation entirely, interventions that simultaneously built trust while shaping beliefs were the most effective at both decreasing and increasing belief polarisation. Real-world implications are discussed.

117. Modulating factors of the Self Reference Effect

Clarkson, T.R. (1) Eather, R. (1) Haslam, C. (2) Cunningham, S. (1) Kritikos, A.

1. School of Psychology, The University of Queensland; 2. School of Applied Sciences, University of Abertay

In person in Brisbane

Stream 3 – Saturday April 10, 11:20 – 11:40 *Student Talk*

The Self Reference Effect (SRE) is the ability to recall and recognise self-relevant stimuli with greater accuracy than other-relevant stimuli. Ownership is one established method of assigning 'Self'- versus 'Other' relevance and hence influencing recognition memory (Cunningham et al., 2008). Many factors modulate the strength of the SRE by shifting the boundary between the 'Self' and 'Others', including the self-construal of an individual (independence versus interdependence), in-group / out-group membership, and affective states. However, the salience of the self-versus the 'Other' has not been investigated. In an ongoing study, we investigate whether enhancing awareness of the 'Self' or the 'Other' referent (by manipulating the describing hobbies and traits) changes the accuracy of recognition of self- and other-owned items. In experiment 1, participants described their own hobbies and traits. They were then informed about those of 'Sam', the 'Other' referent. An ownership allocation phase was followed by a memory test. Contrary to previous findings, participants recognised other-owned items compared to self-owned items with significantly higher accuracy. We speculate that this finding is due to the enhanced awareness of the 'Other' in this task. To investigate further, in experiment 2, no details of the 'Other' referent were provided. Details of these results will be discussed.

118. Motion direction tuning in centre-surround suppression of contrast

Phillips D. J., McDougall, T. J., Dickinson, J. E., & Badcock D. R.

School of Psychological Science, The University of Western Australia

In person at satellite site (Perth)

– Sunday April 11, 15:00 – 15:20

In natural conditions objects are often surrounded by complex backgrounds. The perceived contrast of a stimulus is reduced in the presence of a high contrast surround. This effect has been studied for static stimuli and several stimulus properties influence the amount of suppression. A two-mechanism model has been proposed involving a narrowly-tuned process, requiring very similar stimuli in the centre and surround, and an untuned or very broadly-tuned process unselective for stimulus features. This study examines whether similar mechanisms apply to the motion pathway in human participants by varying the direction of motion of the surround relative to the centre. Four experienced observers completed a two-interval forced-choice contrast matching task. The stimuli were drifting sinusoidal grating patterns with high contrast surrounds (95%) differing in direction of motion and orientation relative to the centre grating. All surround conditions produced suppression however a component of suppression was selectively tuned to motion direction. This tuning was able to be described by a model specifying direction selective channels in both the surround and centre regions. Lateral connections between the surround and centre channels provide inhibitory gain to the sensitivity of channels in the centre and this inhibitory gain increases the suppression of contrast, particularly for directions similar to those stimulated in the surround. This model was able to predict the suppression experienced by each individual and account for individual variability in suppression strengths among observers. Using this model, we have been able to extend the two-mechanism theory of contrast suppression to motion direction.

119. Multiple routes to face recognition expertise

Towler A. (1), Dunn J.D. (1), Moreton R. (2), Martinez S. (3), Eklöf F. (4), Ruifrok A. (5), Kemp R.I. (1) & White D. (1)

1. University of New South Wales, Australia; 2. Open University, United Kingdom; 3. Comisaría General de Policía Científica, Spain; 4. National Forensic Centre of the Swedish Police Authority, Sweden; 5. Netherlands Forensic Institute, Netherlands

In person at satellite site (Sydney)

– Sunday April 11, 11:00 – 11:20

Accurate face recognition is critical for daily life and in forensic settings. However, people frequently make errors on real-world face recognition tasks. Here, we examine qualitative aspects of the very highest performing "face experts": super-recognisers, forensic facial examiners, and face recognition algorithms. All experts completed an international proficiency test for forensic practitioners and achieved similarly high levels of accuracy. Critically, we found numerous qualitative differences in the perceptual abilities and decisional strategies of the experts, indicating that there are multiple types of face recognition expertise. These findings have important theoretical implications for our understanding of what it means to be a face expert, and indicate that each type of expert is best suited to different types of real-world face recognition tasks, e.g. border control vs police investigations.

120. Musical Training and Audiovisual Recalibration of Timing and Spatial Judgements

O'Donohue, M.P., Lacherez, P. & Yamamoto, N.

School of Psychology and Counselling, Queensland University of Technology

In person in Brisbane

– Saturday April 10, 14:00 – 14:20 *Student Talk*

Audiovisual recalibration refers to how our brain often minimises small temporal or spatial misalignments between sensory stimuli. Both temporal and spatial recalibration have been shown to occur at two seemingly independent timescales: a cumulative form of recalibration where several minutes of adaptation leads to a sustained recalibration effect, and a rapid form where large but transient recalibration effects can be seen between individual trials. While recalibration is presumably an adaptive process that helps account for both long-term and short-term changes in our physiology and in the environment, it is largely unknown whether perceptual expertise can modulate these processes. With data collection ongoing, our study is assessing whether musical training (a prominent model of multisensory expertise) influences temporal and spatial recalibration. Furthermore, to our knowledge, our study will be the first to compare the magnitude of temporal and spatial recalibration, and the two timescales of recalibration, within individuals. The findings of this study will provide insight into how expertise and perceptual precision affect the adaptability of audiovisual perception.

121. Negative Expectancies Mediates the Relationship Between Attentional Bias and Trait Anxiety

Chiara Ventris, Ben Grafton, Daniel Rudaizky & Colin MacLeod

School of Psychological Science, Centre for the Advancement of Research on Emotion, University of Western Australia

In person at satellite site (PERTH)

– Saturday April 10, 15:00 – 15:20 *Student Talk*

It is well established heightened trait anxiety is characterised by an attentional bias toward negative information and an expectancy bias, whereby individuals demonstrate an increased tendency to have negative expectancies related to upcoming events. Previous research has established these biases have independent effects on trait anxiety, however, it is yet to be determined whether such biases operate interdependently to exert influence on trait anxiety. The current study tests two alternative hypotheses concerning the interdependent relationship between these two biases and trait anxiety, 1) if an individual displays an attentional bias toward negative information relevant to an upcoming event, this will drive the formation of a negative expectancy and subsequently, heightened trait anxiety, 2) prior to an upcoming event, an individual forms an expectancy, leading the individual to attend to information in line with this expectancy consequently leading to heightened trait anxiety. To test these hypotheses, participants were informed of an upcoming event they were later required to participate in. Before participating, they were exposed to differentially valenced information relevant to this event, while their attentional allocation was assessed. This allowed participants the opportunity to form expectancies about the upcoming event and, provided a measure of attentional bias for negative information pertaining to this event. The relationship between attentional bias toward negative information and trait anxiety was found to be mediated by negative expectancies for the upcoming event. The findings of the current study enhance understanding of the mechanisms driving trait anxiety and provide a new methodological framework for future research.

122. Neighing dogs: Semantic context effects of environmental sounds in spoken word production: a replication and extension

Matteo Mascelloni (1)*, Sonia L.E. Brownsett (2)*, Georgia Gowlett (1), Katie L. McMahon (3), Greig I. de Zubicaray (1)

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In person in Brisbane

Stream 2 – Friday April 9, 11:00 – 11:20 *Student Talk*

Semantic context effects are well established using both words and pictures as stimuli. One such effect, semantic interference (SI), is reliably observed in naming latencies when a categorically related distractor word is presented together with a target picture (e.g., dog-LION). Recently, this effect has also been shown to occur when an environmental sound (e.g., a dog barking) is presented as an auditory distractor during picture naming (Madebach et al., 2017; 2018). The purpose of the current study was twofold; (1) to replicate the SI effect in the picture-sound interference (PSI) paradigm, and (2) determine whether an SI effect is observable when distractor words are presented with environmental sounds as target auditory objects for naming, using a novel sound-word interference (SWI) paradigm. A linear mixed effects (LME) model replicated the SI effect in Experiment 1 with environmental sound distractors, with a maximal effect at an SOA of -200ms. Experiment 2 demonstrated SI effects at SOAs of 0 and 200ms, also using LME. This finding (Experiment 2) is the first demonstration of an SI effect during a SWI paradigm. We discuss the implications of these results for our understanding of the origin and locus of the SI effect according to current theories of lexical selection. The observation of SI effects with nonverbal auditory stimuli shows potential for assessing lexical-semantic retrieval across populations where linguistic or visual stimuli may be less well-perceived (i.e. people with aphasia or congenital blindness).

123. Neural mechanisms of sensory integration across space

Rangelov, D. (1), Fellrath, J. (1,3), Galligan, D. (2), and Mattingley, J.B. (1,2)

1. Queensland Brain Institute, The University of Queensland; 2. School of Psychology, The University of Queensland; 3. University Hospital of Lausanne

In person in Brisbane

Stream 1 – Friday April 9, 14:20 – 14:40

Virtually every human behaviour relies on our capacity to make reliable decisions. The computational and neural mechanisms of simple perceptual decisions, such as judging the motion direction of a visual stimulus, have been well characterised. Much less is known about how people process multiple sensory sources to make a single, integrated decision. To address this issue, we presented random-dot kinematograms (RDKs) to the left and right of central fixation. Motion directions in the two RDKs were different and uncorrelated across the two patches, and participants had to reproduce the average of the two motion signals while their ongoing brain activity was monitored using electroencephalography (EEG). We used mixture distribution modelling to separate behavioural responses into random guesses and noisy target responses. The estimated guess rates were low and the precision of target responses was high, confirming that participants were able to perform the task. Using trial-specific neural activity measured with EEG, we estimated neural-population motion tuning in response to each of the two presented motion signals, and to the average motion direction of the two. As expected, we found reliable direction tuning to the presented motion signals. More importantly, we also found significant tuning to the average motion, which was never physically presented. Remarkably, this tuning commenced early in the trial and exhibited even higher amplitude than the two presented motion stimuli. Using biologically plausible models of motion processing to simulate our findings, we show that neural integration in our decision-making task unfolds in parallel with individual sensory representations.

124. New evidence in support of the sensorimotor mismatch theory of weight perception and the size-weight illusion

Chouinard, P.A. (1), Saccone, E.J. (2), Chong, R. (1), Harris, J.W.C. (1), Buckingham, G. (3)

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In person at satellite site (Melbourne)

Stream 1 – Friday April 9, 13:40 – 14:00

In the size-weight illusion (SWI), the smaller of two equally weighted objects feels heavier. The sensorimotor mismatch theory (SMT) attributes the influence of expectations on perceived weight to the afferent feedback from a lift that is inappropriate for an object's true weight. The theory fell out of favour twenty years ago owing to an influential study that discredited it on the basis of participants learning to apply similar lifting forces for both objects and still experiencing the SWI. We aimed to re-evaluate SMT using more sensitive and powerful methods. Two experiments performed in 34 participants examined variations in lifting forces on weight perception in non-illusory (Experiment 1) and illusory (Experiment 2) contexts. In line with predictions of SMT, objects in the first experiment felt lighter and heavier when participants applied too much and too little force for their real weight, respectively (ps < .001 for the effects of switching between two objects appearing the same but weighing differently on perceptual and lifting force measures). In the second experiment, participants experienced the SWI where the small object felt heavier than the large one while applying more force for the latter (ps < .001 for the effects of object on perceptual and lifting force measures). Importantly, and contrary to previous reports, applying differential forces on the two objects continued regardless of the number of times participants lifted the two objects (effect of time: p = .11). We argue SMT is still meritorious and should be reconsidered in light of these experiments.

125. No credible evidence that UK safer gambling messages reduce gambling

Newall, P.W.S. (1), Weiss-Cohen, L. (2), Singmann, H. (3), Walasek, L., & Ludvig, E.A (4).

1. CQ University; 2. Leeds University Business School; 3. University College London; 4. University of Warwick

In person in Brisbane

Stream 3 – Saturday April 10, 16:40 – 17:00

Safer gambling messages are a common freedom-preserving method of protecting individuals from gambling-related harm. Yet, there is a striking lack of independent and rigorous evidence to attest to the effectiveness of safer gambling messages. This study presents results from three large (N ≈ 3,000), preregistered, and incentivized experimental tests of the UK's commonly used "When the fun stops, stop" gambling message. Variants of this message were tested on gamblers' propensity to accept bets on soccer events (Experiment 1), behaviour on a realistic online roulette table (Experiment 2), and betting patterns on an online soccer betting platform (Experiment 3). Across all three tasks, we find either no beneficial effect or a small backfire effect on gamblers' behaviour. We conclude that independent evaluations should inform policy-makers' decisions on how to best implement improved safer gambling messages.

126. No masked priming from episodic links in the lexical decision task

Chris Davis & Jeesun Kim

The MARCS Institute, Western Sydney University

Via Zoom

Stream 2 – Sunday April 11, 11:40 – 12:00

Masked priming has become a standard tool for examining lexical processing by using repetition and form related prime and target words in tasks that require the use of lexical knowledge (e.g., the lexical decision task). Under some conditions, masked priming has also been shown to occur in tasks that tap episodic memory. For example, a robust masked priming effect is observed when participants are asked to associate pairs of words (e.g., dog and TRAIN) and then are subsequently given an old/new task in which the first word of the learned pair (e.g., dog) is used as a prime for the second word (e.g., TRAIN) that serves as a target. We investigated whether such newly learned associations would produce priming in a lexical decision task. This was tested in two matched experiments, in which two groups of participants were presented with the same materials in the same learning and test phases, except in the test phase one group carried out a lexical decision task and the other an old-new task. A robust masked priming effect was found for the old/new task; no priming was found in the lexical decision task.

127. Nudging Healthy Choices from Vending Machines: Visual Cues and Primes

Kay E., Kemps, E., Prichard, I. & Tiggemann M.

Flinders University

Via Zoom

Stream 3 – Sunday April 11, 09:40 – 10:00 *Student Talk*

Nudging techniques such as visual cues and primes can be used to subtly encourage healthier consumption behaviours. Two experiments tested the effects of four cues/primes on choices from an analogue vending machine display. Participants (17-25 years) were randomly assigned to view a general health cue (image of a person running along the beach) a water prime (image of water being poured into a glass), a soft drink prime (image of a soft drink being poured into a glass), or a control cue (non-beverage or health related image) before selecting an item from the vending machine. In Experiment 1 (n = 138) the machine included only beverages; in Experiment 2 (n = 593) it included both snacks and beverages. The experimental manipulation did not predict choice in Experiment 1, but it did in Experiment 2. Specifically, the water prime produced more healthy beverage choices than all other conditions, whereas the soft drink prime produced more less-healthy food choices compared to the water prime and control conditions. In both experiments, overall liking and habitual consumption of the chosen items also predicted choice, as did ratings of hunger and thirst in Experiment 2. These findings demonstrate that primes of beverages can be effective for nudging healthier choices from a combined food and beverage vending machine. This research has the potential to inform strategies for encouraging healthier consumption behaviours in a vending machine environment.

128. Numerosity judgments via active touch: Hands and fingers meet density and attention

Rendell, E., Browne, G. & Hughes, B.

School of Psychology, University of Auckland

In person at satellite site (Auckland)

Stream 1 – Saturday April 10, 11:00 – 11:20 *Student Talk*

The perception of number is not a unitary process. People subitize few objects, count moderate numbers, and estimate larger numbers. Are these different modes of enumeration unique to vision, or are they evident in other modalities? In paired experiments, we asked blindfolded braille novices to scan a line of raised (braille) dots and report their number. Scanning occurred in the midsagittal axis toward the body in such a way that the set of dots could be encountered by one finger or two, on one hand or both. For each actual number (1-12 inclusive), the dots could be distributed in a maximally or minimally dense arrangement. Participants in one experiment were advised before scanning which finger(s) would encounter the dots; in the other experiment, different particpants had no such advanced information and needed to allocate attention to both fingers. We took numerosity estimates, derived error scores, recorded confidence ratings, and examined confusion matrices. The data suggest participants can perform this task accurately, but that six or fewer dots are enumerated better and differently from higher numbers, that dot density interacts with both finger and hand, and that prior knowledge of which finger would encounter the dots has only subtle effects on numerosity judgments. We discuss these data in terms of the sensorimotor basis of numerosity judgments, the underlying cognitive components, and the skill of fluent braille readers.

129. Power flowers: Symmetry, colour and complexity as determinants of the aesthetic appeal of gerberas

Tamara Watson[1], Matthew Patten[1], Branka Spehar[2], Damien Mannion[2]

School of Psychology, Western Sydney University, Australia; 2. School of Psychology, UNSW Sydney, Australia

In person at satellite site (Sydney)

Stream 1 – Sunday April 11, 13:40 – 14:00

Flowers are almost universally appreciated. Understanding the attraction of complex natural stimuli with extensive permutations, like flowers, can reveal which aspects of complex visual objects are more important in eliciting aesthetic appeal. To do this we parameterised the appearance of 2545 standardised, individual gerbera images using 33 computationally defined and 6 perceptually rated descriptors. Cut flower gerberas share a prototypical daisy shape, however an extensive number of permutations have been developed. The descriptors we created can be grouped into features describing complexity (texture), colour, contrast, and symmetry. A set of 70 flowers were chosen from the larger set by carrying out principal components analysis on the descriptors, clustering of the flowers based on the outcomes and choosing one example flower from each cluster. These 70 flowers were each shown to participants in an online study. Participants rated the appeal of each flower (n= 1,006 in experiment one) or the appeal and visual interest (n= 1,045 in experiment two). Outlier flowers and collinear descriptors were removed, leaving 66 flowers and 23 descriptors. We used multiple linear regression to model the relationship between participants' mean appeal ratings and descriptors of the visual properties of the flower. A summary of the important descriptors (accounting for 90% of variance in ratings) suggests more appealing gerberas are symmetrical, have a less complex texture and show contrast in the colouration in the form of a bullseye pattern. Conversely, visual interest was higher for gerberas that are less symmetrical, have more complex texture and with contrasting colours.

130. Prediction error combined with MEK inhibitor disrupts reconsolidation of fear memory

Raut S.B. (1), Eri R.D. (2), Canales J.J. (1) & Johnson L.R. (1)

1. School of Psychological Sciences, University of Tasmania; 2. School of Health Sciences, University of Tasmania.

Via Zoom

Stream 3 – Sunday April 11, 13:20 – 13:40

Memory consolidation was earlier thought to be static process however, a body of evidence suggests that memories are much more dynamic and constantly updating with new experience. Retrieval of information from long term memory causes it to enter an active labile state which needs to be restabilized through a process termed as reconsolidation. Post-traumatic stress disorder is characterized by abnormally persistent emotional memories. Behavioural and Pharmacological disruption of the reconsolidation process has significant potential to impact the treatment of PTSD. Recent evidence suggests that prediction error at the time of reactivation is critical for memory to enter labile state. Our aims in the present study were to disrupt the reconsolidation of fear memory with MEK inhibitor Mirdametinib in auditory fear conditioning paradigm in C57BL/6 mice and test the role prediction error. Mice were trained in conditioning chambers A wherein a conditioned stimulus (CS; tone for 30s) was paired with an unconditioned stimulus (US; footshock). Twenty-four hours after training, mice were administered study drugs. They were re-exposed to CS in different Chamber B to reactivate the memory for 30s in experiment 1 and 60s (prediction error) in experiment 2. Disruption of memory was assessed 24 hr later as percentage freezing time. Mirdametinib disrupted the fear memory when coupled with prediction error in experiment 2 however failed to do it in experiment 1. This is the first study to demonstrate the effectiveness of Mirdametinib in disruption of fear memory reconsolidation and highlights the importance of prediction error to reactivate the memory.

131. Predicting Human Detection of Automation Failures: The Effects of Confidence and Trust in Automation

Griffiths N.J., Bowden V.K., Wee S. & Loft S.

School of Psychological Science, The University of Western Australia

In person at satellite site (Perth)

Stream 3 – Saturday April 10, 16:00 – 16:20 *Student Talk*

Human monitoring of imperfectly reliable automation comes with costs. One proposed solution for mitigating some of these costs is adaptive automation, which can dynamically shift control between the operator and the automated system. This study aims to identify which operator states may indicate a need to shift control by investigating the relationship between operator states and ability to detect an automation failure. We investigated the operator states of workload, fatigue, trust in the automation, and confidence related to the ability to detect automation failures. Participants (N=102) completed an Air Traffic Control simulation, and were assisted by conflict detection automation that was 80% reliable. Participants completed three primary tasks: monitoring automation, and accepting aircraft into and handing aircraft out of their sector. Conflict automation failed six times, requiring participants to detect the failure and prevent aircraft conflicts. Participants answered questions about their current state every 3-min throughout the task. Our results show that confidence predicted failure detection, with more confident participants more likely to detect failures than less confident participants. Fatigue and workload did not significantly impact failure detection accuracy or response time. Participants detected automation failures more quickly when they had lower levels of trust in the automation (relative to their average/overall level of trust). As there has yet to be a stand-out victor among adaptive automation triggers, the possibility of easily accessible and self-reported operator states, such as confidence and trust in automation, providing an effective trigger is an exciting possibility that should be investigated in future research.

132. Predictive visual motion extrapolation emerges spontaneously and without supervision at each layer of a hierarchical neural network with spike-timing dependent plasticity

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In person at satellite site (Melbourne)

Stream 1 – Friday April 9, 11:20 – 11:40

The fact that the transmission and processing of visual information in the brain takes time presents a problem for the accurate real-time localisation of a moving object. One way this problem might be solved is extrapolation: using an object's past trajectory to predict its location in the present moment. Here, we investigate how a simulated in silico layered neural network might implement such extrapolation mechanisms, and how the necessary neural circuits might develop. We allowed an unsupervised hierarchical network of velocity-tuned neurons to learn its connectivity through spike-timing dependent plasticity. We show that the temporal contingencies between the different neural populations that are activated by an object as it moves causes the receptive fields of higher level neurons to shift in the direction opposite to their preferred direction of motion. The result is that neural populations spontaneously start to represent moving objects as being further along their trajectory than where they were physically detected. Due to the inherent delays of neural transmission, this effectively compensates for (part of) those delays by bringing the represented position of a moving object closer to its instantaneous position in the world. Finally, we show that this model accurately predicts the pattern of perceptual mislocalisation that arises when human observers are required to localise a moving object relative to a flashed static object (the flash-lag effect).

133. Promoting Healthier Food Choices through Nudging from an Experimental Online Fast-Food Delivery Application

Deek M.R. (1), Kemps, E. (2), Prichard, I. (3) & Tiggemann, M. (4).

1. Psychology, College of Education, Psychology and Social Work, Flinders University; 2. Psychology, College of Education, Psychology and Social Work, Flinders University; 3. Health & Exercise Sciences, College of Nursing and Health Sciences, and SHAPE Research Centre, Flinders University; 4. Psychology, College of Education, Psychology and Social Work, Flinders University.

Via Zoom (Adelaide)

Stream 3 – Sunday April 11, 11:20 – 11:40

The omnipresence of unhealthy food cues in our environment has in part led to poorer dietary behaviours. Emerging research has shown that by changing the food environment through the presentation of a healthy food cue, individuals may be subtly 'nudged' towards making healthier choices. Priming, a form of nudging, is the process where initial exposure to environmental cues may unconsciously influence subsequent behaviour. Accordingly, the present experiment aimed to investigate the effects of a subtle healthy food cue, through the technique of priming, on subsequent food and drink choices from an online fast-food ordering menu. An analogue of the online ordering menus and digital screens used by fast-food retailers was created. Participants (n = 291) were presented with a digital screen displaying either a healthy or unhealthy meal, or no prime (control), followed by one of two versions of a pictorial menu. Participants then made their selections, one item from each of the three menu sections (mains, drinks, desserts), and completed a questionnaire measure of dietary restraint. Participants made more healthy choices from menu version 1 than 2, in particular from the 'mains' category. In menu version 1, restrained eaters made more healthy choices, particularly mains, in the healthy screen condition. By contrast, in the control screen condition, restrained eaters were more likely to select an unhealthy over healthy main. The findings have real world implications that could help inform digital businesses how to present food and drink items to nudge individuals towards healthier choices.

134. Properties of Motion Adaptation in Dragonfly Optic Flow Neurons

McCauley, A.M. (1), Evans, B.J.E. (1), O'Carroll, D.C. (2), Wiederman, S.D. (1)

1. University of Adelaide; 2. Department of Biology, Lund University, Lund, Sweden.

In person at satellite site (Adelaide)

Stream 1 – Sunday April 11, 15:40 – 16:00 *Student Talk*

Many neuronal systems modulate responses to prolonged stimuli, a process called adaptation, minimising the cost of continuously encoding unchanging inputs. In order to visually determine their own motion relative to their surroundings, animals must accurately interpret optic flow cues. Dragonflies possess neurons which encode optic flow information and exhibit adaptation. It has been shown previously that dragonflies possess multiple subtypes of optic flow neurons which exhibit preferences for different speeds of motion. By probing dragonfly optic flows neurons using intracellular electrophysiology, we find that the changes in tuning of these neurons can be explained by their differential adaptation to motion. The degree of adaptation observed in dragonfly optic flow neurons shows a strong dependence on the strength of response to the adapting stimulus. However, in a subset of these neurons, the speed of the adapting stimulus also plays an important role with less adaptation occurring at fast and slow speeds despite otherwise robust responses to the adapting stimulus. During hovering flight dragonflies must continuously interpret slow optic flow cues to prevent drift. The limited adaptation we observe in dragonfly optic flow neurons to slow speed is well-placed to subserve this behaviour. Our findings in dragonflies demonstrate how adaptation can be used to alter the underlying speed tuning properties of neurons. Moreover this shows it is possible for neurons to selectively maintain salient cues while attenuating non-relevant information purely using adaptation.

135. Pupil size, visual imagination and voluntary control.

Hinwar, R. & Lambert, A.J.

School of Psychology and Centre for Brain Research, University of Auckland.

In person at satellite site (Auckland)

Stream 1 – Saturday April 10, 10:40 – 11:00

Laeng and Sulutvedt (2014, Psychol. Sci., 25, 188-197) reported that while viewing the same grey screen participants' eye pupils constricted when they imagined a bright scene and dilated when they imagined a dark scene. We replicated their design and found similarly, that pupil responses differed reliably when participants imagined a sunny day or a dark room. However, contrary to the prevailing view that pupil size is not open to direct voluntary control, in a second condition we found that pupil responses also differed reliably when participants were asked to voluntarily constrict or dilate their pupils. Alternative theoretical interpretations for these findings are considered.

136. Reconsidering the Diffusion Model for Conflict

David K Sewell & Ping-Shien Lee

School of Psychology, The University of Queensland

In person in Brisbane

Stream 3 – Friday April 9, 11:20 – 11:40

Cognitive processing in conflict tasks, such as the Stroop, Flanker, and Simon, is often conceptualized in terms of automatic and controlled processes. Performance costs arise when task-irrelevant information carried by the automatic process (e.g., a color word; RED) conflicts with task-relevant information carried by the controlled process (e.g., the blue color of the ink). The Diffusion Model for Conflict (DMC) was developed to model performance across all conflict tasks within a common evidence accumulation framework. In DMC, evidence from automatic and controlled processes is superimposed into a single accumulator. This allows the model to account for a wide range of conflict data, including patterns that have posed general challenges for evidence accumulation models (i.e., negative-going delta functions). We argue that the processing assumptions about task-irrelevant information in DMC are psychologically implausible because they entail "sign changes" in the evidence provided by task-irrelevant information, creating questionable accumulation dynamics. For example, that RED presented in blue ink is processed as both compatible and incompatible with the (task-relevant) ink color at different times. We propose a reformulation of the DMC, based on dynamic renormalization of channel information, which avoids the problematic assumptions of the original model while still allowing it to capture a wide range of patterns in data, including negative-going delta functions.

137. Re-examining developmental evidence for single or dual processes in reasoning

Stephens, R.G. (1), Tan, M. (1), Hayes, B.K. (2), Dunn, J.C. (3), & Kohler, M. (1)

(1) School of Psychology, The University of Adelaide. (2) School of Psychology, University of New South Wales. (3) School of Psychological Science, University of Western Australia

In person at satellite site (Adelaide)

Stream 3 – Saturday April 10, 11:40 – 12:00

According to highly influential dual-process theories, reasoning is driven by intuitive Type 1 and deliberative Type 2 processing, which may show different developmental trajectories from childhood to adulthood. In contrast, single-process theories propose that common mechanisms can account for reasoning across a range of different task manipulations and groups, including age groups. We examined these competing accounts against existing developmental data, by applying state-trace analysis which identifies the number of latent psychological variables needed to account for the data. This analysis also allowed us to identify experimental paradigms with the strongest evidence for multiple processes, to help direct and focus future research. A systematic search was undertaken to build a database of published studies that have applied dual-process theories to examine reasoning in children or young adolescents (6-15 years). Two screening processes identified 9 papers that provided suitable summary data, forming a database of 55 datasets. The state-trace results showed that most of the developmental reasoning datasets (50/55) were consistent with a single underlying psychological variable, thus providing limited evidence for dual-process accounts of reasoning. However, the remaining datasets point to the most important avenues to pursue for convincing evidence of multiple processes. Specially targeted experimental designs and more stringent statistical tools are recommended for future research, to better understand the cognitive mechanisms underlying reasoning and its development.

138. Re-experiencing disgust in personal trauma

Matson, L. M. (1), Moeck, E. K. (1, 2) & Takarangi, M. K. T. (1)

1. Psychology, College of Education, Psychology and Social Work, Flinders University; 2. Melbourne School of Psychological Sciences, The University of Melbourne;

In person at satellite site (Adelaide)

Stream 2 – Sunday April 11, 16:00 – 16:20 *Student Talk*

In the context of trauma, negative emotional responses other than fear and anxiety have received little scientific attention. Yet, feelings of disgust occur during and following a range of traumatic experiences (e.g., Bomyea & Allard, 2017). Disgust reactions following analogue trauma exposure are associated with post-traumatic stress (PTS) (Badour et al., 2013) and re-experiencing symptoms (i.e., intrusions, a form of involuntarily remembering the traumatic event; Bomyea & Amir, 2010). However, no research has investigated the effect of disgust reactions following personal trauma. Here we investigated the association between disgust reactions following personal trauma, PTS symptom severity, and re-experiencing symptomology. Mturk participants (N = 471) rated the extent to which they experienced specific emotions (i.e., disgust, fear) in relation to their most stressful/traumatic event that occurred in the last 6 months. They then completed the Posttraumatic Checklist (PCL-5) and reported up to 3 intrusions about their most stressful/traumatic event. We collected characteristic ratings for each intrusion (i.e., distress, vividness), because intrusion characteristics may increase the likelihood of persistent future intrusions (Marks, Franklin & Zoellner, 2018). We found disgust reactions to participants' most stressful/traumatic event significantly correlated with more intense intrusion characteristics (i.e., distress, unwantedness, nowness) and PTS symptoms. These findings were similar in strength to correlations between fear responses, and intrusion characteristics and PTS ratings. We conclude disgust responses may be similarly problematic to fear responses following traumatic events and therefore, disgust responses should be more readily targeted in PTSD treatments.

139. Refuting Spurious COVID-19 Treatment Claims Reduces Demand and Misinformation Sharing

MacFarlane, D. (1*), Tay, L.Q. (1*), Hurlstone, M. (2), & Ecker, U.K.H. (1)

*Equal contribution

1. School of Psychological Science, The University of Western Australia, Australia; 2. Department of Psychology, Lancaster University, UK

In person at satellite site (Perth)

Stream 3 – Saturday April 10, 15:40 – 16:00

The COVID-19 pandemic has seen a surge of health misinformation, which has had serious consequences including direct harm and opportunity costs. We investigated (N = 678) the impact of such misinformation on hypothetical demand (i.e., willingness-to-pay) for an unproven treatment, and propensity to promote (i.e., like or share) misinformation online. This is a novel approach, as previous research has used mainly questionnaire-based measures of reasoning. We also tested two interventions to counteract the misinformation, contrasting a tentative refutation based on materials used by health authorities with an enhanced refutation based on best-practice recommendations. We found prior exposure to misinformation increased misinformation promotion (by 18%). Both tentative and enhanced refutations reduced demand (by 18% and 25%, respectively) as well as misinformation promotion (by 29% and 55%). The fact that enhanced refutations were more effective at curbing promotion of misinformation highlights the need for debunking interventions to follow current best-practice guidelines.

140. Repetition blindness for words: What is the effect of an item between C1 and C2?

Burt, Jenny S., Leggett, Jack M. I., & Anderson, Laura E.

The University of Queensland

In person in Brisbane

Stream 2 – Sunday April 11, 11:20 – 11:40

Four experiments with university students investigated repetition blindness (RB) in a three-word sequence, C1-distractor-C2, with C2 displayed for 72 ms and masked. Participants identified only C2 (choice test). The frequencies of C1-C2 and the distractor were varied within participants, and the durations of C1 and the distractor were factorially varied across experiments (72 ms vs. 120 ms). In accord with the Morris et al. (2009) theory that low-frequency words have a competitive advantage under time pressure, there was a reverse frequency effect – higher accuracy for low- than high-frequency C2s. C2 accuracy was also higher when the preceding distractor was high rather than low-frequency. Lengthening C1 did not impair C2 accuracy, in contrast to previous results when there was no item between C1 and C2. Increasing the duration of the distractor increased RB by producing a substantial impairment when C1 was identical to C2. This novel finding may reflect an effect of distractor duration on reconstruction of the event sequence at the end of a trial. In any case, this effect of the distractor indicates that theories of RB must consider items other than the targets C1 and C2.

141. Reproducing the face-inversion effect with non-face stimuli

Manuela Francesca Russo[1], Petia Kojouharova[2], István Czigler[2], Jordy Kaufman[3], Patrick Johnston[1]

1. Institute of Health and Biomedical Innovation, Queensland University of Technology, Kelvin Grove, Australia; 2. Hungarian Academy of Sciences, Budapest, Hungary.; 3. Swinburne University of Technology, Hawthorn, Australia.

In person in Brisbane

Abstract Withdrawn

Faces play an important role in everyday interaction. Individuals gather information from faces such as sex, age, and emotional state which contributes to the ability to better understand and assess our surroundings. Researchers investigating face perception have debated as to whether the human brain has been gradually tuned toward this class of visual stimuli as the result of evolutionary pressures, hence contributing to form a face-specific module, or whether instead, the evidence in favor of a face-specific response could be more simply explained by the brain activation towards any familiar stimulus, anything to which we have developed visual expertise. The aim of the present study was to investigate the effects of familiarity and inversion (typically found more prominent using faces than other classes of stimuli) on behavioural responses (i.e., RTs, accuracy) using faces and cartographic contour stimuli, conducting the experiment on two groups of participants from two different countries of origin, allowing a within-subjects investigation whereby the same cartographic contours were used as both familiar and unfamiliar objects of expertise. We found an effect of familiarity for the cartographic contours of Home Country compared to another country, and similar results for Faces when compared to Scrambled faces, such that higher accuracy and faster RTs are found for Home Country and Face stimuli compared to Other Country and Scrambled faces. Inversion Effects (for RTs) are found for classes of objects that are well-known (i.e., familiar cartographic contour) and not for the unfamiliar ones (i.e., scrambled face and unfamiliar cartographic contour).

142. Running studies online - tips, tools and lessons learnt

Apthorp, D. (1,2).

1. School of Psychology, University of New England; 2. Research School of Computer Science, Australian National University

In person in Brisbane

Stream 3 – Sunday April 11, 10:40 – 11:00

Since moving to a regional, largely online university in 2018, my lab has faced the challenge of carrying research without a conveniently large population of undergraduate Psychology students on whom to run behavioural studies. Rather that switch entirely to survey research, for the last three years we have been running both hybrid (survey + behavioural) and purely behavioural studies in an online environment using Inquisit and Qualtrics. This has presented some challenges and some unexpected benefits – such as the ability to collect data from much larger samples, which enables

investigation of individual differences questions. Across the three years, we have collected behavioural and survey data from over 600 participants on tasks such as finger tapping, psychomotor vigilance, executive function, and working memory, and also on established questionnaire measures of mood, sleep quality, autism spectrum characteristics and alcohol use. Interestingly, although questionnaire measures all correlated strongly, in general they were poor predictors of behavioural measures. Behavioural measures were reliable and correlated with each other, suggesting this result was probably not due to issues with measuring behaviour online. This aggregated research has implications for our understanding of both behavioural and questionnaire measures - are we measuring what we think we are measuring, and how do we know? I will also discuss the challenges and technical issues we have faced, some alternative platforms to consider, and some possible future directions for this type of research.

143. Saying, spelling and sounding out: Comparing methods of irregular word reading instruction

Colenbrander, D. (1), Kohnen, S. (1), Beyersmann, E. (1), Robidoux, S. (1), Wegener, S. (1), Arrow, T. (1), Nation, K. (2) & Castles, A. (1)

1. Department of Cognitive Science and Macquarie University Centre for Reading, Macquarie University; 2. Department of Experimental Psychology, University of Oxford

Abstract Withdrawn

Stream 2 – Sunday April 11, 11:00 – 11:20

Although there is a wealth of research on beginning reading instruction, very little of this research has explored methods of instruction for words with unpredictable or irregular spellings. In this study, we compared three methods of instruction for beginning readers – Look and Say (LSay), Look and Spell (LSpell), and Mispronunciation Correction (MPC). Kindergarten children were randomly assigned to one of these three conditions, or to a wait-list control condition. Children were taught 12 irregular words over three sessions. The number of exposures to the written and spoken forms of the words was controlled across conditions. After training, children were assessed on their ability to read aloud and select the correct spellings of trained and matched untrained words. Children showed evidence of superior learning of trained words in the LSpell and MPC conditions, compared to the LSay and control conditions. There were no significant differences between the LSpell and MPC conditions. Our findings indicate that active processing of a word's orthography is vital for learning irregular words, but further research is required to explore what form this processing should take.

144. Seeing faces where there are none: Pareidolia correlates with age but not autism traits

Muhammad Rahman (1), Jeroen J.A. van Boxtel (1)*

Discipline of Psychology, University of Canberra; * = will present

Via Zoom

Stream 4 – Friday April 9, 09:20 – 09:40

Previous research has found that individuals with autism spectrum disorder experience difficulties when visually processing face stimuli compared to developmentally typical individuals. The evidence of a dependence of face processing on autism-like traits (ALTs) in the typically-developing population is more equivocal. In this report, we aimed to design an experiment that would be more sensitive to any individual differences in face processing. We employed pareidolia, that is, cases where non-face stimuli are perceived to be faces, assuming this is more difficult than the detection of 'real' faces. We also showed multiple faces per trial, allowing for a more graded assessment of face detection accuracy. Participants were 263 individuals aged between 18 and 82 years of age. Pareidolia was investigated in two online experiments, with different types of stimuli: objects that could be perceived as faces (i.e., embedded faces task) and Mooney faces (Mooney face task). In the latter condition, we also investigated the face inversion effect. We found that neither detection accuracy or the inversion effect depended on ALTs (or gender). We did find a dependence of age for both measures. Our data suggest that face perception (and specifically pareidolia) does not depend on ALTs, but does depend on the age of the observer. The dependence on age appears to be different between the two experiments, suggesting that the underlying mechanisms necessary for face detection in our two experiments mature and decline at different rates.

145. Shyness, But Not Social Anxiety or Autistic Traits, Predicts Face Recognition Ability in Typical Children

Giffard, C., Palermo, R., Gignac, G., Crookes, K., Kaiko, N., Bothe, E., Thorburn, M. & Jeffery, L.

School of Psychological Science, The University of Western Australia

In person at satellite site (Perth)

Stream 4 – Friday April 9, 13:40 – 14:00 *Student Talk*

The ability to recognise facial identity facilitates social functioning, and this ability varies across children and adults. Previous research suggests that psychosocial factors, such as social anxiety, shyness, and autistic traits, are associated with individual differences in face recognition in typical adults. However, little is known about these associations in childhood, a period during which face recognition systems are improving and perceptual experience with faces is accumulating. First, we began by exploring the relationships between these three psychosocial factors in a sample of typical children aged 5 to 9 (N = 172) to determine whether they are independent or related constructs, as they share a number of characteristics such as reduced social interactions and limited eye contact. A small to moderate association was found between shyness and autistic traits. We then examined whether these psychosocial factors predicted face recognition ability (controlling for age, sex and object recognition ability). Higher levels of our shyness/autistic traits factor was found to predict poorer face recognition ability. This finding adds to growing evidence of atypical face recognition in shy individuals, and suggests that this relationship emerges early in development. The lack of an association between social anxiety and autistic traits with face recognition may reflect developmental differences in psychosocial functioning between typical children and adults.

146. Sizing Up The Crowd When Perceiving Body Size

Turnbull, G. (1), Alexi, J. (1), Mann, G. (1), Li, Y.R. (1), Engel, M. (2), Farrell, S. (1), Bayliss, D. (1), & Bell, J. (1)

1. School of Psychological Science, University of Western Australia; 2. Utrecht University, Faculty of Social and Behavioural Sciences, Experimental Psychology/Helmholtz Institute

Via Zoom

Stream 1 – Sunday April 11, 11:00 – 11:20 *Student Talk*

Previous research has found that body size judgements are frequently biased, or inaccurate. Critically, these estimation biases are further exaggerated for individuals with eating disorders. Within the eating disorder literature, it has been suggested that exaggerated visual biases in body size estimation are due to difficulties with integration. In this study, we build upon that work by creating a measure of spatial integration, a body version of the Ebbinghaus illusion. Participants judged the size of a central female body amongst a small crowd of six female distractors. To minimise occlusions and render a valid crowd percept, the computer-generated body stimuli were presented in a three-dimensional Virtual Reality environment, using the HTC Vive Pro. Participants (N = 412; 61% female) were randomly assigned to one of two conditions: one condition where the to-be-judged body was surrounded by extremely overweight inducers (Large distractors), and the other condition containing extremely underweight inducers (Small distractors). Results were consistent with the Ebbinghaus illusion, in which the central body appeared larger when surrounded by small distractors, and vice versa. Overall, these findings extend our understanding of the visual information that is integrated when estimating body size and demonstrate a task that can quantify spatial integration. Future research is planned to investigate whether individuals with eating disorders exhibit deficits on our spatial integration task, as theories of integration difficulties would predict.

147. Slant perception of simulated and imagined surfaces.

Hammond F.J. & Grove P.M.

School of Psychology, The University of Queensland

In person in Brisbane

Stream 1 – Saturday April 10, 09:00 – 09:20

We investigated stereoscopic slant perception for simulated surfaces in depth and for imagined surfaces. Our aim was to characterise depth constancy for slant with changes in viewing distance. We have previously reported data suggesting only moderate compensation for changes in viewing distance. However, Bereby-Meyer et al. (1999) reported that participants' slant estimates scaled with viewing distance as per geometric predictions. Two critical differences between our previous work and Bereby-Meyer et al. are the stimuli and experimental task. Bereby-Meyer et al. presented three isolated dots in depth and instructed their participants to respond to the imagined angle between three points in the horizontal plane. Our stimuli consisted of random dot surfaces slanted in depth and we instructed our participants to respond directly to the slant perceived in the stimuli. In order to follow up on this discrepancy we investigated depth constancy for several types of artificial 3D stimuli, including stimuli that replicate Bereby-Meyer et al. and their experimental task. We found a qualitative difference in depth scaling between stimuli that require the participants to imagine an angle between discreet points, and stimuli that display a full surface of slant.

148. Social anxiety-linked attentional biases and their regulation by attentional control: evidence from objective measures of attentional processes

Mahdi Mazidi, Ben Grafton, Julian Basanovic, Colin MacLeod

Centre for the Advancement of Research on Emotion, School of Psychological Science, The University of Western Australia

In person at satellite site Perth

Stream 3 – Saturday April 10, 14:40 – 15:00 *Student Talk*

Cognitive theories of social anxiety implicate attentional bias towards negative social information in the development and maintenance of heightened social anxiety. Empirical evidence for this proposal, however, has been inconsistent. The aim of the current study was to examine the role of attentional control, which is one's ability to deploy attention to goal-relevant information as a potential moderator of the association between attentional bias to negative social information and social anxiety. Eighty-nine adults were recruited through Mechanical Turk platform and completed the Social Interaction Anxiety Scale as well as a novel paradigm designed to measure attentional bias to negative social information (angry faces) and attentional control. Attentional control was operationalised as the relative speeding to orient attention to goal-relevant stimuli compared to goal-irrelevant stimuli. The results supported the hypothesis that attentional control plays this moderating role. Specifically, while participants with low levels of attentional control exhibited a positive association between social anxiety and attentional bias to negative social information, this association was eliminated among participants with high levels of attentional control. The current study is the first to our knowledge that has tested the hypothesis that attentional control moderates the association between social anxiety and attentional bias to negative social information using a task that employs an objective measure of attentional control, and the well-established probe approach to assess attentional bias to negative social information. This finding may explain the heterogeneity of research findings in this area. Implications, limitations and directions for future research are discussed.

149. Social identity switching – How effective is it?

Anna K Zinn (1), Miriam Koschate (1), Mark Levine (2), Aureliu Lavric (1)

1. Department of Psychology, University of Exeter; 2. Department of Psychology, Lancaster University

In person in Brisbane

Stream 4 – Saturday April 10, 16:20 – 16:40 *Student Talk*

Psychological theories posit that we frequently switch between social identities in our everyday lives. Yet, little is known about whether such switches come with any cognitive performance cost. Our research aims to address this gap in knowledge by determining whether social identity switches are

effortless or whether they lead to "switch costs". Based on a paradigm modelled on the task-switching paradigm used to investigate cognitive control, we prompted social identity switches and measured participants' performance in a laboratory study using successive identity-related Implicit Association Tests (IATs). Pilot 1 (N = 24) and Study 1 (N = 64) used a within-subjects design in which each participant completed several – relatively rapid – social identity switches. Results indicated that the IAT congruency effect was no less robust after an identity switch compared to when it was repeated, suggesting that our participants were highly effective in switching social identities. Based on these findings and methodological developments, we conducted a second within-design study (N = 48) comparing switches away from a national identity (established identity) to switches away from a minimal group identity that we introduced in the study (novel identity). We did not find any significant differences in the effectiveness of switching between novel and established identities. Future studies will aim to replicate the findings with different identities and varying strength of identification and focus on assessing our ability to initiate or avoid social identity switches.

150. Specific versus varied visual search training in applied domains

Robson S.G. (1) & Tangen, J.M. (2)

School of Psychology, University of Queensland

In person in Brisbane

Stream 4 – Sunday April 11, 12:00 – 12:20 *Student Talk*

Training on various forms of a task (varied practice) typically leads to better skill transfer than training on only one form of the task (specific practice). However, much of this literature is limited to motor skill learning and to variations in task difficulty rather than variations in stimuli. In this study, we used a visual search task to compare the effects of specific and varied practice on learning and transfer. Participants in the specific group searched for features in fingerprints for ten 1-hour sessions whereas the varied group searched for features in five different image categories. We administered tests pre-training, mid-training, post-training and 6-to-8 weeks after training. Both groups improved at the same rate on our measure of fingerprint expertise and these improvements remained even several weeks post-training. The specific group demonstrated better skill transfer than the varied group for novel fingerprint versions of the search task. And while both groups improved equally on an untrained category search task between pre- and post-test, the varied group's improvements remained several weeks after training whereas the specific group's performance decreased. These findings demonstrate that visual search training is an effective way to improve perceptual expertise. Specific practice also appears to have benefits for transfer to trained categories whereas varied practice leads to better long-term transfer to novel categories.

151. Speeding up or slowing down? The effect of distractor size on target detection visual search.

Lawrence, R.K. (1) & Pratt, J. (2)

1. Griffith University, 2. University of Toronto

In person in Brisbane

Stream 4 – Sunday April 11, 13:40 – 14:00

Imagine searching through a cluttered draw for your keys. How long would you continue looking for the keys before quitting your search? A recent study by Moher (2020) found that a highly salient distractor differentially influences visual search strategies during target-present and target-absent serial visual search. When a distractor was present, both search speeds and error rates for target-present trials increased. In contrast during target-absent trials, the salient distractor speeded search, suggesting that observers lowered their quitting threshold. Here we aimed to extend these findings by testing whether the size of a salient colour distractor modulates the speeding of target-absent visual search. In Experiment 1, we used a salient colour distractor that was a similar size to other items in the search array. In Experiment 2, we used a salient colour distractor that was much bigger than other items in the search array (similar to Moher). With the large distractor, we replicated Moher; reaction times were faster for target-absent trials when the distractor was present. Critically, when the distractor was the same size as other items in the array, it slowed target-absent search. These findings indicate that when it comes to changes in search strategy, the size of the distractor is crucial. Moreover, it appears that for the target-absent speeding of search, a distractor must be of a certain level of salience in relation to the other items in order to cause a change in quitting thresholds.

152. Spontaneous and auditorily-induced postural activity predicts illusions of self-motion in listeners during the Shepard-Risset glissando

Rebecca Amy Mursic & Stephen Palmisano

School of Psychology, University of Wollongong, Wollongong, NSW, AUSTRALIA

In person at satellite site (Wollongong)

Stream 1 – Saturday April 10, 14:20 – 14:40 *Student Talk*

The Shepard-Risset glissando is an auditory illusion that is perceived as an infinitely rising or falling tone. Anecdotally, it has been suggested to cause disrupted equilibrium and feelings of falling in the listener. Our study investigated this by continuously measuring the postural activity of 23 participants (with their eyes either open or closed). On each trial, we recorded the fluctuations in their centre of foot pressure (CoP) as they stood quietly before, and while listening to, each auditory stimulus. We also measured the strength of subjective experiences of self-motion (i.e. vection) directly after each stimulus presentation. The effects of three different Shepard-Risset glissandi (ascending, descending, and combined) were compared to two auditory control stimuli (a phase-scrambled Shepard-Risset glissando stimulus and a white-noise control). As expected, we found that the Shepard-Risset glissandi induced stronger vection than their auditory controls. We also found that the temporal dynamics of the postural sway induced by these auditory stimuli were significantly different. We also found significant correlations between postural activity and vection. Specifically, participants who were more unstable pre-sound, and displayed greater positional variability during sound, reported stronger experiences of auditory vection. Thus, while these experimental findings confirm the anecdotal reports of Shepard symptoms, they also reveal marked individual differences in their expression.

153. Temporal integration windows for visual mirror symmetry

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School of Psychological Science, University of Western Australia, Perth WA

In person at satellite site (Perth)

Stream 1 – Sunday April 11, 14:40 – 15:00 *Student Talk*

Symmetry can be perceived in dot patterns with delays of 60ms or less between the onsets of component elements. We are interested in how this temporal integration process is effected by variations in element features impacting symmetry discrimination in static patterns, such as luminance-polarity. Variations in performance for different polarity patterns can provide evidence for the involvement of particular mechanisms with different temporal characteristics, such as first- and second-order processing, or visual attention. We investigated temporal integration in symmetric patterns with four different luminance-polarity arrangements, using dynamic stimuli with increasing stimulus onset asynchronies (SOAs) between the onset of the first and second element in each symmetric pair. All four polarity conditions showed the same 60ms delay upper limit for temporal integration, but with systematic variation in the processes occurring within this window. Matched polarity patterns produced low (approx. 30%) thresholds but performance degraded rapidly with increasing temporal delay. Conversely, unmatched-polarity patterns produced higher symmetry thresholds at short SOAs, but little change as SOA increased. These variations in the integration process suggest the involvement of two mechanisms; a fast, sensitive first-order mechanism for matched polarity patterns, and a slower, more robust second-order mechanism that combines information from ON and OFF channels in unmatched-polarity patterns. Our findings are not consistent with attentional mechanisms being the only method for perceiving symmetry in unmatched-polarity patterns, and instead support the involvement of a polarity-insensitive perceptual mechanism.

154. That's good news 😞 Semantic congruency effects in emoji processing

Beyersmann, E. (1), Wegener, S. (1) & Kemp, N. (2)

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Via Zoom

Stream 2 – Friday April 9, 11:20 – 11:40

The use of emojis in digital communication has become increasingly popular, but how emojis are processed and integrated in reading processes remains underexplored. This study used eye-tracking to monitor university students' (n = 47) eye movements while reading single-line text messages with a face emoji embedded medially. Sentences contained a semantically congruent emoji (e.g., That's good news 😊 tell me more), a semantically incongruent emoji (e.g., That's good news 😞 tell me more), or a hyphen (e.g., That's good news – tell me more). Results revealed an overall high proportion of skipping. Participants were twice as likely to fixate on emojis (34% of both congruent and incongruent emojis received a fixation) than on hyphens (17%). When fixated, emojis elicited longer fixation durations than hyphens. Semantic congruency did not influence early fixation measures (first fixation duration and gaze duration), nor the probability of regressions. However, there was a significant congruency effect in total reading time and trial dwell time, showing that incongruence incurred a processing cost. The present results extend previously reported semantic congruency effects in sentence reading to the processing of emojis, suggesting that the semantic content conveyed by face emojis is integrated with sentence context late in processing. We further found that the use of congruent emojis improved the relationship between sender and receiver: ratings collected separately suggested that message senders were liked better if they included congruent than incongruent emojis.

155. The 1/fα spatiotemporal characteristics of the DynTex database

Isherwood, Z.J. (1), Joyce, D.S. (1), Kuppuswamy Parthasarathy, M. (1), Clifford, C.W.G (2), & Spehar, B. (2)

1. Department of Psychology, University of Nevada, Reno; 2. School of Psychology, UNSW Sydney

Via Zoom

Stream 1 – Sunday April 11, 16:20 – 16:40

Natural scenes have a $1/f\alpha$ drop off in spatial and temporal frequencies, and the slope of this drop off (α) is often reported as being equal to 1. However, it has been revealed in more recent work that only a few natural scenes actually conform to this value. Photographs of natural scenes instead have a slope of ~1.2 on average, and can range between 0.8 to 1.4. Currently, it is unknown whether this is also the case in the temporal domain since, to the best of our knowledge, an analysis of a larger set of natural movies has yet to be conducted. To address this, we measured the $1/f\alpha$ spatiotemporal amplitude spectrum of movies in the DynTex database (a freely available dynamic texture database). A subset of movies was labelled manually across three categories: 1) Natural: containing mostly natural objects, 2) Mixed: containing a roughly equal mix of natural and man-made objects, 3) Unnatural: containing mostly man-made objects. There was large variance in both spatial and temporal slope measurements across categories. Spatially, our measurements are similar to past research: slopes in the Natural category were ~1.1 on average, but had a wider range between ~0.6-1.9. Temporally, slopes in the Natural category were ~0.5 on average, and ranged between ~0.0-1.1. Mixed and Unnatural categories had significantly steeper spatial (~1.3) and shallower temporal (~0.4) slopes on average. Our findings are possibly unique to the database analysed, and further research is needed to confirm the extent $1/f\alpha$ temporal spectra vary in nature.

156. The Dynamics of Competition and Goal Pursuit

Morgan, A., Ballard, T. & Neal, A.

The School of Psychology, The University of Queensland

In person in Brisbane

Stream 2 – Saturday April 10, 10:40 – 11:00

Competition has been a social psychology focus for many years, but social psychology methodology alone doesn't allow us to further our understanding of how a competition impacts us over time as it progresses. The competition's time limit, your performance, as well as the performance

of others, could drive you towards competing in different ways to hopefully improve your chances of winning. In order to address and assess these dynamic components, we have used cognitive psychology methodology and modelling, and combined them with the social psychology topic of competition. We compared participant performance against a computer opponent in a simple cognitive task and used the data to make inferences about participants' rates of evidence accumulation and strategy during the task. We manipulated the time limit for each trial as well as the starting scores of the participants and computer opponents. This prevented the variables from being too highly correlated and allows us to break down the unique and dynamic effects of these variables on participant behaviour.

157. The Effect of Cue Utilisation in Driving on Response Inhibition

Greenwood, C.E. (1), & Carrigan, A.J. (1,2,3)

1. Department of Psychology, Macquarie University, Sydney, Australia; 2. Centre for Elite Performance, Expertise & Training, Macquarie University, Sydney, Australia; 3. Perception in Action Research Centre, Macquarie University, Sydney, Australia.

In person in Brisbane

Stream 4 – Sunday April 11, 15:00 – 15:20

Driving a motor vehicle is a high risk and cognitively demanding activity that requires the effective and efficient use of cognitive resources to inhibit responses when necessary to avoid accidents. One possible strategy that may be applied while driving to reduce cognitive load and allow for the allocation of resources to other necessary and difficult processes, is the application of cue-based strategies, or cue utilisation. Cue utilisation is the association of a feature and an event or outcome stored in long term memory, which becomes specialised with repetition and is associated with high levels of performance. The present study was designed to measure the contribution of cue utilisation in a driving context on performance in a response inhibition task. Undergraduate psychology students (N = 105) completed an online experiment comprising (1) the driving edition of the Expert Intensive Skills Evaluation 2.0 (EXPERTise 2.0) to establish behavioral indicators of context-related cue utilisation (higher/lower) and (2) an independent measure of response inhibition, the Stop-Signal Task. Those with relatively higher cue utilisation were more accurate at inhibiting responses on the Stop-Signal Task, but there was no difference in their response times. These findings suggest that those with higher cue utilisation have a greater number of cognitive resources available to inhibit responses when necessary. This study has practical implications for drivers, suggesting that the development and adoption of cue-based strategies, can improve response inhibition and therefore road safety.

158. The effect of motion and intensity on recognising facial expressions of emotion depends on the emotion.

Simone Favelle & Lyndsay Menzies

School of Psychology, Faculty of Arts, Social Sciences and Humanities, University of Wollongong

In person at satellite site Wollongong

Stream 4 – Friday April 9, 09:40 – 10:00

Motion has been shown to be a useful cue for recognising subtle and low intensity facial expressions of emotion, however, the relationship between motion and intensity in expression recognition remains surprisingly underexplored. In this study we make a direct comparison of static and dynamic face stimuli across different levels of expression intensity (low, moderate, and full) in a recognition task for six basic facial expressions of emotion (anger, disgust, fear, joy, sadness, surprise) using stimuli with good ecological validity. Participants from the University of Wollongong and volunteers from the general population (n = 277) completed an emotion labelling task of static and dynamic stimuli from the ADFES-BIV. As predicted, there was a significant advantage for dynamic over static face stimuli for low intensity expressions, however, there was a significant advantage for static over dynamic face stimuli for medium and full intensity expressions. Importantly, a three-way interaction of motion, intensity and emotion on recognition accuracy indicated that this pattern was not present for each emotion. There was a benefit of motion only for low intensity expressions of joy and surprise. The findings suggest that while motion may help to disambiguate some low intensity expressions, information for successful recognition of low intensity expressions of emotion is available in static images of faces.

159. The effect of pre-reading exposure to definitions on contextual word learning during reading.

Elgort, I. (1), van de Wetering, R. (1), Beyersmann, E. (2) & Li, Luan (2).

Victoria University of Wellington; 2. Macquarie University

In person at satellite site (Wellington, NZ)

Stream 2 – Saturday April 10, 10:00 – 10:20

Glosses of technical terms improve reading-comprehension, but is viewing definitions before or after reading better for word learning? Pre-exposure to definitions avoids initial encoding errors, but confronting incorrect/incomplete meaning inferences in post-exposure may create deeper memory traces. In our earlier study, exposure to word definitions before reading had a less positive effect on the learning of word meanings than post-exposure, for first (L1) and second language (L2) readers of English. However, the exact mechanism underpinning this disadvantage could not be established. Pre-exposure may (1) make unfamiliar words look familiar, leading to less attention to word forms during reading; (2) reduce the need to derive meanings from context, negatively affecting contextual learning of meanings; (3) decrease post-retrieval error-checking during reading that supports learning. To clarify how pre-exposure affects contextual word learning (compared with post-exposure), we recorded L1 and L2 participants' eye-movements while they read passages with 60 unfamiliar made-up words. In a counterbalanced design, all participants experienced half of the items in the pre- and half in the post-exposure condition. The L1 pilot showed that, on the first encounter in reading, the words learned in the pre-exposure condition showed shorter reading times, lower fixation counts and more skipping, compared with the post-exposure. However, by the second contextual encounter, the difference between the two conditions decreased dramatically. In this talk we present our findings for the L1 pilot (n=14) and 50 L2 readers (testing is completing soon), detailing the effect of pre-exposure on early and late eye-movement measures during reading.

160. The effect of the Ebbinghaus Illusion in a 2-dimensional shooting game

Urale, P. W. B. (1) & Schwarzkopf, D. S. (1, 2)

1. Schwarzkopf Lab, School of Optometry and Vision Science, The University of Auckland; 2. Experimental Psychology, University College London, U.K.

In person at satellite site University of Auckland

Stream 1 – Saturday April 10, 09:40 – 10:00 *Student Talk*

The Ebbinghaus Illusion has been shown to affect simple laboratory-based motor tasks such as rapid pointing between locations and grasping. More recent work has extended this research to previously unused ballistic tasks (i.e. golf-putting), in some cases showing better accuracy with perceptually larger targets. We extend this research to a 2-D video game task that involves shooting a virtual laser towards Ebbinghaus-illusion stimuli. Our results are consistent with these previous findings, but follow-up experiments that controlled for gaze suggest that these effects may be driven by crowding effects rather than perceived size differences.

161. The effects of implicit expectation on stream-bounce perception

Zeljko M., Grove, P. M. & Kritikos, A.

School of Psychology, The University of Queensland

In person in Brisbane

Stream 1 – Saturday April 10, 13:20 – 13:40

Expectations reflect prior information about what is likely in the current sensory environment and so create predictions about forthcoming sensory events, and this provides a key mechanism to cope with sensory ambiguity. In a series of experiments, we covertly manipulated stimulus statistics to induce implicit expectations regarding the perceptual outcomes of audio-visual stream-bounce stimuli. First, we found an effect of expectation on responses to audio-visual stream-bounce stimuli. The effect was established rapidly (in a block that lasted less than 10 minutes), and anecdotally, participants remained mostly unaware of the biased stimulus statistics underlying the expectation manipulation. Importantly, expectation only affected multisensory stimuli but not unisensory (visual-only) stimuli, suggesting an effect that is not simply associative learning (associating certain stimuli with certain perceptual decisions). By next manipulating the temporal offset between the key audio-visual aspects of the stimuli (collision of the visual targets and presentation of the sound), we further found an interaction between expectation and offset asymmetry on perceptual outcomes, with expectation only affecting trials in which the sound followed the visual collision. Finally, by changing from a perceptual task (did the targets stream or bounce?) to a simple sensory task (audio-visual temporal order judgement), we found that expectation impacted sensitivity (JND) to sensory judgements, but in a manner that was inconsistent with our perceptual findings. Implicit expectations appear to exert an influence on observations of audio-visual stimuli, but the effect is task related and sensory effects are different to perceptual effects.

162. The Effects of Repeated Exposure to Novel Music on Phonological Working Memory

Killingly, C. & Lacherez, P.

School of Psychology and Counselling, QUT.

In person in Brisbane

Stream 4 – Saturday April 10, 13:40 – 14:00

Listening to music has been shown to adversely impact performance in tasks requiring working memory, potentially more so for well-known or well-liked songs. However, to date, no research has separated out the relative contribution of familiarity and liking in terms of determining how distracting a piece of music might be. In the present study, participants (N = 48) undertook a serial recall task while four novel songs were presented. Familiarity was manipulated by concurrently presenting a repeated segment of each song for a 2-minute interval on several occasions (between one and four times), counterbalanced across participants. Participants undertook the task again the following day during presentation of each song. They rated songs on familiarity, enjoyment, their desire to sing along, and perceived catchiness, before and following the experiment. Ratings of perceived familiarity and the desire to sing along increased significantly across sessions. Moreover, serial recall accuracy in the second session was disrupted dependent on how many times the song was presented the previous day.

163. The generalisation of implicit valence: Verbal instructions can update implicit and explicit evaluations of generalisation stimuli after evaluative conditioning.

Patterson R. R. (1), Lipp, O. V. (2) & Luck, C. C. (1)

1. School of Population Health, Curtin University; 2. School of Psychology and Counselling, Queensland University of Technology

In person at satellite site (Perth)

Stream 3 – Friday April 9, 14:20 – 14:40

Likes and dislikes can be acquired via evaluative conditioning – a process by which a neutral stimulus (conditional stimulus or CS) is paired with a pleasant or unpleasant stimulus (unconditional stimulus or US). Evaluative conditioning can generalise to stimuli (generalisation stimuli or GS) that were not paired with the US based on their similarity to the CS. Explicit and implicit CS valence can also be altered by providing instructions about the CS that are incongruent with prior learning. We examined whether instructions about the CS can also update implicit and explicit GS valence after evaluative conditioning. We created fictional alien groups where a single alien (CSp) from one group was paired with pleasant US images while a single alien (CSu) from a different group was paired with unpleasant US images. After evaluative conditioning, negative instructions were provided for CSp and positive instructions for CSu. Explicit evaluations of the CSs and GSs updated in line with the instructions provided and implicit GS evaluations that were evident after evaluative conditioning were eliminated. These results indicate that (a) implicit valence acquired via evaluative conditioning can be updated with verbal instructions, and (b) the updating effect can generalise to unreinforced stimuli from the same group.

164. The impact of item placement on food choices from physical and online menus

Gynell, I (1), Kemps, E (1), Prichard, I (2,3) and Tiggemann, M (1)

1. Psychology, College of Education, Psychology and Social Work, Flinders University, Adelaide, Australia; 2. Health & Exercise Sciences, College of Nursing and Health Sciences, Flinders University, Adelaide, Australia; 3. SHAPE Research Centre, Flinders University, Adelaide, Australia

Via Zoom

Stream 3 – Sunday April 11, 11:40 – 12:00

Previous attempts to promote healthy eating using explicit techniques have not been consistently successful. We therefore investigated an implicit strategy (item placement techniques) to encourage healthy food choices in the context of snack menus. Two experimental studies compared presentation of healthy items in the top, middle, and bottom sections of a snack menu. Study 1 compared these presentations in a physical menu, while Study 2 used an online menu. Menus consisted of 8 unhealthy and 4 healthy items, arranged in three rows of four in Study 1, and one column of 12 in Study 2. In each study, participants selected one food item from one of the three experimental menus, before completing the Revised Restraint Scale (to determine dietary restraint status). In Study 1 ($n = 172$), item placement condition did not predict healthiness of food choice. In Study 2 ($n = 182$), healthy items were most popular from the first section of the menu, in comparison to the middle or last sections. The manipulation may have been more effective in Study 2 because in line with gaze-motion tendencies research, the top section of the menu was viewed first, the middle section second and the bottom section last, whereas all items were viewed at once in Study 1. Dietary restraint did not moderate the effect of item placement condition on food choice. In line with nudging principles, results suggest that item placement techniques could be a potentially powerful tool in promoting healthy choices from online snack menus.

165. The Influence of Primed Positive and Negative Emotion on Boundary Errors for Neutral Images

Green D.M. & Takarangi, M.K.T

College of Education, Psychology and Social Work, Flinders University

In person at satellite site (Adelaide)

Stream 4 – Sunday April 11, 16:40 – 17:00

Boundary restriction is a memory error that occurs when people remember the boundaries of an image as narrower than they actually were. However, while some evidence shows that negatively valenced images induce boundary restriction (e.g., Mathews & Macintosh, 2004), other evidence shows that negative valence merely reduces boundary extension (e.g., Menetrier et al., 2013). Previous research has investigated how valence affects boundary judgments by comparing negative images with positive or neutral images. However, these image categories differ in aspects besides valence, including several factors that go hand-in-hand with negative valence, such as emotional arousal, unusualness, and including threatening or attention-grabbing elements. Due to these differences, we cannot conclude that boundary restriction effects, when they do occur, arise in relation to negative valence specifically. Here, our aim was to assess whether negative valence alone induces boundary restriction and/or attenuates boundary extension. We isolated negative valence from the other components of an image—such as emotional arousal, unusualness, and threatening or attention-grabbing elements —by presenting the same neutral images accompanied by either a negative, positive or no prime statement. Participants (N = 750 across 5 experiments) selected the extent to which the images at test had restricted or extended boundaries compared to their memory of the original image. A meta-analysis of all five experiments showed that despite successfully manipulating image valence, participants tended to make boundary extension errors regardless of valence prime. We conclude that valence alone does not lead to boundary restriction nor attenuation of boundary extension errors.

166. The influence of target motion on diplopia thresholds in stereoscopic depth perception.

Agnes Horvath & Philip M. Grove

School of Psychology, The University of Queensland

In person in Brisbane

Stream 1 – Sunday April 11, 13:20 – 13:40

Stereoscopic depth perception is based on the slight positional differences of corresponding image features falling onto the retinas in the two eyes, called disparities. We experience precise depth and single vision when disparities are small or moderate in magnitude. Previous experiments, using stationary stimuli, demonstrate that diplopia or double vision is present when disparities are large. However, in everyday life, our eyes, head, and objects around us are constantly moving such that the images of objects rapidly travel across the retinas. Yet, we rarely experience diplopia. Therefore, we asked, under what conditions the visual system recovers a single, three-dimensional representation of an object when its images move across the two retinas? To investigate this, we measured the upper disparity thresholds of single vision in two experiments. In experiment one, stimuli moved across the central visual field at one of four speeds. In experiment two (control), we repeated the threshold measurements for stationary stimuli presented at one of four durations. The threshold disparity for diplopia was determined using the method of constant stimuli. Experiment one demonstrated that as target speed increased, diplopia thresholds also increased. The control experiment showed that diplopia thresholds did not increase with longer durations. Our results indicate that over the range of speeds tested, the upper disparity limit for single vision is higher for moving stimuli than for stationary stimuli. These findings may inform information technology engineers to simulate three-dimensional scenes to facilitate single vision and comfort.

167. The minimal exposure duration required for neural processing of faces and emotional expressions

Lanfranco, R.C. (1,2), Canales-Johnson, A. (3,4), Cleeremans, A. (5), Rabagliati, H. (2), & Carmel, D. (2,6)

1. Department of Neuroscience, Karolinska Institute; 2. Department of Psychology, University of Edinburgh; 3. Department of Psychology, University of Cambridge; 4. Vicerrectoría de Investigación y Posgrado, Universidad Católica del Maule; 5. Center for Research in Cognition and Neurosciences, Université Libre de Bruxelles; 6. School of Psychology, Victoria University of Wellington

Via Zoom

Stream 4 – Friday April 9, 11:00 – 11:20

Faces are believed to be processed quickly, efficiently, and perhaps unconsciously. Previous studies have suggested a processing advantage for upright over inverted faces, and for emotional over neutral faces. If so, would orientation and emotion affect the minimal exposure duration required for a face to be discriminated? Due to hardware limitations, studies examining fast visual processing typically present stimuli for suprathreshold durations and disrupt processing with a mask. Here, we report four experiments using an LCD tachistoscope that enables sub-millisecond presentations. Participants discriminated the location of a face from that of a scrambled face, in unmasked presentations ranging in duration from 0.8 to 6.2ms. We found that above-chance discrimination requires ~2.5ms of stimulation. An advantage for upright over inverted faces arose at durations greater than 4.4ms, for both perceptual and metacognitive sensitivity. We found no evidence of differential discrimination of emotional faces. EEG-ERP analysis and multivariate decoding analysis found evidence of face processing and conscious access at 4.3ms, but only revealed evidence for differential emotion processing at the longest presentation durations, once participants could reliably perceive faces. Finally, whilst decoding analysis found evidence of face and emotion processing at shorter durations than ERP analysis, it could not decode either factor with shorter exposure durations than 4.3ms, suggesting that conscious access may be required for processing of emotional expressions. These findings clarify the minimal exposure duration required for face perception, emotion processing, and conscious access and suggest that while holistic processing provides an advantage in perception and awareness, emotion does not.

168. The Production Effect in Young Children, and Where to Next?

Pritchard, V. E. (1), Heron-Delaney, M. (2) Malone, S. A. (3) & MacLeod, C. M. (4)

1. School of Psychology and Counselling, Queensland University of Technology; 2. Australian Catholic University; 3. Autism Centre of Excellence, Griffith University; 4. Department of Psychology, University of Waterloo

In person in Brisbane

Stream 4 – Saturday April 10, 15:00 – 15:20

The production effect refers to the enhanced memory for items that are produced (vocalised) during encoding over those that are seen and read silently. The effect is largely attributed to distinctiveness at encoding. A robust and extensively studied phenomena in adults, production effects for printed items have not been studied in primary school-aged children. Here, we present two experiments designed to evaluate the production effect for list of words and nonwords in 7- to 10-year-old children for the first time. Experiment 1 (n = 41) involved familiar printed words, with words read aloud or silently appearing either in mixed- or blocked-list formats in a within-subject design. Experiment 2 (n = 40) used printed pronounceable novel nonwords. A yes/no recognition test was used. Results showed that recognition for words and nonwords read aloud was better than for those read silently, an effect consistent across both mixed- and blocked-lists. Further analyses revealed the production effect was comparable for words and nonwords, indicating that vocalisation has the potential to be valuable in early word learning. We go on to outline important next steps in investigating the usefulness of the production paradigm in educational settings. Specifically, we discuss how examining effects for yes/no recognition vs. cued recall tests and paired associates and in different age groups will help to establish the best ways to enhance the rate of word learning via vocalisation across development.

169. The relationship between the experience of real-world cognitive failures and performance in rare-target visual search

Thomson, K.J. & Goodhew, S.C.

Research School of Psychology, The Australian National University

Via Zoom (Presented by Goodhew, S.C.)

Stream 2 – Sunday April 11, 10:00 – 10:20

The prevalence of a target has a substantive influence on human visual search performance, such that rare targets are far more likely to be missed. This has important practical implications, as many professional visual search tasks, such as airport baggage screening and medical diagnostic imaging are characterised by rare targets. Here we examined the extent to which individual differences in rare target visual search performance could be explained by variance in other measures. Only a handful of previous studies have sought to understand individual-differences in rare-target visual search performance, and they have focussed on other laboratory-based measures, such as working memory capacity. Here, we sought to test the explanatory capacity of variables derived from the rich informational source of participants' experience of their cognitive and attentional function in everyday life. In particular, we had participants complete a visual search where they were presented with arrays containing multiple photorealistic objects, and their task was to detect when a gun was present in the array (2% target prevalence). Following this, they completed the Cognitive Failures Questionnaire (CFQ) and the Attentional Control Scale (ACS). We found that participants' scores on the False Triggering component of the CFQ uniquely predicted accuracy in correctly identifying the presence of the rare target, whereas these scores were unrelated to general visual search performance on target-absent trials. Theoretical and practical implications are discussed.

170. The remarkably precise coordination of shifts of spatial attention and saccadic eye movements

Harrison, W. J, (1,2); Stead, I. (1); Wallis, T.S.A. (3), Bex, P. J. (4), Mattingley, J. B. (1,2)

1. Queensland Brain Institute, The University of Queensland; 2. The School of Psychology, The University of Queensland; 3. Amazon Inc.; 4. Department of Psychology, Northeastern University

In person in Brisbane

Stream 1 – Saturday April 10, 16:40 – 17:00

We do not see the world in high resolution in a single fixation. Instead, we actively construct a coherent representation of a scene over time by coordinating saccadic eye movements with shifts of visual attention. We probed the dynamic coordination of spatial attention and saccades with unprecedented spatio-temporal resolution using a large-field psychophysical classification image task, reverse-correlational analyses, and generative computational modelling. Each of 7 observers completed 12,000 trials, in which their task was to make a saccade and report the polarity of a target bar embedded in noise. Prior to the start of each trial, the saccade target and perceptual target locations were cued, minimising spatial uncertainty. The target duration was 17ms, with a random onset time during each one second trial, requiring observers to attend to the cued location throughout each trial and saccade. Contrary to previous studies that find a loss in sensitivity prior to saccade onset, our results reveal a loss in contrast sensitivity only during the saccade itself, suggesting that attentional allocation plays a critical role in determining trans-saccadic sensitivity. Our reverse-correlation analyses further reveal that observers' spatio-temporal tuning functions are similarly consistent immediately before and after eye movements. Finally, motivated by recent neurophysiological advances, we developed a novel generative model in which attention is allocated in real-world coordinates. This model not only recapitulates the trans-saccadic spatio-temporal sensitivity of observers, but it also provides a simple, unifying framework that explains a range of previously reported changes in spatial attention across saccadic eye movements.

171. The Role of Additional Cues in the Testing Effect

Leggett J. M. I., Burt, J. S. & Pin, T. W.

School of Psychology, The University of Queensland

In person in Brisbane

Stream 3 – Sunday April 11, 12:00 – 12:20

The testing effect is the improvement in memory that results from a practice retrieval of the response to a cue or a question. According to one theory, the testing effect arises because additional information is activated during the retrieval attempt which may to cue the target response on future occasions. The present study examined the role of an additional cue in the learning of a cue-target pair during retrieval practice vs. restudy. The extra cue was a semantic mediator connecting the cue and target (Experiment 1; star in film-star-galaxy) or a cue related only to the target (Experiment 2; deliver for the pair dough-pizza). In Experiment 1, participants studied triples (cue-mediator-target), and then practice retrieval or restudy were conducted under three cuing conditions: single cue, cue plus mediator, no exposure. Contrary to the prediction that testing would enhance memory more than restudy, results suggested that the performance on the final recall test was the same for both practice test group and restudy group. The retrieval practice group had the same performance on target recall in the single cue condition and the cue plus mediator condition, suggesting that testing might not work through mediation. In Experiment 2 the semantic mediator was replaced in the triples by an additional cue for the target. A significant testing effect was found for both single-cue and double-cue practice testing. Overall, the results indicate that mediation might not be the primary mechanism for the testing effect.

172. The Role of Outcome Probability and Uncertainty on Information Preference

Embrey, J.R., Liew, S.X, & Newell, B.R

Cognition Lab, The University of New South Wales

Via Zoom

Stream 3 – Sunday April 11, 15:00 – 15:20 *Student Talk*

People's desire to seek or avoid information is not only influenced by the possible outcomes of an event, but the probability of those particular outcomes occurring. There are competing explanations however as to why and how people's desire for information is affected by factors including expected value, probability of outcome, and a unique formulation of 'outcome uncertainty'. Over three experiments, we find that people's preference for information is positively correlated with probability when the outcome is positive (i.e., winning money) and negatively correlated when the outcome is negative (i.e., losing money). Furthermore, we find the probability of an outcome to be more influential on information preference than the expected value of the event or its outcome uncertainty.

173. The role of uncertainty in financial decision-making

Wang-Ly, N. & Newell, B. R.

School of Psychology, UNSW Sydney

Via Zoom

Stream 2 – Sunday April 11, 14:00 – 14:20 *Student Talk*

Uncertainty is inherent in many of the important decisions we make on a day-to-day basis. Consider, for example, how we are expected to save towards retirement without being certain of when we will retire or how much we need for a comfortable lifestyle. We designed a financial decision-making task to examine the role that uncertainty plays in spending and saving decisions. We specifically focused on two types of uncertainty with real-world relevance: income uncertainty (having an unpredictable flow of income) and goal uncertainty (being unsure of how much is needed to be saved). Our results offer preliminary evidence that when faced with uncertain income, people are motivated to save earlier; when faced with uncertain goals,

people are motivated to save more and to save consistently (Study 1). We also find evidence suggesting that these effects are sensitive to the degree of uncertainty (Study 2).

174. The structure of facial expression recognition ability in children: evidence for general and specific factors

Maira Vicente Braga, Dr. Linda Jeffery, Dr. Gilles Gignac, Ellen Bothe, Dr. Mariane Thorburn and A/Prof Romina Palermo.

School of Psychological Science, University of Western Australia, Perth, WA, 6009, Australia

In person at satellite site UWA

Stream 2 – Friday April 9, 14:00 – 14:20

Recognising facial expressions is important for social interactions. Typical adults show large individual differences in the ability to recognise facial expressions, but researchers are only beginning to understand the nature of this variation. Recent research with typical adults suggests that variation could reflect both a common underlying (general-expression) factor used for recognising all expressions as well as separate (specific-expression) factors reflecting specific skills for different expressions. However, little is known about the structure of facial expression abilities during childhood when these abilities are developing. Overall recognition performance improves with age but the rate of improvement varies across the different expressions. Thus it is plausible that individual differences in expression ability during development may reflect some expression-specific variation. This study examined the structure of expression recognition ability during childhood. We assessed individual differences in facial expression recognition in a sample of 196 children aged 5 to 9 years using seven levels of intensity of four of the so-called 'basic' expressions (happy, sad, fear and anger). A latent variable model approach was used to correct for modest reliability. The best-fitting models included both a general-expression and specific-expression factors, so that the overall structure of children's ability resembled that of adults. These findings suggest the dimensionality of expression recognition ability is multidimensional in nature (general and specific factors), as it is for adults. Nevertheless, our finding that general expression recognition ability is more clearly represented in childhood than expression-specific skills, may reflect ongoing refinement of face expressions skills in later childhood and adolescence.

175. The Structure of Team Search Behaviours with Varying Access to Information

Prants, M. (1), Simpson, J. (1), Nalepka, P. (1,2), Kallen, R. W. (1,2), Dras, M. (3), Reichle, E. K. (1,2), Hosking, S. G. (4), Best, C. (4) & Richardson, M. J. (1,2)

1. Department of Psychology, Macquarie University; 2. Centre for Elite Performance, Expertise and Training, Macquarie University; 3. Department of Computing, Macquarie University; 4. Aerospace Division, Defence Science and Technology Group

In person at satellite site (Macquarie University)

Stream 4 – Sunday April 11, 14:20 – 14:40

In many team-based activities, members search for information to gain situational awareness and thereby structure their own behaviour. The extent to which members are coupled and in control of their surrounding environment can be accessed via the fluctuations of their searching behaviours. To facilitate prospective control, assistive technologies such as a heads-up display (HUD) can alleviate the demands of search and facilitate team performance. This study investigated how three-person teams divided their labour and structured their search behaviour when playing a multiplayer search-and-retrieval task where first-person visibility and access to a HUD were manipulated to systematically vary task difficulty. Results showed that access to task-relevant information facilitated performance and division of labour, as well as increased prospective control of searching behaviours, as indexed by detrended fluctuation analysis (DFA). Over multiple sessions, teams learned to use the HUD to structure their behaviour, especially with low first-person visibility. Results indicate the potential in using DFA for monitoring prospective control in team contexts.

176. The time course of brain reactivity to approaching emotional faces – an EEG study.

Yu Z. & Pegna A.

School of Psychology, The University of Queensland

Abstract Withdrawn!

To investigate rapid brain processing of emotional expressions with an ecologically valid approach, it is important to acknowledge the spatial properties of our social environment. The current study created a visual environment with enhanced perception of distance, and manipulated emotional faces (angry vs. neutral) to either approach or recede an observer from an ego-centric perspective. Using EEG/ERP strategies, this study examined the time course of brain reactivity to those moving emotional faces by focusing on several ERP components: P1, N170, and P2. It found out that angry approaching faces evoked the largest amplitude of P1 (occipital), neutral approaching faces evoked the smallest P1 amplitude, and the amplitudes evoked by receding faces were alike regardless of emotion. Results also suggested that angry faces enhanced the N170 amplitude regardless of motion direction, consistent with literature, the effect was stronger on the right hemisphere. Analysis regarding the P2 is still underway, although it can be seen that approaching motion tend to enhance P2 amplitude regardless of emotion, more data analysis is required. Those findings suggested that brain processing of threatening faces (e.g. angry) could be modulated by approaching motion at very early stage. Followed by specific processing of emotional and motion components in the stimuli sequentially. Furthermore, as compared to the no-distance-enhancement conditions, above effects tended to vanish or lose significance, suggesting it is important to enhance the perception of distance in experiments using approaching/motion-in-depth stimuli.

177. The Time Course of Composite Face Processing

Lynch, C., Cheng, X. J. & Little, D. R.

The University of Melbourne

In person at satellite site (Melbourne)

– Friday April 9, 13:20 – 13:40

Faces are considered a special class of holistically-processed object. The composite face task is a widely-used paradigm for inferring holistic processing. In this task, recognition of one half of a composite face is shown to be hampered by interference from the other half of the face when faces are aligned but not when misaligned. Although this effect has been documented numerous times, when used in different paradigms, composite faces do not always exhibit effects consistent with holism. The present study explored the cause of these discrepant findings by combining a composite face task with a signal-to-respond paradigm. The amount of time to make a face recognition decision was manipulated by introducing a response signal, and the resulting changes in accuracy were mapped over the time course of processing, which was then used to fit a speed-accuracy trade-off model. We found that holistic processing emerges late in the time course after approximately 400 ms processing time for easy to discriminate faces and after approximately 1000 ms for difficult to discriminate faces.

178. Transfer from virtual to real-world environments

Michalski, SC. (1), Szpak, A. (1), Saredakis, D. (1), Ross, T. (1), Billinghurst, M. (2), Loetscher, T. (1)

1. Cognitive Ageing and Impairment Neurosciences (CAIN), University of South Australia; 2. Empathic Computing Lab, University of South Australia

In person at satellite site Adelaide

Stream 2 – Saturday April 10, 15:40 – 16:00 *Student Talk*

Using virtual reality (VR) as a tool for training is becoming increasingly popular. Training programs for surgeons, pilots, and firefighters are taking advantage of the realism and flexibility VR offers. A key assumption of VR training is that the learned skills and experiences transfer to the real world. Yet, in certain application areas, such as VR sports training, there is a lack of research testing this assumption. The present study aimed to investigate transfer from VR sports training to the real world, using the fast-paced sport table tennis. That is, it was examined whether VR table tennis training improves real-world table tennis performance compared to no training. Fifty-seven participants were assigned to either a VR training group (n = 29) or no-training control group (n = 28). The VR group completed six 30-minute sessions while immersed in competitive table tennis matches against an AI opponent. An expert table tennis coach evaluated participants real-world table tennis skills before and after training. Blinded regarding participant's group assignment, the expert assessed backhand, forehand, and serving on quantitative (e.g. count of rallies without errors) and qualitative (e.g. technique and consistency) aspects. VR training significantly improved participants' real-world table tennis performance compared to a no-training control group in both quantitative and qualitative aspects. This study adds to a sparse yet expanding literature demonstrating real-world transfer from VR training. Now, we are investigating whether skills can transfer from VR to real life in people with intellectual disabilities.

179. Transformation from local image contrast to location-independent numerosity tuning in human extrastriate cortex

Paul J.M., van Ackooij, M., ten Cate T.C. & Harvey, B.M.

1. Experimental Psychology, Helmholtz Institute, Utrecht University, Netherlands

In person at satellite site (Melbourne)

Stream 1 – Friday April 9, 14:40 – 15:00

Many animals use visual numerosity, the number of items in a group, to guide behaviour. Neurons in human association cortices show numerosity-tuned responses, decreasing amplitude with distance from a specific numerosity. How are such responses derived from early visual responses? Recent studies show aggregate response amplitudes in human early visual cortex monotonically increase with numerosity, regardless of object size and spacing. This is surprising because numerosity is typically considered a high-level visual or cognitive feature. Here we first use computational modelling of 7T fMRI data to show these monotonic responses originate at the stimulus's retinotopic location in primary visual cortex (V1). Given this location, we then ask whether these monotonic responses can be better described by V1's established response properties. We characterize the Fourier decomposition (into contrast at specific orientations and spatial frequencies) of laboratory numerosity stimuli. This demonstrates that aggregate Fourier power (at all orientations and spatial frequencies) nonlinearly follows numerosity with little effect of item size, spacing or shape: it is effectively equivalent to numerosity. This nonlinear relationship lets us distinguish predictions of responses to Fourier power and numerosity. Monotonic responses are better predicted by Fourier power, later tuned responses are better predicted by numerosity. Tuned responses emerge after lateral occipital cortex and are independent of retinotopic location. We propose that numerosity's straightforward perception and neural responses reflect its straightforward relationship to aggregate Fourier power and thereby to V1's population activity. This repositions numerosity as a low-level visual feature and may explain numerosity-guided behaviours of simpler animals.

180. Trusting your reality: From precise updating to uninformative noise

Robinson, J. E. (1,2), Hohwy, J. (1), Johnston, P. J. (2)

1. Cognition and Philosophy Lab, Monash University; 2. Johnston Lab, Queensland University of Technology.

In person at satellite site (Melbourne)

Abstract Withdrawn

How do our brain's representations of stimuli change as our expectations of relevance change? It's clear that a skew in underlying experiment probability can be captured by stronger representation of a specific stimulus in EEG (Blom et al., 2020), however it is not clear how these representations change through the progress of experiment, particularly when the underlying probabilities are actually uninformative in gaining an accurate stimulus representation. Under Predictive Processing accounts, learning is modulated by an organism's expectations about whether the received inputs are informative and/or meaningful (or they are irreducible noise). If this is the case stimuli representations with equal probabilities should initially be considered informative but should ultimately lead to a non-existent/very low learning rate and, as a consequence, the precision-weighting of prediction-error from these source should very low. Thus, these stimulus representations should be reduced in strength over time and changes in stimulus should be less likely to change interpretation. In an EEG study, we used a bistable stimulus and obtained participants' reported perception. A 'true' state of the stimulus is then revealed to participant that equally often violated or was consistent with their perception. We perform

an MVPA analysis to investigate changes in representation as a consequence of uninformative perceptual inputs. Results show changes in the strength of representations over the course of the experiment that supports the notion of reduced precision-weighting on input predictions errors for learned uninformative stimuli.

181. Two Target Templates for Attentional Guidance and Decision-Making: Relational and Optimal

Becker, S.I., Hamblin-Frohman, Z.

School of Psychology, The University of Queensland

In person in Brisbane

Stream 4 – Sunday April 11, 13:20 – 13:40

The target template is often described as the mental representation that drives attentional selection, for instance, in visual search. However, this template is not necessarily a veridical representation of the sought-for target. According to Optimal Tuning, the attentional template shifts to an exaggerated target value to maximise the signal-to-noise ratio when the target is similar to the non-targets. By contrast, the Relational Account states that attention is tuned to the relative target feature that specifies how the target differs from the context (e.g. all redder items or the reddest item). Both theories are empirically supported, but used different paradigms (perceptual decision tasks vs. visual search), and different attentional measures (probe response accuracy vs. gaze capture). Here, we incorporated both paradigms and measures to provide a critical test of the accounts. The results revealed that Optimal Tuning shifts are observed in probe trials but do not drive early attention or gaze behaviour in visual search. Instead, attentional guidance follows the Relational Account, selecting all items with the relative target colour (e.g., redder). This suggests that the masked probe trials used in Optimal Tuning do not probe the attentional template that guides attention. In Experiment 3 we found that optimal tuning shifts could moreover be explained by simultaneous contrast effects. This suggests that the optimal tuning shift in probe responses may in fact be a perceptual artefact rather than a strategic adaptation to optimise the signal-to-noise ratio. These results highlight the distinction between early attentional mechanisms and later, target identification mechanisms.

182. Underlying Mechanisms explaining Self-related biases in Cognition

Vella A., A/Prof Kritikos A., Dr Sewell D. & Dr Ballard T.

Perception and Action Lab, The University of Queensland; School of Psychology,

In person in Brisbane

Stream 3 – Saturday April 10, 09:20 – 09:40 *Student Talk*

Our sense of self plays a fundamental role in everyday psychological processes, including but not limited to perception, decision-making and memory. These cognitive processes prioritize self-relevant information, over other-relevant information. For example, objects owned by one's self are better remembered than objects owned by another individual. To investigate underlying mechanism responsible for this prioritized status the self plays in memory, participants were initially introduced to a fictious other person, the other-referent in the experiment. Next, an incidental learning task where objects were sorted and given ownership (self-owned or other-owned) was completed, followed by an unexpected recognition (self/other/do not recognise) memory test. During the memory test, self-owned and other-owned objects from the previous learning task, as well as novel foil items, were shown. Participants indicated whether the displayed objects were self-owned, other-owned or an object they did not recognise. In the memory test objects were presented under low- or high-contrast conditions, this key contrast manipulation was used to investigate if 'the self' boosts processing at the early perceptual level. Repeated measures ANOVA showed higher corrected hit rates for other-owned than the self-owned items under both high and low-contrast conditions, contrary to predictions. This memory enhancement for other-owned items could be potentially explained by a more liberal decision criteria for other than self-responses. This means for self-related decisions people seem reluctant to claim ownership and maybe more cautious.

183. Undivided attention: The effects of attention dissociated from decision, memory, and expectation

Moerel D. (1,2), Grootswagers T. (3,4), Robinson A.K. (4), Woolgar A. (5), Carlson T.A. (4*) & Rich A.N. (1,2,6*)

* Equal contribution

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In person at satellite site (Sydney)

Stream 3 – Saturday April 10, 14:20 – 14:40 *Student Talk*

Selective attention prioritises relevant information amongst competing sensory input. Neuroimaging studies have shown stronger representation of attended compared to unattended stimuli, which has been interpreted as an effect of attention on information coding. However, because attention is often manipulated by making only the attended stimulus a target to be remembered and/or responded to, attention effects could be influenced by target-related processes such as visual short-term memory or decision-making. In addition, the effects of attention could be influenced by expectation. The aim of this study was to investigate the dynamic effect of attention on visual processing using electroencephalography, while 1) minimising effects of target-related processes, and 2) directly investigating the influence of temporal expectation on attention effects. Participants viewed rapid streams of overlaid oriented grating pairs at fixation while detecting a "target" grating of a particular orientation. There was an attentional manipulation, where one grating was attended and the other ignored, and a temporal expectation manipulation, where stimulus onset timing was predictable or not. We minimised effects of target-related processes by only analysing non-target trials. Both attended and ignored gratings were initially coded equally in the pattern of responses across EEG sensors. An effect of attention, with preferential coding of the attended stimulus, emerged from approximately 230ms after stimulus onset. This effect occurred even when target-related effects were minimised, and regardless of stimulus onset predictability. Our study

showed attentional effects that were not reliant on target-related or expectation processes and highlights the importance of considering these potential confounds in attention research.

184. Up and down: The relationship between stress and mind perception before and after COVID-19

Meier J. (1), Grimshaw G. (1), & Carmel, D. (1)

1. School of Psychology, Victoria University of Wellington

In person at satellite site (Wellington)

Stream 3 – Saturday April 10, 11:00 – 11:20 *Student Talk*

Findings from different areas in psychology suggest that we perceive the minds of other entities differently when we are stressed, but no research has tested this relationship directly. We conducted an online study in which we asked US participants (n = 220) to report their state and trait stress, and to rate the extent to which they perceived different entities to be capable of two dimensions of mind: agency (thinking and doing) and experience (sensing and feeling). Participants who reported higher stress attributed more mind (combining agency and experience) to other entities. The COVID-19 pandemic seemed to provide a natural stress induction, so we ran a replication study (December 2020) with a demographically matched sample (n = 379) to see if added COVID stress strengthened this relationship. As a replication, this study failed; but, like many failures in science, this one was interesting. Participants in the second study reported less, not more, general stress than those in the first study. The relationship between general stress and mind perception in study two was moderated by COVID-specific stress: Participants who were highly stressed about COVID showed a positive relationship between general stress and mind perception (like participants in study one), whereas those who were not stressed about COVID showed a negative relationship. Structural modelling revealed that, across both studies, participants consistently attributed agency, experience, and mind to different groups of entities. Thus, both samples had similar perceptions of other entities' minds, but the relations of these perceptions with stress differed between samples.

185. Vestibular and active self-motion signals drive visual perception in binocular rivalry

Alais, D[1]., Paffen, C[2]., Keys, R.T[1]., & Verstraten, F.A.J[1].

1. School of Psychology, The University of Sydney, Australia; 2. Department of Experimental Psychology, Utrecht University, The Netherlands.

In person in Brisbane

Stream 1 – Saturday April 10, 11:40 – 12:00

We investigated whether motor and vestibular self-motion signals modulate rivalry between left vs. right drifting gratings. Rivalry dynamics in vision-only were compared with two observer-rotation conditions – passive and active. Passive: Observers viewed motion rivalry on a motion platform undergoing sinusoidal yaw oscillations (±24°, sine period=4s). Active: Observers wore a virtual reality headset and made trunk rotations reproducing the same sinusoidal yaw. Alternations over 64 s trials were modelled with a sinewave. Perceived direction in motion rivalry correlated with direction of yaw rotation. Passive data: Rivalry dynamics entrained to self-motion oscillation rate (group mean period 3.88 s), mean amplitude was 0.37. Active data: All observers showed strong in-phase oscillations with mean period 3.98 s and stronger amplitude (0.53) than passive rotation. Rivalling up/down motions showed no effect of yaw rotation (active or passive), ruling out response bias linked to oscillation rate or direction reversals. Head and eye movements: head was stable throughout trials and eye movement timing and showed no correlation with rotation profile. We conclude both motor and vestibular self-motion signals input to vision and can help resolve perceptual ambiguity. In both cases, perceived visual direction follows rotation direction, with active self-motion (vestibular+motor) particularly salient.

186. Virtual Courts: How contextual background cues can influence character judgements

Muir, B. R. (1), Newman, E. J. (1), Rossner, M. (2) & Tait, D. (3)

1. School of Psychology, Australian National University; 2. Centre for Social Research & Methods, Australian National University 3. School of Humanities and Communication Arts, Western Sydney University

Via Zoom

Stream 2 – Saturday April 10, 16:40 – 17:00 *Student Talk*

Recently, many situations and events that would normally occur face-to-face have had to occur in virtual environments. Courtrooms are no exception, with trials being conducted through audio-visual links or where all members appear remotely, from wherever they may be. This video appearance, however, introduces contextual background cues that can signal the type of environment members are appearing in. For instance, lawyers and judges may appear from their offices, witnesses may appear in their homes, and defendants may appear from their custodial institutions. While background cues in a Zoom call or AVL may seem innocuous, literature in social and cognitive psychology suggests that seemingly tangential cues may produce bias in how decisions and judgements are made. This is particularly important when you consider the impact this may have on a defendant's right to a fair trial. To test this theory, we looked at how people formed character and guilt judgements to faces presented across different contexts (custody, home, or neutral). Across two experiments, our findings show that people seen in custody environments are perceived less favourably than people seen in home or neutral environments, suggesting there is a systematic bias of context. These findings suggest that contextual cues warrant consideration in policy development regarding virtual environments.

187. Visual Attentional Orienting by Eye Gaze: A Meta-Analytic Assessment of the Gaze-Cueing Effect

McKay, K.T.[1], Grainger, S.A.[1], Coundouris, S.P.[1], Skorich, D.P.[2], Phillips, L.H.[3], & Henry, J.D.[1]

1. School of Psychology, The University of Queensland; 2. Research School of Psychology, The Australian National University; 3. School of Psychology, The University of Aberdeen.

Reflexively following the eye gaze of others is thought to be a fundamental mechanism of human social cognition. In line with this, a gaze-cueing effect – whereby, healthy adults respond faster to peripheral targets presented at gazed-at rather than gazed-away-from locations – has been observed in the empirical literature. However, from both a methodological and theoretical perspective, many important questions remain about the potential role of moderator variables in understanding this effect. To directly address these, we conducted the first meta-analytic integration of the gaze-cueing literature. Integrating data from 3693 healthy adult participants from 112 independent samples, we found a small but significant gaze-cueing effect. Although robust, emerging at all levels of each of the task parameters we examined, our results suggest that the magnitude of the gaze-cueing effect is moderated by a number of task and cue features including whether direct-gaze cues had preceded each directional gaze-cue or not, whether gaze-cues had disappeared before targets appeared or not, whether the task had been to detect, localize, or categorize targets, the stimulus onset asynchrony between cue and target and the cue emotional expression. We found that cue ecological validity was largely not a moderator of the gaze-cueing effect. Overall, this meta-analysis suggests that eye gaze is indeed a powerful social cue that reliably influences the allocation of others' visual attention. Critically, however, the findings from our moderation analyses have a number of implications for our understanding of the gaze-cueing effect.

188. Visual attention when Exercising in a Virtual Reality Environment

Neumann D. L. (1), Moffitt R. L. (2), Stainer, M. J. (1)

1. School of Applied Psychology, Griffith University; 2. Psychology, School of Health and Biomedical Sciences, RMIT University

Virtual reality (VR) has the potential to improve learning, performance, and psychological states in a range of tasks. However, little is known about attentional states in a VR environment. The present experiment examined visual attention during a VR-based exercise task. Participants (N = 19) cycled through a virtual city for 10 min. In a repeated measures design, participants completed two trials that differed in the level of physical intensity (moderate and vigorous). The virtual world depicted a city environment on a projection screen. In addition to the virtual world, the screen included information relating to performance (e.g., speed, cadence). Performance, heart rate, and ratings of perceived exertion confirmed the increased aerobic demands in the vigorous intensity condition relative to the moderate intensity condition. Visual attention to the virtual world was greater than to the real environment (laboratory, equipment, self) but was reduced as the exercise intensity increased. In addition, attention was greater to the virtual environment than to performance information even at vigorous intensity levels. Participants attended more to information relevant to navigation (e.g., the road, cars, horizon) than to more peripheral scenery (e.g., buildings, signs, pedestrians). The findings suggest that VR can be effective in drawing attention to task-relevant cues during exercise although its effectiveness may diminish at high intensities. Moreover, attention is directed in a way that mirrors the preference for fixating on task-relevant information as seen across natural tasks.

189. Visual categorisation: Insights from Response Time Modelling

French, L. A & Sewell, D. K.

School of Psychology, The University of Queensland

Humans are able to perform well on a variety of categorisation tasks while relying on only the low-dimensional global properties of an image, the stylistic information per se. These findings have been robust across a range of visual stimuli, from faces to natural scenes, which are typically categorised based on multiple complex membership dimensions. A recent study by Searston et al. (2019) found that participants could discriminate between complex visual categories (e.g. cubist and impressionist paintings) from (upsampled) resolutions as low as 2x2 pixels without being informed of the category identities. In a series of experiments, we further explore these findings using the Diffusion Decision Model to examine how the decision-making process is impacted by changes in image resolution, category knowledge and identification vs comparison tasks. Our preliminary results suggest that changes in performance across image resolutions is driven by both the speed of perceptual encoding and the rate of visual evidence accumulation. Independent evidence accumulation rates for "Same" versus "Different" responses also suggests that participants are attending to differing visual information to drive each of these decisions.

190. Visual imagery, source monitoring and 'false memories': Insights from aphantasia and hyperphantasia

Keogh, R[1,2]. (1), Kay. L.[2] (2) & Pearson, J.[2] (3)

1. Department of Cognitive Science, Macquarie University; 2. School of Psychology, The University of New South Wales

Our ability to faithfully assess the veracity of our memories is vitally important, however sometimes the source of our memories can be confused and results in a 'false memory'. It has been posited that visual imagery plays a role in source monitoring failures, such that imagining something very vividly can result in confusion as to whether the event occurred in reality or was merely imagined. Here we investigated the role imagery plays in monitoring the source of memories using a basic source monitoring task in 3 different populations with different visual imagery abilities: Undergraduate students (normal imagery distribution), aphantasic individuals (participants with no visual imagery) and hyperphantasic individuals (participants with photorealistic imagery). In the source monitoring task participants were presented with either words in isolation or a word plus a picture and performed a basic categorisation task. After a 6 min break, participants completed a surprise memory test where they had to indicate whether each of the words in the categorisation task had been presented as a word only or a word plus a picture. We found evidence that both aphantasic and hyperphantasic individuals were less likely to falsely remember a word being presented as a picture compared to undergraduate students. Using signal detection theory, we found that hyperphantasic individuals were the most sensitive on this task and there were also significant

differences in decision criterions when comparing the 3 groups. The results of this experiment are discussed in relation to current theories of visual imagery and memory.

191. Visual information sampling of faces by super-recognisers

Dunn, J.D. (1), Nicholls, V.I. (2), Papinutto, M. (3), Varela, V.P.L. (1), White, D. (1), & Miellet, S (4 - Presenter).

1. Face Lab, School of Psychology, UNSW Sydney; 2. Faculty of Science & Technology, Bournemouth University; 3. iBM lab, Department of Psychology, University of Fribourg; 4. ActiveVision lab, School of Psychology. University of Wollongong

In person at satellite site Wollongong

Stream 4 – Friday April 9, 11:20 – 11:40

Individual differences in face recognition accuracy are likely to be linked to the way visual information is sampled and processed. Here we compared visual sampling of super-recognisers (SRs) – individuals that achieve the highest levels of accuracy in face recognition tasks – to typical viewers, using a novel gaze-contingent technique. Participants performed a face recognition task in which they learned and recognised novel faces while their gaze position was recorded. The face on the screen was modified in real-time to constrict the information around the gaze position at different aperture sizes. Super-recognisers displayed superior recognition accuracy for all but the smallest aperture viewing sizes. Underlying this superiority are qualitative differences in visual sampling: (i) SRs exhibited greater distribution of fixations across face images, suggesting enhanced visual exploration; (ii) SRs focused less on the eye region; (iii) SRs produced more fixations to the central region of faces. Importantly, these differences were most apparent in the learning phase of the experiment, suggesting that the superior accuracy of SRs was founded on enhanced encoding of faces into memory. Together, our results point to a process whereby SRs construct a more robust memory trace by accumulating samples of complex visual information across successive eye movements. Because super-recognisers display superior accuracy with restricted viewing – while also showing fixation patterns that are associated with holistic processing – SR's superior performance appears to achieved by combining both local and global sources of information in memory representations.

192. Want to improve learning from your video lectures? Pre-questioning and question notetaking might be answers.

Brazil J.R. (1), Lodge J.M. (1,2,3)

Institute for Teaching and Learning Innovation, The University of Queensland; (2) School of Psychology, University of Queensland (3) School of Education, University of Queensland

In person in Brisbane

Stream 3 – Sunday April 11, 11:00 – 11:20

In the last decade, video lectures have become a popular mode of content delivery in higher education. This study explores the impacts of two techniques on learning from video lectures: prequestioning (asking students questions before providing content) and question notetaking (asking students to write their notes in a question-answer format). To do this, 78 Australian undergraduate students were first assigned to a question or conventional notetaking group. Students then randomly watched half of a lecture with prequestions and half without (i.e., a traditional lecture). After each lecture-half, students rated their learning satisfaction, affect, cognitive load and meta-cognition. After the lecture, students took an immediate test assessing recall, recognition, and transfer learning. A week later, students studied their notes and took a final test. There was no impact of prequestioning or question notetaking compared to traditional conditions on immediate test performance. However, on the final test: (a) conventional notetakers performed better on the prequestioned lecture compared to traditional one (d = 0.93) and (b) question notetakers outperformed conventional notetakers on the traditional lecture (d = 0.63). Neither technique impacted metacognition, subjective affect, self-reported cognitive load or learning satisfaction except the prequestioned lecture was more confusing for conventional notetakers than question notetakers (d = 0.70). Overall, these findings suggest that prequestioning and question notetaking improves video lecture learning without introducing any negative effects. Further research is required to strengthen these findings, establish boundary conditions, and explore how these techniques are best implemented.

193. What are learning traps and how can we prevent them?

Hayes, B. K. (1), Li, A. X. (1) & Gureckis, T. (2)

1. School of Psychology, The University of New South Wales; 2. Department of Psychology, New York University

Via Zoom

Stream 4 – Sunday April 11, 09:40 – 10:00

A "learning trap" is a pattern of suboptimal decision-making thought to arise from the overgeneralization of early learning in environments where feedback is choice-contingent – i.e., feedback is provided about chosen options but not foregone options. Learning traps have been implicated in suboptimal decision-making in a range of domains. However, the cognitive mechanisms that underlie learning traps are poorly understood and there are currently no principled methods for preventing trap formation. Two experiments were carried out using a novel paradigm for investigating trap formation in category learning. Participants learned to discriminate between categories of visual stimuli ("friendly bees" that were relatively common and earned reward points, and "unfriendly bees" that were relatively rare and reduced points). Accurate discrimination was based on a conjunctive rule involving two feature dimensions. Participants could choose to either explore or avoid individual instances on each learning trial. When feedback was choice-contingent (i.e. only provided on approach trials) a majority of participants learned an incomplete one-dimensional (1D) rule, resulting in suboptimal rewards. In each experiment we also trialed a novel method for preventing such trap formation based on principles of "loss attention". This involved varying the payoff structure associated with the categories, so that small losses were common, and large rewards were rare. In this "frequent loss" condition, the prevalence of the one-dimensional learning trap was significantly reduced. Experiment 2 confirmed that this reduction was not solely due to learners becoming more familiar with the base rates of each category.

194. What I Don't Know Can Hurt You: Collateral damage seems more acceptable when bystanders in war are anonymous

Danielson S.W. (1), Conway P. (2), Zajchowski E. (2), Vonasch A. (1)

1. Department of Psychology, Speech and Hearing, University of Canterbury. 2. Department of Psychology, Florida State University

In person at satellite site (Christchurch)

Stream 3 – Friday April 9, 09:20 – 09:40 *Student Talk*

Civilian casualties are a common occurrence in modern war, these can be due to mistaken identity, unintended consequences, or intentional sacrifices for military success. People generally think killing civilians is wrong, but across four studies, we show that people are more willing to sacrifice bystanders if their identity is unknown. Participants read a dilemma in which a pilot in a warzone must decide whether to bomb a dangerous enemy target if it would mean also killing a bystander. When the bystander was described as an innocent civilian, only 20% of people reported they thought the pilot ought to bomb the target even if it would mean killing the civilian bystander. However, when the bystander's identity is unknown, 50% of people endorse bombing the target and killing the bystander (Study 1). We rule out explanations that this effect is caused by dehumanization of the bystander (Study 2), or in-group bias (Study 3), and show the effect occurs when people overestimate the likelihood that the unknown person is an enemy (Study 4). We demonstrate that in the context of war, people do not follow innocent until proven guilty when judging anonymous bystanders, often judging them guilty without evidence. This work has implications for modern war, where decisions must be made without all the facts, and where allies and enemies are not so clear-cut.

195. What Makes an Expert Persuasive? Examining the Influence of Relevant and Superficial Cues on Jurors' Evaluation of Forensic Expert Credibility and Evidence Quality.

Younan, M. & Martire, K.A.

UNSW Expertise and Expression Lab, School of Psychology, University of New South Wales;

Via Zoom

Stream 2 – Saturday April 10, 12:00 – 12:20 *Student Talk*

Expert evidence offers important aid in legal decision-making. However, expert opinion quality varies – ranging from empirically-sound and accurate to false and erroneous. Most concerning is that Innocence Projects show misleading, inaccurate expert evidence to have been believed by lay juries and implicated in wrongful convictions. Therefore, it is important that jurors can differentiate the expert opinions that can be relied upon from those that cannot. The recent Expert Persuasion Expectancy (ExPEx) Framework (Martire, Edmond & Navarro, 2020) is a promising avenue to pursue this objective. The ExPEx Framework proposes 8 attributes that decision-makers ought to be informed of to logically assess expert evidence (i.e., proficiency). While preliminary research suggests that providing this information enables jurors to distinguish between low- and high-quality expert evidence, it does not account for superficial cues that jurors might consider in their assessments. Using a written mock trial with expert testimony from a real-life wrongful conviction case, two studies examined the effect of expert attractiveness and gender, cues which jurors commonly encounter when viewing expert testimony. The results revealed that attractiveness and gender did not affect jurors' evaluation of expert persuasiveness and opinion quality. Jurors appeared to differentiate low- and high-quality expert evidence regardless of these cues. This suggests that if logically relevant information about expert evidence quality is communicated to jurors, that this is sufficient to facilitate jurors' perception of expertise without having to infer judgment from superficial cues (i.e., attractiveness). Research directions into other superficial cues and paradigms, and practice implications are discussed.

196. What makes perceptual information memorable?

Grootswagers, T (1,2), Robinson, A.K. (2), Shatek, S.M. (2), & Carlson, T.A. (2)

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In person at satellite site (Sydney)

Stream 1 – Friday April 9, 14:00 – 14:20

Our brains constantly process an incredible amount of information. Even though all sensory information is processed to some extent, only some information is remembered. Recent work has suggested that memorability is an intrinsic property of a stimulus, but it is unclear how memorability operates in a large amount of concurrently presented competing information. Here, we investigated which perceptual information is retained from a stream of information, what factors cause information to be remembered, and when memorability manifests in neural signals. In an electroencephalography experiment, we presented sets of 18 unique images in fast sequences (10Hz), preceded and followed by mask stimuli. After every sequence, participants selected the images they remembered. On average, participants correctly remembered fewer than three images per sequence, demonstrating the cognitive limits of memorability. We found that image memorability could be decoded from the neural signal approximately 180ms after image presentation. Furthermore, we observed that memorability was predicted by stimulus position and category, as well as convolutional neural network activations. Together, our findings suggest intrinsic properties of the stimulus and the presentation context influence the neural responses to the stimulus during the sequence, ultimately determining if the item will be remembered.

197. What underlies spatial heterogeneity in object perception?

Schwarzkopf, D.S. (1,2)

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In person at satellite site (University of Auckland)

Stream 1 – Saturday April 10, 09:20 – 09:40

The appearance of visual objects varies across the visual field in individually unique patterns – sometimes referred to as "perceptual fingerprints". Here we probed potential neural mechanisms of this spatial heterogeneity in perceptual experience. We found that perceptual biases for judging the size of simple circle stimuli are well-predicted by idiosyncratic variations in the retinotopic selectivity of visual cortex. Next, we turned to studying similar spatial heterogeneity in recognising complex objects. We demonstrated that which parts of a bistable vase-face image observers perceive as figure and ground also varies depending on the image's retinal location. Could this kind of spatial heterogeneity be due to undersampling of the visual field by object-selective neurons? Control experiments suggest a simpler explanation: the spatial patterns of these perceptual biases were similar regardless of whether the vase-face images were upright or inverted. Neither a propensity for seeing faces at a given location, nor variations in global versus local grouping could explain our results. Taken together, we therefore surmise that, like biases for judging object size, perceptual fingerprints for vase-face images reflect idiosyncrasies in low-level spatial sensitivity across an observer's visual field.

198. When logic gets in the way of perceptual judgments –Parallel processes vs. individual differences in response strategies

Cruz, N. (1), Lee, M. D. (2), Stephens, R. G. (3), Dunn, J. C. (4). & Hayes, B. K. (1).

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Via Zoom

Stream 2 – Saturday April 10, 11:00 – 11:20

People can be impressively rational yet also dangerously biased. Accounting for this contrast has been a driving force in the development of dual process theories of reasoning, which posit two qualitatively different types of thinking that differ in their susceptibility to bias. Recent findings such as the "logic-brightness" effect have challenged earlier dual process accounts. This effect is that people rate the conclusions of inferences as physically brighter when the inferences are deductively valid. More recent dual process theories account for the effect by assuming that intuitive Type 1 thinking can process both simple heuristics that can lead to biases and simple logical information in parallel, with deliberate Type 2 thinking acting as a moderator between potentially conflicting intuitions. A simpler explanation for the logic-brightness effect is that people base their responses on brightness information when it is straightforward to do so, but otherwise resort to other salient cues such as argument validity. If so, then the logic-brightness effect should reduce as the brightness discrimination becomes easier. We varied the difficulty and ambiguity of the brightness task in two experiments, and captured interindividual differences in response strategies through a Bayesian signal detection theory model. The findings were in line with our alternative explanation, requiring no complex dual process assumptions.

199. While repeated exposure to VR can reduce cybersickness, these benefits do not generalise across apps

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In person at satellite site (Wollongong)

Stream 2 – Saturday April 10, 14:40 – 15:00

Despite its enormous potential, cybersickness continues to limit the use of head-mounted display (HMD) based virtual reality (VR). Our study investigated whether this cybersickness can be reduced by repeated exposure to HMD VR (e.g., via behavioural/sensory adaptation/habituation). Twenty-eight participants, who had never experienced HMD VR before, were evenly split into two different groups. Each participant was given 45-minutes exposure to HMD VR across two testing days. This included two 15-minute virtual rollercoaster rides as well as another 15-minutes of an active virtual climbing game. The first HMD VR exposures on each testing day were always to the virtual rollercoaster. On day 1, group 1 participants also played the virtual climbing game after a 30 minute rest break. By contrast, participants in group 2 finished early on day 1, and were only exposed to the virtual climbing game on day 2. As predicted, the sickness induced by the virtual rollercoaster was markedly reduced on day 2 compared to day 1. However, exposure to the virtual climbing game on day 1 did not alter sickness to the virtual rollercoaster ride on day 2. Sickness to the virtual climbing game was similarly unaffected by their amount of exposure to the virtual rollercoaster. Based on this convergent evidence, we conclude that reductions in sickness due to repeated exposure to HMD VR are game specific (i.e., they do not generalise from one app to another).

200. Within-person Variability in First Impressions from Faces

Gogan T. D., Beaudry J. L., & Oldmeadow J. A.

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In person at satellite site (Melbourne)

Stream 3 – Friday April 9, 14:00 – 14:20 *Student Talk*

Social perceptions of an individual can change dramatically across different images of their face. Questions remain as to whether some traits are more sensitive to image variability than others and whether trait judgements vary more across images of the same person than between different people. To investigate this issue, we constructed a database of 340 highly naturalistic and variable images consisting of 20 photos of 17 individuals. In this preregistered study, 95 participants rated all 340 images on one of three social traits: trustworthiness, dominance, or attractiveness. The images were presented in randomised order and participants were not told that there were multiple images of each face. Across images, trustworthiness judgements tended to vary more than dominance, which in turn varied more than attractiveness; however, the relative differences between traits depended on the identity in question. In contrast to much of the literature, we also found substantial variability in judgements between different target identities despite variability across images of the same person. Specifically, our findings revealed greater between-identity variability for attractiveness judgements compared to trustworthiness and dominance. Overall, our findings might suggest that some trait judgments (e.g., attractiveness) are based to some degree on relatively invariant facial characteristics and may, in part, be tied to the identity of the face.

201. Working Memory Capacity, Removal Efficiency and Event Specific Memory as Predictors of Misinformation Reliance

Sanderson, J. A. (1), Gignac, G. E. (2), & Ecker, U. K. H. (3)

School of Psychological Science, The University of Western Australia

In person at satellite site (Perth)

Stream 4 – Saturday April 10, 14:00 – 14:20 *Student Talk*

Event-related misinformation that has been retracted often continues to influence an individual's later reasoning regarding the event. This has been termed the continued influence effect (CIE). To explain this effect, most research to date has focused on factors governing retrieval of the misinformation and its retraction from long-term memory during reasoning. However, recent research has begun to investigate working memory (WM) capacity as a predictor of continued influence, based on its assumed role in information integration and updating following retraction encoding. The present study expands this research in two ways. (1) It explored whether memory for the materials more generally is a significant predictor of continued influence, based on the notion that high-fidelity event representations may be easier to update. (2) It investigated the specific WM updating process of removal, testing whether participants' ability to remove information from WM would predict their susceptibility to the CIE. It was hypothesized that WM capacity, removal efficiency, and memory for the materials would predict CIE susceptibility. Participants (N = 308) completed WM capacity and WM updating task batteries, as well as a CIE task that included a measure of participants' memory for the materials. Latent-variable modelling suggested that memory for the materials but not WM capacity and removal efficiency were significant predictors of the CIE. This finding reduces support for the integration/updating account of the CIE.

202. You are faster than me: Do we similarly process information?

Asheek Shimul[1, 2], Emily Freeman[1], Kerry Chalmers[1], Scott Brown[1] & Ami Eidels[1]

1. Newcastle Cognition Lab, University of Newcastle, Australia; 2. Memory Research Unit, University of Dhaka, Bangladesh

In person at satellite site (Newcastle)

Stream 3 – Saturday April 10, 09:40 – 10:00 *Student Talk*

Working memory capacity plays a critical role in decision-making processes. Prior research showed cultural background influences the capacity of working memory, but the underlying processes are not understood. The present research examined (1) whether working memory performance differs between Australian and Bangladeshi participants; (2) whether working memory performance changes when participants engaged in the concurrent recollection of autobiographical memories; and (3) whether that performance remains similar or different for different working memory tasks. 91 Participants from the University of Newcastle, Australia, and 68 participants from the University of Dhaka, Bangladesh, performed working memory tasks in both single and concurrent conditions. In the single task condition, participants performed three working memory tasks (i.e., verbal, spatial, and verbal-spatial task one at a time). In the concurrent task condition, participants were asked to recall a specific autobiographical memory in response to a cue word while simultaneously performing the working memory task. The results indicated a cultural difference in working memory performance: Australian participants were faster and more accurate than their Bangladeshi counterparts. Also, participants' involvement in the concurrent recollection of autobiographical memories severely degrades working-memory performance. To account for both response time and accuracy, performance measures were combined using the EZ-diffusion model. The modeling results showed no cultural difference between Australian and Bangladeshi participants in drift rate and boundary separation, but a significant difference in the non-decision time parameter.