

ASfAR2016

8th – 9th December

University of Western Australia, Perth

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We would like to thank the sponsors of the ASfAR2016 Conference



WELCOME

On behalf of the Organizing Committee, welcome to ASfAR 2016, the third conference of the Australasian Society for Autism Research. With 120 contributors drawn from across Australia and overseas, ASfAR 2016 will highlight current advances in the major research disciplines investigating autism and the broader spectrum, including work with families, support services and the broader community. If you are visiting Perth, we hope the picturesque UWA campus inspires you to explore more of our beautiful city and state. We are grateful for the generous support of the Autism CRC, Perth Convention Bureau, Telethon Kids Institute and University of Western Australia. I am indebted to everyone listed below for their generous advice and help. Enjoy ASfAR 2016!

Murray Maybery

ACKNOWLEDGEMENT OF TRADITIONAL OWNERS

The ASfAR2016 conference takes place in Perth, Western Australia, home of the Whadjuk Noongar people. We recognise the Whadjuk Noongar people as the Traditional Owners of the land on which we are meeting. We wish to acknowledge and respect their continuing culture and the contribution they make to the life of this region and our community.

CONFERENCE ORGANISING COMMITTEE

CONFERENCE CONVENOR

Murray Maybery

CONFERENCE ORGANISING COMMITTEE

Murray Maybery; Mark Stokes; Valsamma Eapen; Trevor Clark; Andrew Whitehouse; Cheryl Dissanayake; Sylvia Rodger; Sonya Girdler; Torbjorn Falkmer; Lauren Taylor; Gail Alvares; Cheryl Mangan; Glenda Bow; Vivienne Brown.

CONFERENCE SCIENTIFIC COMMITTEE

Murray Maybery; Andrew Whitehouse; Cheryl Mangan; Cheryl Dissanayake; Sonya Girdler; and Mark Stokes.

ADMINISTRATIVE ASSISTANCE

Vivien Brown and Michael English.

WEBSITE ASSISTANCE

Adrian Shatte

ASFAR EXECUTIVE COMMITTEE

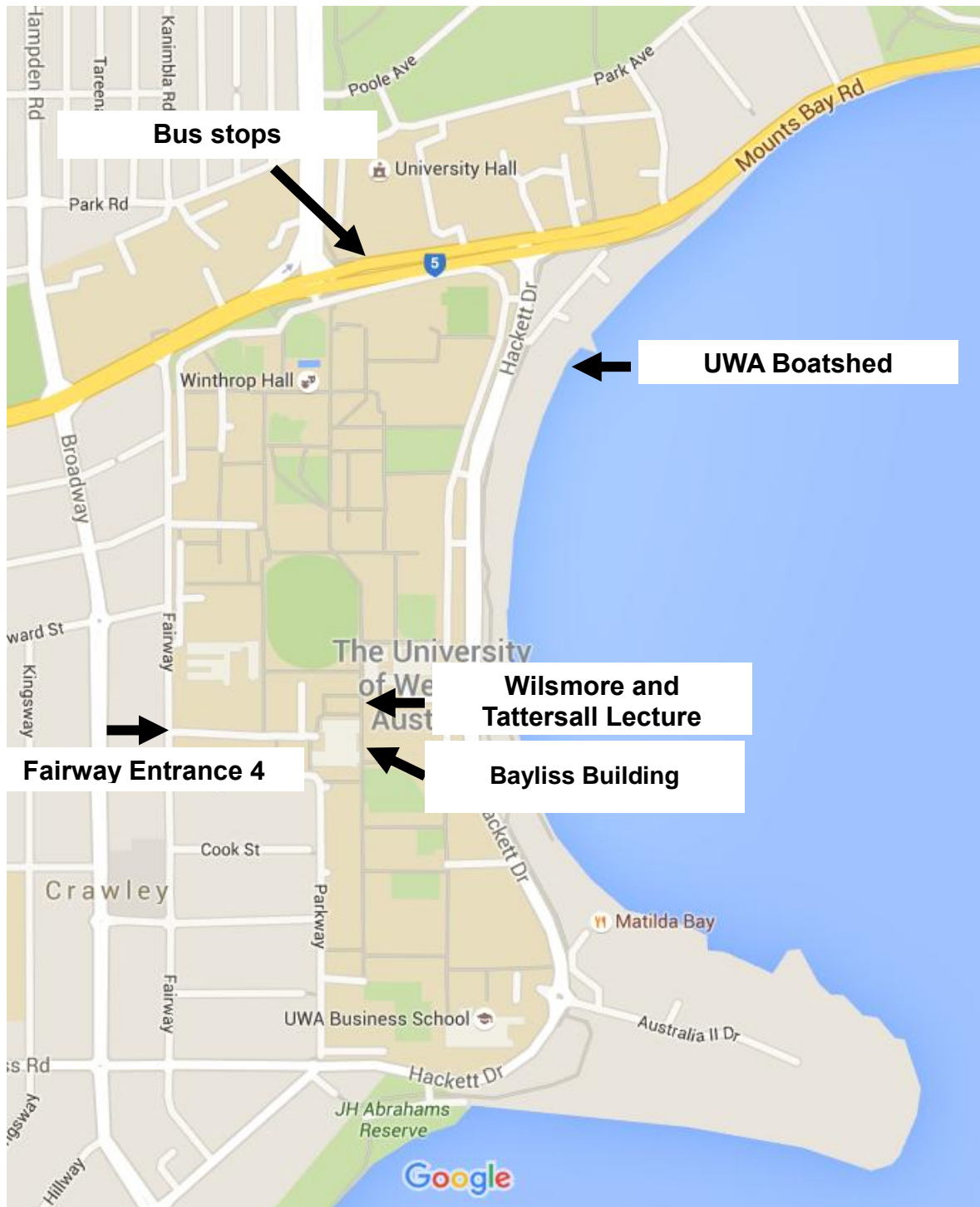
Trevor Clark (president), Cheryl Dissanayake (Vice President), Mark Stokes (Secretary & Treasurer), Sandra Devaraj (Executive Assistant), Valsa Eapen, Peter Enticott, Emma Goodall, Clare Holmes, Iliana Magiati, Jacqueline Roberts, Sylvia Rodger, David Trembath, Andrew Whitehouse.

CONFERENCE INFORMATION

VENUES

The conference sessions will be held in the Wilshire and Tattersall Lecture Theatres at UWA. During the day refreshments will be served in the Bayliss Building Foyer opposite these venues. On Thursday we will be hosting a Sundowner event with light refreshments for delegates starting at 6:00pm in the UWA Boatshed overlooking the beautiful Swan River.

Please see the schedule below for more details.



REGISTRATION

The registration desk will be located in the foyer of the Bayliss Building. It will be staffed at the following times:

- 4.00-5.30 pm on Wed Dec 7
- 7.30-9.00 am and in the tea and lunch breaks on Thu Dec 8
- 8.00-8:30 am and in the morning tea break on Fri Dec 9

If you are planning to attend the Sundowner please be ready to pay the \$50 fee at registration in cash.

REFRESHMENTS AND SPECIAL DIETS

Lunches, and morning and afternoon teas, are all included in the conference registration fee and will be served in the Bayliss Building Foyer. Additionally, coffee and tea will be available on arrival each morning.

If you have indicated a special dietary requirement on your registration form, please identify yourself at the Registration Desk and they will be pleased to assist.

MOBILE PHONES AND TABLETS

As a courtesy to presenters and other delegates, please ensure that all mobile phones and tablets are in silent mode during all sessions and social functions, and do not use the flash to take photos during sessions.

INTERNET ACCESS

Free Wi-Fi is available at the conference venue for conference delegates. Please check the notice board near the Registration Desk for details.

INSTRUCTIONS FOR SESSION CONVENORS

Please ensure that you are at the venue at least 10 minutes before the beginning of your session to discuss the session format with the presenters and assist them with their slides.

Each presentation in the oral and symposia series should be kept to 12 minutes, with 3 minutes of additional time for discussion and change-over. You will be provided with a bell and 3 minute and 1 minute time cards to help presenters keep to the 12 minute time limit.

To facilitate movement between sessions, and to ensure the programme runs to schedule, please adhere strictly to the programme as provided. If a presenter does not arrive for their slot, please do not move other presenters forward, but rather wait until the scheduled time to begin the next presentation.

INSTRUCTIONS FOR ORAL PRESENTERS

We have allocated 12 minutes for each of these presentations, with 3 minutes following for discussion.

The venues will be available in the break before each session so that you can pre-load your presentation on to the computer.

Please be in your session room 10 minutes prior to the start of your session to assist all sessions to run on time. Your convenor will brief you about the format of your session before the commencement of presentations.

Please note that time limits will be strictly enforced to ensure delegates can move between sessions.

INSTRUCTIONS FOR 3-MIN PITCH PRESENTERS

This year we are hosting the inaugural 3-min Rapid session at ASfAR2016. This session is designed for researchers who are in the preliminary stages of data analysis and is based loosely on the 3MT competition. This form of presentation consists of a 3 minute rapid oral presentation (no question period), with the presentation linked to a poster.

Please prepare your poster as per the instructions above.

The 3-minute limit for the oral presentation will be strictly enforced. You can use up to three PowerPoint slides to assist in your presentation but these must be submitted to asfareng-psy@uwa.edu.au by 3.00pm on Mon Dec 5.

The 3-minute presentations will run in the pre-lunch session on Day 2. Please be in your session room 10 minutes prior to the start of this session.

INSTRUCTIONS FOR POSTERS

Please limit your poster to A0 size sheet in portrait format (1189mm high and 841mm wide).

The poster session is scheduled for 12.00-1.00pm on Day 2 of the conference (Fri Dec 8).

Poster boards will be in place from 8.00am on Day 2. Please work with staff at the Registration Desk to set up your poster by 9.00am.

The posters will be on display throughout Day 2.

Please collect your poster immediately after the end of the conference (boards will be collected at 4.00pm). This is the responsibility of the presenter and no responsibility can be accepted by the organisers for the collection or safekeeping of posters. Posters not collected by the close of the conference will be discarded.

RECORDING PRESENTATIONS

You may wish to record or photograph presentations, slides and/or posters on personal devices. Please be respectful if a presenter requests that you do not do so. Any recordings or photographs should be for your personal use only and not for uploading on any social media or online platform without the presenter's express permission, which you must request personally.

Presenters, if you have sensitive material in your presentation that you do not want recorded or you simply do not wish to be recorded or photographed, please make an announcement to this effect at the beginning of your presentation; e.g. 'Please do not record or photograph this presentation.'

SOCIAL MEDIA

The official conference hashtag is #ASfAR2016. If you want to tweet about the conference, please use this hashtag so that others interested in the conference can find your tweets. Facebook posts are also encouraged.

We encourage live-tweeting during the conference using the official hashtag, with the following caveats and suggestions for best practice:

- Respect the wishes of the presenters if they do not wish their paper to be tweeted, and presenters please make it clear if this is your wish. Remember that many people present unpublished work at conferences and you should use your best judgement when putting other people's work into the public sphere.

- Correctly attributing information is vital. If tweeting be sure to give the name of the presenter and be clear when you are directly quoting someone. Presenters, if you are on Twitter and are happy for people to tweet about your paper put your Twitter handle on your opening slide so the audience can accurately cite you.
- Do your best not to misrepresent other people's views (even if you disagree with them) and post corrections if you slip up or someone misunderstands your tweet.
- You don't need to tweet everything a presenter says, a few take home messages to capture what you found interesting/significant about their presentation is generally sufficient.
- Do not post photos of people, photo competition entries or posters without the permission of the individual or author.
- Remember that Twitter is a public forum, so think twice about posting comments about the more social aspects of the conference; the general rule is to be collegial and respectful.
- Finally, enjoy it. Live-tweeting can be a great way to increase engagement and widen participation at a conference.

REMINDER: Everything you post on Twitter using the conference hashtag and on the AAA Facebook page during the conference is considered to be public.

ASFAR2016 PROGRAM SUMMARY

Day 1: Thursday, 8th December			
7:30	Registration - Bayliss Building Foyer		
8:30			
9:00	Welcome: Trevor Clark and Murray Maybery		
9:30	Keynote Speaker: Dr Dorothy Bishop Wilsmore Lecture Theatre		
10:00	Morning tea - Bayliss Building Foyer		
	Wilsmore Lecture Theatre	Tattersall Lecture Theatre	
10:30	Symposium – Coming of age: Transition to adulthood for people on the autism spectrum	Symposium – Biological markers in ASD	
11:00			
11:30	Symposium – The eyes have it?: Emotion recognition and visual perception in autism	General Session	
12:00			
12:30	Lunch - Bayliss Building Foyer + ASfAR AGM - Wilsmore Lecture Theatre		
1:00			
	Wilsmore Lecture Theatre	Tattersall Lecture Theatre	Bayliss Building G.33
1:30	Symposium: Innovating Autism Intervention Research	General Session	Symposium: Cognition and the Broader Autism Spectrum
2:00			
2:30			
3:00	Afternoon tea - Bayliss Building Foyer		
	Wilsmore Lecture Theatre	Tattersall Lecture Theatre	Bayliss Building G.33
3:30	Symposium – Improving the Early Detection of Autism Spectrum Disorder: Methods and Challenges	General Session	General Session
4:00			
4:30			
4:45	Keynote Speaker: Dr John Constantino Wilsmore Lecture Theatre		
5:30			
6:00	Sundowner - UWA Boatshed Complex		

Day 2: Friday, 9th December

8:00	Registration - Bayliss Building Foyer	
8:30	Keynote Speaker: Dr Sven Bölte	
9:00	Wilsmore Lecture Theatre	
	Wilsmore Lecture Theatre	Tattersall Lecture Theatre
9:15	General Session	Symposium – Mental Health and Well Being of Adolescents and Adults with Autism and their Parents
9:30		
10:00		
10:15	Morning tea - Bayliss Building Foyer	
10:30		
	Wilsmore Lecture Theatre	Tattersall Lecture Theatre
10:46	3-min Rapid Presentations (Stream 1)	3-min Rapid Presentations (Stream 2)
11:00		
11:30		
12:00	Lunch and Poster Session - Bayliss Building Foyer	
12:30		
1:00	Wilsmore Lecture Theatre	Tattersall Lecture Theatre
1:30	General Session	General Session
2:00		
2:30		
2:45	Afternoon tea, including prizes, awards and closing - Bayliss Building Foyer	

KEYNOTE ABSTRACTS

DR DOROTHY BISHOP, OXFORD UNIVERSITY

Children with an extra sex chromosome: a mirror on heterogeneity in autism

9.15 am, Thursday 8th December 2016, Wilsmore Lecture Theatre

Some children have an extra X or Y chromosome; instead of the usual XX (girls) or XY (boys), we see girls with trisomy X (XXX), or boys with Klinefelter's syndrome (XXY) or XYY. The effect of the additional genetic material is relatively mild: most children have normal range intelligence and attend mainstream schools, but language skills tend to be relatively poor. The extra chromosome may go undetected unless it is picked up on prenatal screening, or the child is referred for genetic testing. We have conducted two studies of children with all three types of trisomy and found that, as well as a high rate of speech and language problems, there is an increased rate of autistic spectrum disorder in boys with XXY or XYY chromosomes, and evidence of autistic features in some girls with XXX. However, even among children with the same chromosomal condition, there is wide variation from child to child. I will present in-depth analyses of the neurodevelopmental profile of these children, which raises questions about relationships between autistic spectrum disorder and other conditions such as language impairment and social anxiety. It is important to stress that children with an extra sex chromosome are rare, and most children with autism will have normal XX or XY chromosomes. However, sex chromosome trisomy is a clear risk factor for neurodevelopmental problems, including autistic spectrum disorder. Our hope is that by studying relationships between genes and behavior in these children we will find out more about the genetic bases of neurodevelopmental disorders and discover why some children make good progress while others have more serious social and/or language problems.

DR JOHN CONSTANTINO, WASHINGTON UNIVERSITY

Developmental Origins of Risk and Resilience in Autism: Findings from quantitative trait measurement across the lifespan

4.45 pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

The past decade of quantitative trait studies of autism has generated new understanding of risk and resiliency factors related to its developmental origins. This presentation will review what has been learned from tracing key quantitative components of the autistic syndrome over the course of development, within families, and across generations — and will discuss the implications for new prospects for prevention and higher-impact intervention in the autism spectrum disorders.

SVEN BÖLTE, KAROLINSKA INSTITUTET

Social Skills Group Training for Children and Adolescents with Autism Spectrum Disorder

8.30 am, Thursday 8th December 2016, Wilsmore Lecture Theatre

Autism spectrum disorder (ASD) has been diagnosed increasingly in recent years, posing a major issue to educational, social and public health services. Several important areas of adaptive social functioning are challenging in ASD, even in individuals with average to high IQ. This is associated with an elevated risk of peer conflicts, social exclusion, and psychiatric comorbidity. Therefore, evidence-based interventions aiming to enhance social skills are of pivotal importance to ASD. Social skills group training (SSGT) is an umbrella term for interventions applying socially instructive techniques and behavioral modification principles in a group setting. Despite the frequent use of SSGT in the clinical management of ASD, few approaches have been rigorously evaluated for efficacy, and effectiveness remains largely unknown.

After an introduction into ASD treatment in general and SSGT in particular, this talk will present new data from the largest pragmatic randomized controlled multicenter (13 sites) trial of SSGT in ASD without intellectual disability to date (N =296 + 52; NCT01854346). Results are presented for short (12 sessions) vs long (24 sessions) training using the manualized SSGT training KONTAKT. In addition, findings are reported in relation age group (children vs adolescents), and gender. Preliminary findings from moderator and mediator analyses on the effects of other individual characteristics (e.g. IQ, severity, comorbidity, medication, verbal abilities, and genetic variants) are also discussed, together with previous information from qualitative responder analyses on the KONTAKT program. Recommendations for current clinical practice and future research on SSGT, such as long-term follow-ups, active control designs, and generalization focused trials, are derived.

SYMPOSIA AND OPEN-SESSION ABSTRACTS

ALVARES, G; QUINTANA, D & WHITEHOUSE, A

Beyond the hype and hope of oxytocin research

In the Symposium: **Innovating Autism Intervention Research**

2:15pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: There has been a surge of interest in the last decade exploring the potential utility of intranasal oxytocin as a novel therapeutic to alleviate social difficulties for individuals with autism spectrum disorder (ASD). After much hyped early findings, subsequent clinical trials have yielded conservative and mixed evidence, or failed to replicate well-cited findings. It is still unclear at this stage whether these more disappointing findings reflect a true null effect or are mitigated by methodological differences masking true effects.

Methods: This talk will critically review the rationale for oxytocin as a therapeutic, evaluating evidence from randomised controlled trials, case reports, and open-label studies of oxytocin administration in individuals with ASD.

Results: The evidence to date, including reviews of pre-registered trials, suggests a number of critical considerations for the design and interpretation of research in this area. These include considering the choice of outcome measures, dosing and nasal spray device issues, and participant selection. This talk will discuss how the next wave of clinical trials, including one underway in Sydney and Perth, are attempting to trial the therapeutic efficacy that oxytocin may have for children with ASD.

Conclusions: Despite the limitations in this field, there remains significant potential for oxytocin as a novel method to modulate social behaviour. Given the considerable media hype around new treatments for ASD, as well as the needs of eager families, there is an urgent need for researchers to prioritise conducting well-designed and appropriately controlled studies to further advance this field.

ALVARES, G; CHEN, N; NOTEBAERT, L; MITCHELL, C; GRANICH, J & WHITEHOUSE, A

Development of a serious game to improve social attention in children with autism spectrum disorder

4:15pm, Thursday 8th December 2016, Bayliss Building G.33

Background: From a very early age children show an attentional preference for social stimuli, particularly faces and body movements. This early social bias is critical for the development of social communication skills. However, some individuals with autism exhibit a reduced attentional preference for social information, showing reduced time looking at faces or a bias towards looking at objects before faces. This social bias appears to have functional significance for acquisition of social skills, such as understanding emotions. Attentional bias modification paradigms have exhibited great utility in modifying attention in anxiety disorders. Such robust training paradigms provide a useful framework to design a social attention bias modification program.

Methods: We developed a game to help implicitly train children with autism pay more attention to social information. Children between 5-12 years of age were randomised to play the training game, or a control version, for 15 minutes. Measurements of eye gaze assessed changes in visual search and attention bias.

Results: Findings suggest that children playing the training game tended to increase initial engagements with faces, compared to objects, whereas those in the control condition tended to increase engagements with objects. Interestingly, the group as a whole exhibited an overall search advantage for social stimuli in a visual search task.

Discussion: A gamification approach to social attention modification may modify children's processing of social stimuli, providing a mechanism by which to increase understanding of complex social information. These preliminary findings highlight a need to examine whether extended gameplay demonstrates similar attentional changes.

ARMSTRONG, J; PASKAL, K; ELLIOTT, C; WRAY, J; DAVIDSON, E; MIZEN, J & GIRDLER, S

What makes playgroups therapeutic? A scoping review to identify the "active ingredients" of therapeutic and supportive playgroups

2:45pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Therapeutic and supportive playgroups aim to support vulnerable children and families and improve child outcomes. Therapeutic playgroups are increasingly being recognised as an effective engagement point into therapeutic services for children with developmental difficulties. Many children diagnosed with Autism Spectrum Disorder or Global Developmental Delay are first recognised and referred as being at risk of developmental delays. One of the possible early intervention options for these children is therapeutic playgroups. This review comprehensively scoped the literature to identify the "active ingredients" of supportive and therapeutic playgroups.

Method: A systematic search of grey and scholarly literature was conducted using Medline, PsycINFO, EMBASE, ERIC, CINAHL, Mednar, Informit, Scopus, Libraries of Australia and Trove. Articles were included if they: i) defined playgroup as a group of children and actively involved caregivers; ii) described a therapeutic playgroup or supportive playgroup model; iii) targeted children prior to school age; and iv) measured the effect of playgroups. A total of 27 articles met the inclusion criteria. Study quality was assessed and findings were analysed using an engagement framework based synthesis.

Results: The findings identified that emotional, practical and informational components are important "active ingredients" of playgroups. These strongly reflected family centred practice, self-efficacy theory and peer-support principles.

Conclusion: Therapeutic playgroups are a complex intervention, with numerous interacting components that make them efficacious for children and families. This review is the first to identify the "active ingredients" of

playgroups which may inform the design of future playgroups for children with developmental disabilities and their families.

ASHBURNER, J; SAGGERS, B; CAMPBELL, M; DILLON-WALLACE, J; HWANG, Y & CARRINGTON, S

How does bullying affect students on the spectrum? Perceptions of students and their parents

1:15pm, Friday 9th December 2016, Tattersall Lecture Theatre

Background: Although a number of studies have explored the prevalence of bullying, less attention has been given to the extent to which students with ASD and their parents worry about bullying. This explanatory sequential mixed methods study examined the perspectives of students and their parents on the students' bullying experiences and worries about bullying. It is also important to understand the characteristics of young people with ASD that can increase vulnerability to bullying. The impact of student characteristics including understanding of bullying, age and co-morbid conditions was explored.

Method: Surveys exploring bullying experiences and levels of worry about bullying were completed by 89 students with ASD without intellectual disability aged 11-16 years and their parents. Nine parents also participated in semi-structured interviews about their perceptions and concerns about bullying.

Results: Both parents and students reported high rates of face-to-face victimisation, but relatively lower rates of cyber victimisation, and face-to-face and cyber perpetration. Students with anxiety disorders were more likely to report face-to-face victimisation, and were more worried by both face-to-face and cyber bullying. Students with depression were also more likely to report cyber victimisation. Parental concerns included the impact of victimisation on their child's school attendance, self-esteem, mental health, social participation, academic performance, and emotional and behavioural responses at home and school.

Conclusion: High rates of reported victimisation suggest an urgent need for more effective management of victimisation of students with ASD. This is particularly the case for students with internalising symptoms who appear to be disproportionately affected by bullying

BARBARO, J & DISSANAYAKE, C

Utilising technology for the early identification of Autism: Introducing ASDetect: an early detection tool for parents

In the Symposium: **Improving the Early Detection of Autism Spectrum Disorder: Methods and Challenges**

4:45pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: Early detection of autism is critical as it provides access to early intervention, improving children's developmental outcomes and quality of life. Over the past 10 years, we have conducted two community-based studies (Social Attention and Communication Study; SACS) within the Victorian Maternal and Child Health (MCH) system. The SACS is the most accurate and sensitive early detection method for autism, and we wanted to make this research accessible to the world's population.

Methods: ASDetect is a free mobile application for the early detection of autism (11-30 months) that incorporates a modified version of the SACS training. Short videos demonstrate key social-communication behaviours followed by a question, with automatic calculation of a child's "likelihood" for autism. Parents are encouraged to share these results with their doctor to request a formal assessment for their child.

Results: Within its first 6 months, ASDetect was downloaded 10,000 times with 4,000 assessments completed. A small survey (n = 86) indicated 56% of parents whose children returned a "high-likelihood" result arranged a follow-up appointment.

Conclusion: ASDetect has facilitated hundreds of families in requesting an assessment for their child. We will be evaluating its effectiveness in identifying children with autism by inviting families to use the app and

offering developmental assessments for eligible children. We will also engage stakeholders for feedback on ASDetect to improve future versions.

BLACK, M; CHEN, N; IYER, K; LIPP, O; BÖLTE, S; FALKMER, M; TAN, T & GIRDLER, S

Looking and Seeing Emotion in Autism Spectrum Disorders

In the Symposium: **The eyes have it? Emotion recognition and visual perception in autism**

12:00pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

There is uncertainty surrounding the attentional and neurological correlates of facial emotion recognition (FER) difficulties in individuals with Autism Spectrum Disorders (ASD). This systematic review evaluates the research examining the eye tracking and electroencephalography (EEG) outcomes of individuals with ASD during FER in order to provide an overview of the current state-of-the-art in the area. A search of six electronic databases resulted in 54 articles examining EEG or eye tracking in individuals with ASD during FER meeting inclusion criteria. The literature shows that individuals with ASD presented with both atypical gaze patterns and cortical activation to facially expressed emotions. Eye tracking and EEG findings indicate a possible lack of maturation in visual processing systems associated with FER in ASD. Eye tracking and EEG findings may provide potential pathways for clinical intervention and prognosis in the future.

BÖLTE, S

"TRANSITION" - a training course with case management to support the change from adolescence to adulthood for individuals with ASD in Sweden

In the Symposium: **Coming of age: Transition to adulthood for people on the autism spectrum**

11.15am, Thursday 8th December 2016, Wilsmore Lecture Theatre

Despite consensus that continuous support and treatment is crucial in ASD, there is a continuous lack of evaluated interventions across the life span. For instance, specific and timely intervention is crucial for individuals with ASD during the transitioning to adulthood in order to prepare for societal challenges and to reduce the risk for mental health problems. In addition, potential spin-off from transition training is reduced need for income support, social security benefits, and personal assistance.

TRANSITION is an intervention program for individuals with ASD aged 17-24 years in Sweden, aiming to support optimal adult outcomes, and to prevent from negative outcomes, respectively. TRANSITION has been developed in collaboration between a multitude of experienced clinical staff of varying profession and organizational backgrounds and interest organization, financed by grants from the Stockholm County Council, the Social Insurance Agency, and the Trygg Hansa insurance company.

TRANSITION is a glossary-based structured program containing several core elements that can flexibly be adapted to the routines and needs of different service providers, incl. internet-based intervention. Transition is currently piloted with service providers in Stockholm County: child and adolescent psychiatry, adult psychiatry and habilitation and health centers. Moreover, within the pilot, TRANSITION is provided to Trygg Hansa customers. Conceptually, TRANSITION is made up of three parts. First, an individual assessment by a clinician, with the clinician also serving as a case manager during the program period. The purpose of the assessment is to identify a hierarchy of potentially reachable individual transition goals for each participant. Thereafter, second, a total of five group sessions (1/week) are conducted. Sessions are organized around information and discussions on areas of live (e.g. independent living, education,

employment) significant for adult transition. Third, and finally, participants actively work in real live on reaching their set individualized goals, supervised by the mentor over a period of four months. The ongoing open pilot study has a target N of 30 (~6 groups). Aside from testing general feasibility of TRANSITION, outcome measures collected are number of achieved goals (Goal Attainment Scaling), and changing in Quality of Live (QoL Inventory).

BOUTRUS, M; MAYBERY, M; ALVARES, G & WHITEHOUSE, A

Do Autism Spectrum Conditions have a distinct facial phenotype?

In the Symposium: **Biological markers for ASD**

11:00am, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Many developmental disorders, such as Down syndrome, have observable differences in facial structure. Although Autism Spectrum Conditions (ASC) is not classically associated with a distinct facial phenotype, emerging research suggests that individuals with ASC may have some subtle facial differences. Pinpointing these differences may be able to assist in the earlier detection of ASC and provide insights into possible causes.

Methods: We critically evaluated studies that have found differences in the facial features of individuals with ASC compared to those who are typically developing.

Results: While there was little agreement between the studies, there is some support for asymmetrical facial features being more common in ASC. There was also preliminary evidence that particular facial characteristics of individuals with ASC may relate to specific patterns of cognitive and behavioral symptoms.

Conclusion: In light of various inconsistencies between the studies, further research on facial structure in ASC is encouraged. We provide suggestions for how future studies can be conducted, including details on how to improve research methods, which facial features to prioritize for research, and the most accurate measurement techniques.

BRIGNELL, A; WILLIAMS, K; MORGAN, A; JACHNO, K; REILLY, S & PRIOR, M

Language trajectories and predictors of language outcomes in children with and without autism spectrum disorder

1:30pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Language difficulties are common in children with autism spectrum disorder (ASD). Information on the prognosis of language outcomes can help inform intervention and future support needs.

Objective To describe trajectories, profiles and predictors of language development from four to seven years in children with ASD compared to children with typical language (TD) and language impairment (LI).

Methods: In a prospective, community-based study (the Early Language in Victoria Study, n=1910) children completed comprehensive, standardised language assessments at 4, 5 and 7 years. Individual trajectories for the children with ASD were plotted. Mean trajectories and proportions of children who had declining, increasing and stable trajectories for ASD, TD and LI groups, were compared. Predictors of receptive and expressive language outcomes at seven years were analysed.

Results: Similar proportions of children with ASD had decreasing, accelerating and stable trajectory types as the TD and LI groups. Mean trajectories for children with ASD showed stable development, again comparable to LI/TD groups. Relative weakness in receptive compared to expressive language was not more common in children with ASD. Language outcomes at seven years were predicted by language level and IQ at four years but not by social abilities or diagnosis of ASD.

Conclusion: Children with ASD and LI had similar language scores at baseline that were lower on average than those who had TD. Language progressed at a similar rate for all groups, with later progress influenced by IQ and language ability at four years rather than a diagnosis of ASD.

CAI, R; RICHDALE, A & ULJAREVIC, M

Education and employment outcomes of an Australian cohort of young adults on the autism spectrum

In the Symposium: **Coming of age: Transition to adulthood for people on the autism spectrum**

10:30am, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: Research indicates that few adults on the autism spectrum, including those with a good language and an IQ within the normal range, achieve post-secondary school qualifications or full-time employment. Follow-up studies of adolescents and adults with autism show that few have good outcomes as assessed by employment and even when tertiary qualifications are obtained. Most of the research has been conducted in the USA and the UK, therefore the aim of this study is to assess the outcomes of young Australian adults diagnosed with autism.

Methods: Fifty-five individuals on the spectrum (14 females; Mage= 18.15 years, SDage= 2.32) started the online survey. Data collection is on-going and data will be re-analyzed with any extra participants.

Results: Twenty individuals completed all of high school and thirteen completed TAFE or undergraduate studies. One-fifth of individuals received support for transitioning out of school. Forty-two individuals were studying and more than half felt they got along well with other students and teachers however half also reported being bullied by other students. Although almost half of the young people were looking for work (47.3%), only nine are employed, five of them have post high-school education.

Conclusion: Even though more than half of the sample have completed high school, only a small proportion are employed. This is the first study to assess the education and employment outcomes of an Australian cohort of young adults. Future research should assess the factors that are associated with the reduced rate of employment in people on the spectrum.

CHEE, D; LEE, H; PATOMELLA, A & FALKMER, T

Driving behaviour profile of drivers with autism spectrum disorder

1:45pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Previous research has only attempted to assess driving performance of drivers with Autism Spectrum Disorder (ASD) in a laboratory setting using driving simulators. Very little is known about the on-road driving behaviours of drivers with ASD. The current research aims to investigate the driving performance of drivers on the autism spectrum in a naturalistic environment.

Method: Twenty-one typically-developed drivers and 16 drivers with autism underwent an on-road observational session where they drove along a standardised route lasting 25 minutes. Each driver was observed for specific driving behaviours at pre-determined checkpoints such as roundabouts, traffic lights, intersections and pedestrian crossings. The P-Drive assessment protocol and a driving performance checklist were used to guide the observation.

Results: Drivers with autism were observed to perform poorer at right-turns, left-turns and at pedestrian crossings. They also performed poorer at vehicle manoeuvring compared to the comparison group. However, drivers with autism performed significantly better in aspects that involves rule-following for safe driving such as using the indicator at roundabouts and checking for cross-traffic when approaching traffic light intersections.

Conclusions: Drivers with autism may present with a range of capabilities and weaknesses during driving. None of the underperformed driving skills of the drivers with ASD were identified as a potential threat to safety of other road users. To successfully develop the driver training programs, it is imperative that driving educators understand the challenges faced by individuals with autism and are able to identify specific strategies to teach drivers with autism.

CHEN, N; HAMMOND, M; PALERMO, R; LIPP, O & MAYBERY, M

Mechanisms Underpinning the Processing of Facial Emotion in High Autistic Traits: Evidence from Eye Tracking

In the Symposium: **Cognition and the Broader Autism Spectrum**

1:45pm, Thursday 8th December 2016, Bayliss Building G.33

Background: Research suggests that individuals with high autistic traits have difficulty in the recognition of facial emotion. The present study sought to examine whether such emotion recognition difficulties may arise from impairments in either featural or configural facial processing strategies.

Method: Individuals with high and low autistic traits were administered a delayed emotion matching task with a gaze-contingent viewing manipulation. In this, participants were required to match faces based on their emotional expressions under three viewing conditions. The first restricted viewing to a gaze-contingent window revealing only one facial feature at a time. The second restricted viewing with a gaze-contingent mask, which forced participants to rely on the configural information of whole face but not the fixated feature. The third viewing condition allowed for full-view of the faces.

Results: Participants with high, compared to low, autistic traits were found to have reduced emotion matching accuracy under the full-view condition, while no autistic trait group differences in emotion matching performance were evident for the window or mask viewing conditions. Interestingly, low autistic trait individuals performed significantly better in the full-view, compared to either window or mask restricted viewing conditions. However, such a facilitation effect was absent in the high autistic trait group.

Conclusion: The findings suggests that autistic traits may be associated with a deficit in emotion recognition. However, this may not necessarily pertain to a deficit in either featural or configural processing per se, but rather a lack of integration between these two processes.

CHOUINARD, P; UNWIN, K; LANDRY, O & SPERANDIO, I

Afterimage duration but not size constancy changes in typical individuals with higher degrees of autistic traits.

2:00pm, Friday 9th December 2016, Tattersall Lecture Theatre

Background: Deficits in perceptual constancies from early infancy have been proposed to contribute to autism and exacerbate its symptoms by Hellendoorn and colleagues.

Methods: In the present investigation, we examined size constancy in typical adults from the general population (N=108) with different levels of autistic traits, as measured on the Autism Spectrum Quotient (AQ), using an approach based on Emmert's law of negative afterimages. The strength of the afterimages, as indexed by their duration and vividness, was also quantified.

Results: In opposition to the model developed by Hellendoorn and colleagues, we were unable to demonstrate any kind of relationship between abilities in size constancy and autistic traits ($r = -.007$, $p = .940$). However, despite the lack of support for this model, our results did demonstrate that individuals with higher degrees of autistic traits experienced more persistent afterimages ($r = -.250$, $p = .009$) – albeit not more vivid ($r = -.008$, $p = .938$).

Conclusions: We can draw two conclusions. First, abilities in size constancy remains the same with increasing levels of AQ. Second, there is a link between hypersensitivity and autistic traits in the general population. Possible avenues for future research could consider what factors might affect the persistence of afterimages.

CLARK, M; BARBARO, J & DISSANAYAKE, C

Does age of diagnosis contribute to differential cognitive and behavioural outcomes at school age

2:30pm, Friday 9th December 2016, Wilsmore Lecture Theatre

Background: Although the average age of diagnosis of Autism Spectrum Disorders (ASDs) has reduced over time, the average age of diagnosis in Australia is 49 months (Bent, Barbaro & Dissanayake, 2016). This results in delayed or missed opportunity to receive intervention during the early and most critical years of development. Limited research has investigated the impact of age of ASD diagnosis on later outcomes during middle childhood.

Aims: This study compared the cognitive and behavioural outcomes of two groups of children aged between 7 and 9 years, to investigate whether children diagnosed early were advantaged in any way. The outcomes of a group of children diagnosed with ASD at 24-months of age (n=48) were compared to a second group of children diagnosed after age 3 (n=37), but prior to school entry. It was expected that children diagnosed early would demonstrate more positive cognitive outcomes at school age. Groups were not expected to differ in their autism severity.

Methods: The Wechsler Abbreviated Scale of Intelligence (WASI) was administered to assess cognitive development while the Autism Diagnostic Observation Schedule (ADOS) was used as a measure of autism severity.

Results: These findings reveal that age of diagnosis does contribute to differential cognitive development at school age with children diagnosed early demonstrating higher FSIQ $t(83) = 2.75$, $p < .05$, $d = 0.59$ and verbal abilities (VIQ) $t(83) = 2.96$, $p < .05$, $d = 0.64$ relative to children diagnosed late. Further, children diagnosed later are exhibiting significantly more restricted and repetitive behaviours as measured by the ADOS at school age $t(82) = -2.26$, $p = .03$, $d = -.49$. **Conclusions:** the findings support the importance of diagnosing ASD early, which maximizes children's opportunities to receive EI, and leads to improved outcomes at school age

CRIBB, S; OLAITHE, M; DI LORENZO, R; DUNLOP, P & MAYBERY, M

Embedded Figures Test Performance in the Broader Autism Phenotype: A Meta-Analysis

In the Symposium: **Cognition and the Broader Autism Spectrum**

2:00pm, Thursday 8th December 2016, Bayliss Building G.33

Background: People with Autism Spectrum Disorder (ASD) show superior performance to controls on the Embedded Figures Test (EFT). However, studies examining the relationship between autism-like traits and EFT performance in neurotypical individuals have yielded inconsistent findings.

Methods: To examine the inconsistency, a meta-analysis was conducted of studies that a) compared high and low Autism-Spectrum Quotient (AQ) groups (quantile AQ studies), and b) treated AQ as a continuous variable (continuous AQ studies). Additionally, we reanalysed data from previous quantile studies with individuals scoring above screening cut-offs for clinical ASD removed to determine if findings could be driven by a small number of extreme scorers. Monte Carlo simulations were used to illustrate the effect of methodological differences between quantile and continuous AQ designs on results.

Results: Quantile studies show consistently faster and more accurate performance on the EFT for high AQ individuals. Continuous studies, however, show no consistent effect of AQ on EFT performance.

Reanalysis of previous quantile data suggests findings are unlikely to be driven by a small number of extreme scorers. Monte Carlo analyses showed that a quantile design is typically more statistically powerful than a continuous design.

Conclusions: Outcomes are consistent with superior visual search forming part of the broader autism phenotype, but in existing literature, this is evident only when comparing extreme groups.

CRIBB, S; KENNY, L & PELLICANO, E

Understanding the transition to adulthood for young autistic people and their parents

1:45pm, Friday 9th December 2016, Tattersall Lecture Theatre

Background: The transition from adolescence to adult life comes with challenges for all young people, but may be especially challenging for autistic young people, although little is known of the specific difficulties they face and the factors that may support successful transition.

Methods: This study investigated the transition experiences in a group of cognitively-able young autistic people (n=28, aged 16-21, M = 17.8, SD = 1.19 years) followed from childhood (Pellicano et al., 2006). Twenty-six young people and their parents (n=28) participated in semi-structured interviews to elicit their experiences of school, goals for the future and self-concept.

Results: Using thematic analysis, we identified three themes common to both young people and their parents' interviews, including (1) challenges that young autistic people face during this period of their lives, (2) autism and "autistic" identity, and (3) factors facilitating positive outcomes.

Parents highlighted several concerns, including about anxiety, difficulties with organization, problems with initiative and potential vulnerability. Parents also expressed concern about lack of friends and romantic relationships. The young people themselves varied considerably with regard to their views on being autistic, but all had clear ambitions and appeared to have an age-appropriate desire for increased independence. There was agreement between parents and young people that "likeability", strengths and interests and a drive to reach goals all were key to promoting young people's outcomes.

Conclusions: While there are some additional challenges in transition to adult life for young people with autism, there are also perceived pathways to success.

DISSANAYAKE, C; RICHDAL, A; KOLIVAS, N & PAMMENT, L

An Exploratory Study of the Impact of Autism Traits on Parenting

1:45pm, Friday 9th December 2016, Wilsmore Lecture Theatre

Background: Despite a rich literature on parenting, there is a paucity of research examining the influence of autism traits on parenting. Our aim was to investigate the influence of autism traits on parenting style and competence to establish whether these traits influence the parenting of typically developing (TD) children. We also investigated whether autism traits contribute to the self-reported parent-child relationship and whether parenting needs differ between those with high and low traits.

Methods: 58 parents with either a child/ren or a first degree relative with autism and a TD child under 18 years completed the Autism Quotient (AQ), and questionnaires on Parenting Sense of Competence, the Parent-Child Relationship, Parenting Difficulties and Family Quality of Life.

Results: Regression analyses examined the unique contribution of autism traits to parenting and quality of life (QoL) variables, and parents with high (>26) and low (<20) AQ scores were compared to determine any differences in parenting difficulties/needs. Higher autism traits contributed to self-reported parenting difficulties with increased traits related to more difficulties and needs. Autism traits did not contribute to parenting competence, QoL or the parent-child relationship, with the exception that parents with high autism traits reported less involvement with their TD child.

Conclusion: The wealth of available parenting resources may not address the specific needs of parents on the autism spectrum. As autism traits impacted on parent-reported levels of involvement with their TD child, and levels of parenting difficulties, supports should be built around these aspects of parenting to assist parents on the autism spectrum prosper in their parenting role.

ENGLISH, M; MAYBERY, M & VISSER, T

Atypical Lateralization of Attention in Adults with Autistic-Like Traits

In the Symposium: **Cognition and the Broader Autism Spectrum**

2:30pm, Thursday 8th December 2016, Bayliss Building G.33

Background: Neurotypical individuals generally over-attend to the left side of visual stimuli (pseudoneglect). However, individuals with ASD attend less to the left side of centrally presented face stimuli compared to controls, indicative of relatively reduced right hemisphere (RH) activation in response to visual stimuli. We explored the extent to which attenuated levels of pseudoneglect is also present in neurotypical individuals with high levels of autistic-traits (AT).

Methods: Large numbers of Low and High AT individuals completed the landmark and greyscales tasks to observe pseudoneglect in physical representations of space, and the mental number line task to observe representational pseudoneglect. Non-invasive transcranial direct current stimulation (tDCS) of the right PPC via was also used to determine if pseudoneglect on the greyscales task can be modulated in High AT individuals.

Results: High AT individuals repeatedly showed significantly reduced levels of pseudoneglect relative to Low AT individuals. However, group differences were not present on the mental number line task. Anodal tDCS over the right PPC was also found to be effective at increasing pseudoneglect for High AT individuals on the greyscales task.

Conclusion: Our results complement previous findings, extending patterns of reduced attention to the left side of space by ASD individuals to High AT individuals and non-facial stimuli, furthering support for the notion of autism as a spectrum extending into the healthy population. However, this attentional pattern does not appear to extend to non-visually presented stimuli. Anodal tDCS may also be a useful tool in modulating atypical attentional behavior in ASD.

FERNANDEZ, S; MAYBERY, M & WHITEHOUSE, A

A Dual-Task Investigation of the "Thinking in Pictures" Account of Autism in Low and High Scorers on the Autism Spectrum Quotient

In the Symposium: **Cognition and the Broader Autism Spectrum**

1:30pm, Thursday 8th December 2016, Bayliss Building G.33

Background: Various studies employing dual-task methodologies have commonly shown that cognitive performance in autism is more adversely affected by the imposition of spatial tapping (which blocks visuo-spatial processing) than articulatory suppression (which blocks verbal processing), compared to their typically developed counterparts. These findings are consistent with the "Thinking in Pictures" hypothesis, where individuals on the autism spectrum are understood to exhibit a cognitive bias toward processing information visuo-spatially. We administered an auditory sentence verification task under dual-task interference to investigate the "Thinking in Pictures" hypothesis in non-clinical groups of undergraduates selected for high or low scores on the Autism-spectrum Quotient (AQ).

Method: Thirty-six high-AQ and 36 low-AQ young adults performed a sentence verification task containing three types of statements: verbal (requiring verbal semantic processing), visual (requiring visuo-spatial processing) and ambiguous verbal-visual statements (amenable to either verbal or visuo-spatial processing). All participants completed the sentence verification task under three conditions: baseline, with spatial tapping, and with articulatory suppression, to investigate the involvement of verbal and visuo-spatial processes in sentence comprehension, among the high- and low-AQ groups.

Results: High-AQ participants displayed higher visuospatial mental abilities, while those with low-AQ were quicker to complete verbal statements from the sentence verification task. However, both AQ groups demonstrated a similar pattern of performance decrement across the verbal, visual and ambiguous statements during spatial tapping and articulatory suppression.

Conclusions: No evidence was found to support a greater preference for visuo-spatial over verbal processing in individuals with high-AQ compared to those with low-AQ, even for the ambiguous verbal-visual statements. However, high-AQ individuals appear to be more capable in visuo-spatial processing and less capable in verbal processing compared to their low-AQ counterparts. Support for the "Thinking in Pictures" hypothesis was therefore limited.

FOLEY, K & TROLLOR, J

Mental health of adults with autism and intellectual disability: Australian parent reports and recommendations for management

2:30pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Adults with autism and intellectual disability (ID) experience high rates of mental ill health. There are considerable issues with identification of these conditions, including diagnostic overshadowing and limitations in communication skills. The aim of this study was to describe the rate of mental health conditions reported by parents/carers of people with autism and ID in Australia and identify the most recent recommendations for management.

Method: The Australian Longitudinal Study of Adults with Autism (ALSAA) collects informant report data on individuals with autism and intellectual disability living in Australia aged 25 years and older. Questionnaires were completed online or via paper copies by parents or carers. Parents/carers reported presence of mental ill health either current, or in the past for the person with autism and ID.

Results: Data were collected on 32 adults with autism and ID. We anticipate an increase in sample size by December 2016. Thirteen adults (40%) were reported as having depression currently or in the past, individuals were also reported as having (currently or in the past): anxiety (n=15,47%), panic disorder (n=2,6%), post-traumatic stress disorder (n=2,6%), obsessive compulsive disorder (n=8,25%), bipolar (n=2,6%), schizophrenia (n=2,6%) and ADHD (n=6,19%).

Conclusion: This study presents novel Australian data on presence of mental ill health in adults with autism and ID. These reported high rates of mental ill health have important implications for families and services working with this population. This presentation will explore current recommendations for management of mental ill health in adults with autism and ID.

FOLEY, K; ULJAREVIC, M; RICHDAL, A & TROLLOR, J

Autism symptoms are not associated with self-reported quality of life for adults on the autism spectrum in Australia

In the Symposium: **Mental Health and Well Being of Adolescents and Adults with Autism and their Parents**

9:15am, Friday 9th December 2016, Tattersall Lecture Theatre

Aims: Improving quality of life (QOL) for autistic people is a primary aim of many services, organisations and health professionals. The association between self-reported QOL and autism symptoms in Australian autistic and non-autistic adults is explored.

Method: Two Australian Longitudinal Studies of Adults and School Leavers with autism collect self-report data from autistic individuals aged 25+ and 15-25 years respectively. Questionnaires include the WHOQOL-BREF, Autism Quotient, Glasgow Sensory Questionnaire, Waisman Activities of Daily Living (ADL) Scale and demographic questions. To date regression analysis are conducted for adults with and without autism exploring relationships between QOL and autism symptoms adjusting for age, gender, functioning, sensory processing, employment status and having reliable friends. School Leavers data will also be included in our presentation.

Results: Non-autistic participants (n=111) reported significantly higher QOL across all subscales: psychological, physical, environment and social relationships. Regression analysis showed autism symptoms were not associated with QOL in any domain for those with autism (n=167). Better functioning in ADLs were associated with better QOL in psychological

(1.87, 95%CI 0.84, 2.89), physical (2.05, 95%CI 1.02, 3.07) and environment (1.26, 95%CI -1.99, 3.47) domains for those with autism. Having reliable friends was associated only with better QOL across every domain for those with autism.

Conclusion: This is the first national study exploring the relationship between QOL and autism symptoms for those with and without autism. Autism symptoms were not associated with any domain of QOL for the autistic adults. This supports valuing neurodiversity and investigating environmental factors which may be associated with poorer QOL for autistic adults.

GEORGE, R & STOKES, M

Sexual Orientation and Gender-Identity in High-Functioning Individuals with Autism Spectrum Disorder

4:00pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Clinical impressions indicate a sexual profile within the Autism Spectrum Disorder (ASD) population unlike that seen in the general population that is suggestive of a wide range of sexual orientations and an overrepresentation of gender-dysphoria. We therefore hypothesized that there would be an increased prevalence of non-heterosexual orientations and increased gender dysphoria.

Method: We surveyed sexual orientations with the Sell Scale of Sexual Orientation, and gender-dysphoria with the Gender Identity and Dysphoria Questionnaire in an international sample of individuals with ASD (N= 309, M=90, F= 219), aged (M=32.30 years, SD=11.93) and compared these rates to those of typically-developing individuals (N=261, M= 103, F= 158), aged (M=29.82 years, SD=11.85).

Results: When compared to controls, individuals with ASD reported increased sexual and gender-diversity. When compared to sex-matched controls, individuals with ASD demonstrated increased homosexuality, bisexuality and asexuality, but lesser heterosexuality. Furthermore, individuals with ASD reported a higher number of gender-dysphoric traits.

Relative to TD individuals, individuals with ASD prioritized the character of and compatibility with their romantic partner over their birth-sex, expressed an androgynous self-concept and reported dissatisfaction with culturally-dictated sex-roles.

Conclusions: Results suggested the limited ability to articulate an inner experience, nonchalance toward social norms, and a cognitive inflexibility inherent to ASD presented unique challenges to the formation and consolidation of gender and sexual identity. Sexuality and gender diversity in ASD might be outcomes of social rather than biological factors.

GLASSON, E; BEBBINGTON, K; HALLMAYER, J; COOPER, M; KLINKEN, J; TENDER, J; WHITEHOUSE, A & WRAY, J

The prevalence of Autism Spectrum Disorder in Western Australia

4:00pm, Thursday 8th December 2016, Bayliss Building G.33

Background: The prevalence of autism spectrum disorders is estimated to be at least 1% of the population in many developed countries. The calculation and comparison of prevalence rates is complicated by case ascertainment methods, varying age at diagnosis and period of data collection.

Methods: We report ASD prevalence rates for Western Australia (WA) using an ongoing register that has prospectively and continuously collected information on newly diagnosed cases since 1999. All cases born in WA between 1997-2010 who had been notified to the Register 1st January 1999 to 31st June 2015 were included (n=3,541). The number of cases registered per year of birth was compared to the number of children born in WA for those birth years.

Results: The birth year prevalence of autistic spectrum disorders ranged over the study period from 0.8% to 1.3% of the WA population but declined in more recent birth years due to the younger aged cohorts.

Conclusion: These data represent minimum estimates of ASD prevalence among children born in WA 1997-2010. Findings are comparable to

prevalence estimates published globally and are an Australian first using data from a long-term prospective register.

GRANICH, J; DASS, A; LIN, A; GIANG DO, L; LUZZI, L & WHITEHOUSE, A

Oral health and dental care among children with and without an autism spectrum disorders

4:30pm, Thursday 8th December 2016, Bayliss Building G.33

Background: Oral health is empirically linked with general health. But, little is known about oral health of children with ASD. This study aimed to better understand oral health of children with ASD compared to the general child population.

Methods: We report data from a survey of parents about their child with ASD oral health, dental needs and barriers. Data from parents of 5-14 year olds with ASD (n = 57) was compared with the 2012-14 Australian National Child Oral Health Survey (NCOHS) (n = 24, 664) on selected socio-demographics and dental health factors.

Results: Children with ASD had moderate-to-severe levels of oral (78.1%), taste (82.9%), light (72.3%) and sound (84.1%) sensitivities. The majority (67.7%) of parents of children with ASD had difficulties with children's oral care. Children with ASD were more likely to be older than NCOHS children at their first dental visit (p < .001). Children with ASD were more likely to visit the dentist for a dental problem or pain compared with NCOHS children (p < .001). Children with ASD had a higher rate of deciduous dental decay and permanent filled teeth compared with NCOHS children (p < .001).

Conclusion: This study highlights difficulties with oral care for children with ASD. Sensory sensitivities pose challenges to effective dental hygiene. Children with ASD have more dental decay compared with the general paediatric population. This study warrants the development of preventive strategies that can assist both, parents and children with ASD to overcome dental care problems and prevent dental disease.

HANCOCK, G; PECORA, L, BARISIC, L & STOKES, M

Factor structure underlying the Sexual Behaviour Scale - III

4:30pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: Socio-sexual functioning encompasses an individual's interests, behaviours, and understandings with respect to sexual, romantic, and social aspects of life. To better understand how ASD symptomology affects this, the Sexual Behaviour Scale (Stokes & Kaur, 2005) was significantly redeveloped; as informed by findings from recent systematic review and meta-analyses.

Method: The SBS-III, AQ, PWI, and demographic questions were completed online by 232 individuals with ASD and 227 individuals without ASD, with mean ages of 25 and 22 respectively. The SBS-III contains 236 items divided into 14 scales. Confirmatory factor analysis was undertaken to confirm the hypothesised single-factor models, within each scale. The non-ASD sample was used for factor determination, to allow for subsequent comparison between groups.

Results: Relative chi-square and fit statistics confirmed the single-factor models for seven of the scales, namely Socialising, Social insight, Puberty, Privacy, Sexual orientation, Sexual exchanges, and Sex education. Exploratory factor analysis subsequently identified the alternate multi-factor structures underlying the Sexual behaviour, Romantic relationships, Initial romantic interactions, and Relationship formulation scales.

Conclusions: The process of factor identification revealed that anxiety and worry is a prominent sub-factor within Initial interactions, that decision-making and sexual experience together form a primary sub-factor within Sexual behaviour, and that different characteristics are prioritised in a sexual relationship than in a friendship and romantic relationship. Having confirmed the factor structure of the SBS-III, comprehensive analysis of its reliability and functioning can be undertaken and differential use by ASD samples explored.

HATFIELD, M; FALKMER, M; FALKMER, T & CICCARELLI, M

Preparing adolescents with autism for leaving school: Efficacy of the BOOST-ATM online protocol

In the Symposium: **Coming of age: Transition to adulthood for people on the autism spectrum**

11:00am, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background and objectives: The transition out of high school is often difficult for students with autism; many do not transition successfully to post-secondary education or work. There is a need for an autism-specific protocol that assists adolescents to prepare for leaving school.

Methodology: The online Better Outcomes & Successful Transitions for Autism (BOOST-ATM) has been developed using the PRECEED-PROCEED model, with the self-determination model as the underlying framework. The BOOST-ATM guides adolescents with autism and their families to think about their strengths and interests, and to engage in activities that will prepare them for leaving school. A trial is currently underway with 100 participants in years 9 to 12 from across Australia enrolled in the study, half of which are using the BOOST-ATM

Results: Preliminary results about the efficacy of the BOOST-ATM will be presented, including its effectiveness in increasing the primary outcome of self-determination, and the secondary outcomes including career planning and exploration, quality of life and environmental support

Conclusions: The BOOST-ATM is one of the first online, autism-specific protocols that can be used in assisting adolescents with autism to prepare for leaving school.

HAYWARD, S; MCVILLY, K & STOKES, M

The challenges to workplace participation for Australian women and men with high autistic traits

1:30pm, Friday 9th December 2016, Tattersall Lecture Theatre

Background: Those with High Autistic Traits (HATs) such as those with Asperger's or high functioning autism report experiencing high levels of underemployment and unemployment. Given such challenges, there is a paucity of research regarding the barriers to workplace participation, especially for women.

Method: An anonymous online survey, focusing on people with HATs was conducted. Short answer questions were analysed using inductive thematic analysis to organise concepts into themes. The distribution of themes were analysed using Chi-square.

Results: One-hundred and three women aged 18-62 years took part; 70 women possessed HATs ($M=36.47$, $SD=10.29$), and 33 LATs ($M=38.49$, $SD=9.88$). Further, 53 men aged 20-68 years participated; 24 LATs aged 23-61 years ($M=39.17$, $SD=9.17$), and 29 HATs aged 20-68 years ($M=43.28$, $SD=12.13$). The barriers for women with HATs (vs women LATs) included difficulties with: working relationships ($\phi=.40$, $p<0.05$) - specifically socialisation ($\phi=.46$, $p<0.05$), communication ($\phi=.28$, $p<0.05$) - particularly verbal communication ($\phi=.20$, $p<0.05$), and impacts upon health and wellbeing including sensory issues, stress, and exhaustion ($\phi=.24$, $p<0.05$). The barriers for men with HATs (vs men LATs) included a lack of structure and dealing with change ($\phi=.42$, $p<0.05$). Comparing women and men with HATs, barriers included impacts upon health and wellbeing ($\phi=.23$, $p<0.05$), and the effect of socialisation ($\phi=.25$, $p<0.05$).

Conclusion: Workplace barriers for women with HATs coincide with the recognised defining characteristics of Autism Spectrum Disorder. When compared with their male colleagues, significant differences emerge. Thus indicating the need to develop gender-informed policy and support strategies to maximise opportunities for women with HATS.

HEDLEY, D; NEVILL, R; ULJAREVIC, M; BREWER, N; BUTTER, E & MULICK, J

Challenging diagnostic classification in research and practice: Where to next?

In the Symposium: **Improving the Early Detection of Autism Spectrum Disorder: Methods and Challenges**

4:30pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: Large paediatric hospitals in the USA can assess upwards of 2000 children a year for ASD or other intellectual and developmental disabilities. Efficiency in the assessment and diagnostic process is essential to reduce wait lists and to ensure children access appropriate services early.

Method: This research first examined the efficacy of ASD targeted screening and diagnostic instruments (ADEC, ADOS-2) and clinician confidence in predicting an ASD diagnosis in a clinical population < 3 years ($n = 125$) from a paediatric hospital in the USA.

Results: While sensitivity to an ASD diagnosis was good (.93-1.00), specificity was comparable but poor for all methods (.50-.64) resulting in over identification of non-spectrum cases. Next, cluster based analysis identified two groups of children, with group 1 characterized by lower verbal and non-verbal mental age and higher ASD severity, and group 2 characterized by significantly higher CBCL subscale scores.

Discussion: We suggest this reflects significant overlap of symptom presentation and within category heterogeneity and, therefore, recommend broad, multidisciplinary assessments leading to individualised intervention programs. We challenge the assumption that narrow, ASD focused assessment aimed purely at diagnostic classification is in the best interests of the child and pose the question: "How do we reconcile the perceived utility of diagnosis with both the heterogeneity and high symptom overlap between neurodevelopmental disorders, which challenges the assumptions underlying current classification systems"?

HEDLEY, D; DISSANAYAKE, D; RICHDAL, A; SPOOR, J; BARTRAM, T; MOSS, S; WILMOT, M & ULJAREVC, M

Long-term benefits of supported employment for adults with Autism Spectrum Disorder

In the Symposium: **Mental Health and Well Being of Adolescents and Adults with Autism and their Parents**

9:30am, Friday 9th December 2016, Tattersall Lecture Theatre

Background: Poor employment outcomes prevail in people with developmental disabilities. Vocational options vary considerably, yet research suggests supported employment programs may lead to better long-term outcomes. This longitudinal study reports on the outcomes of a supported employment program for adults with ASD.

Method: Participants were adults with ASD who were participating in a supported employment program, unsuccessful applicants, co-workers and family members. Participants were employed as part of the program worked in the IT sector. Quality of Life, Health and Well-being, and Job Satisfaction measures were collected at three time-points. Analyses included change over time on the questionnaires and between-group factors that might influence initial selection.

Results: No differences in autism symptomology or daily living skills were identified between selected and non-selected candidates. Longitudinal data did not indicate either significant improvements over time, nor were any negative impacts of the program identified, with most measures being overall stable over time for employed individuals. Adults in the program reported higher levels of job satisfaction than those engaged in other employment activities, and compared to co-workers. Support workers also reported a higher level of job satisfaction than co-workers.

Discussion: Results were mixed concerning QoL, health and well-being benefits of work for adults with ASD following engagement in a supported employment program, with no significant overall effects for program participation identified. However, adults with ASD reported high levels of

job satisfaction. The next steps will be to determine predictors of good versus poor outcomes at work, for individuals on the Autism Spectrum.

HOLLIER, L; DISSANAYAKE, C & BARBARO, J

Behavioural Markers of Autism Spectrum Disorders Identified in the Social Attention and Communication Study - Revised

In the Symposium: **Improving the Early Detection of Autism Spectrum Disorder: Methods and Challenges**

3:30pm, Thursday 8th December 2016, Wilmore Lecture Theatre

Background: Social Attention and Communication Surveillance (SACS) was designed to prospectively identify children developing Autism Spectrum Disorder (ASD) between 12-24 months of age. The tool has an 81% positive predictive value and an estimated 83.8% sensitivity, and 99.8% specificity. Subsequently, identification of the behavioural markers most predictive of an ASD diagnosis at 24 months led to revision of the SACS (SACS-R). The aim in this study is to compare the behavioural markers between children who did and did not receive an ASD diagnosis who were identified as 'at risk' by SACS-R.

Methods: The SACS-R was implemented by Maternal and Child Health (MCH) nurses across eight councils in Melbourne. A total of 222 children identified as 'at-risk' on the SACS-R were assessed at La Trobe University using the ADOS, ADI-R, and the Mullen Scales of Early Learning. The proportion of typical and atypical responses for each behavioural marker on the SACS-R will be compared between children with ASD (n=171) and without ASD (n=51; but who instead had a developmental/language delay) at 12-, 18-, and 24-months of age. A comparison will also be made to the key markers identified in the original SACS.

Results: Data are currently being analysed, and will be completed by December 2016.

Conclusion: The SACS is currently the most accurate and sensitive method for the early detection of ASD. The results from use of the SACS-

R will provide further evidence regarding the most accurate behavioural markers for the early detection of ASD.

HUDRY, K; MAYE, M; GREEN, J; KASARI, C; MANDELL, D & VIVANTI, G

Evaluating Autism Intervention: Where Are The Gaps and What Should We Do?

In the Symposium: **Innovating Autism Intervention Research**

1:30pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: This presentation will serve to introduce the line-up of speakers within the ASfAR Symposium “Innovating Autism Intervention Research”. In this talk, I will present a framework for intervention research from solid theoretical foundation work, through rigorous clinical trial methodology, to implementation science. I will outline the presentations given at the 2016 IMFAR SIG by Vivanti, Kasari, Green, and Mandell, and will summarise the ensuing discussion by way of setting the scene for the presentations that will follow from ASfAR researchers – representatives from different labs, bringing different perspectives, and working toward different ends in the Asia Pacific region.

Method: The International Society for Autism Research sponsored a 3-year Special Interest Group (SIG) on “Implementing and Evaluating Community-Based Early Intervention for ASD” convened by Hudry and Vivanti. At the 2015 meeting, chaired by Hudry and Vivanti, presentations from 10 international groups highlighted the various challenges inherent in conducting community-based intervention research. At the 2016 meeting, Hudry and Vivanti and Maye invited presentations from three experts – Kasari, Green and Mandell – who shared their views from very different perspectives of conducting autism intervention research.

Conclusion: It is clear that a paucity of rigorous clinical trials represents only one among several gaps present across all stages of the pathway from conceptualizing to implementing autism intervention. Internationally, progress is being made to improve the quality and diversity of autism intervention research, and this symposium will showcase work underway

locally that will build important knowledge and bring innovation to this rapidly growing field.

HWANG, J; FOLEY, K & TROLLOR, J

Ageing well on the autism spectrum in Australia - a qualitative study

2:15pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Recent demographic trends of population ageing have coincided with an emergent theory that posits that there is an attainable and desirable life as one gets older, termed: ‘ageing well’ (AW). A universally accepted conceptual framework of AW does not yet exist. Existing conceptualisations have excluded autistic adults and rely heavily on objective indicators of physiological health and functioning. There has been increased acknowledgement of the need to consider subjective perspectives in conceptualising AW. The aim of this study was to explore the definition and experience of AW for autistic adults from their perspectives.

Methods: Twenty-four semi-structured interviews were conducted with autistic adults and carers from across Australia. In response to the sensory and social-communication preferences of autistic adults, interviews were offered via email, telephone, Skype and face-to-face. Thematic analysis was undertaken to find common themes across participants’ responses.

Results: Eight themes were found to be important in AW: ‘myself’, ‘autism’, ‘others’, ‘being supported’, ‘lifestyle and living well’, ‘life environment’, ‘relating to others’ and ‘societal attitudes’.

Conclusion: AW for autistic adults appears to be a holistic concept encompassing the individual, their life, the world they live in and relational issues connecting these domains. Insights will be drawn to contribute to the development of a theoretical framework for AW and key considerations for service development and delivery will be discussed. This study highlights the important contribution autistic adults and their support people can make in conceptualising such theories, which ensures they reflect the real-life experiences of people with this condition.

IACONO, T; HUDRY, K; SPONG, J; DISSANAYAKE, C; TREMBATH, D & ERICKSON, S

Challenges for Translating Early Intervention Evidence into Practice in Autism Community Settings

2:00pm, Friday 9th December 2016, Wilsmore Lecture Theatre

Background: Translating evidence-based diagnostic and intervention practices for autism into community settings is especially challenging in low-resource settings, even those situated in high-income countries. Our aim was to explore the autism service delivery context within an Australian regional town (population 107,000) with a high level of disadvantage and the potential use of telehealth.

Methods: Five organisations, providing 15 services to children aged 0-6 years, participated. Mixed methods included interviews with service managers across the five organisations and eight clinicians from one service, and surveys of service providers (n=15) and families (n=19).

Results: Most services were funded through autism support packages.

Two provided diagnoses only and among the others, assessments for goal setting either were not provided or only on request for a fee. Most provided multi-disciplinary supports, but service providers tended to work as individuals. Referral pathways to diagnostic services often began with a GP and the mean age of diagnosis was 3 years. One diagnostic service used telehealth. Service providers described interventions in broad terms only, without evidence of knowing structured or evidence-based programmatic approaches. Most families received an hour a week of intervention per fortnight; many received less. Both service providers and families were open to telehealth, seeing it as a way to link with expertise, but few saw its potential value for service delivery.

Conclusions: Shifting service provision towards evidence-based practices requires fundamental changes to funding mechanisms. Telehealth offers the potential to provide expert support to service providers to enable them to deliver evidence-based interventions.

IACONO, T

The evidence for AAC Interventions for Children with Autism

1:15pm, Friday 9th December 2016, Wilsmore Lecture Theatre

Background: Augmentative and alternative communication (AAC) interventions are widely used with children with autism, but appear almost absent from interventions considered evidence-based in the autism field. The aim of the study was to synthesise research into the use of AAC in autism in order to determine its role within established, comprehensive, evidence-based behavioural autism interventions.

Methods: A systematic search was completed across OVID Medline and PsycINFO, and ERIC databases, supplemented by forward citation and hand searches to identify systematic reviews of AAC intervention efficacy research including children with autism, published between 2000 and March, 2016 in peer-reviewed journals. Data extraction included quality indicators of included studies, outcome effect sizes, and evidence for effectiveness.

Results: Seventeen systematic reviews met inclusion criteria. They showed that, overall, AAC can be effective to highly effective, but methodological problems rendered many included studies inconclusive in terms of intervention efficacy. Further, targeted outcomes tended to be narrowly focused on teaching children to make requests.

Conclusions: Despite increasing empirical evidence for the role of AAC in enhancing the communication skills of children with autism, there remains a need for studies with greater methodological rigour and outcomes that address wider functions, particularly those enhancing socio-communication. A comparison of evidence for AAC with other behavioural autism interventions must take into account the significant learning needs of children included in AAC studies. These children pose the greatest challenges to achieving large and consistent intervention effects, yet stand to gain the most from the inclusion of AAC into evidence-based interventions.

JOHANSSON, G; LINCOLN, M; BUNDY, A & COSTLEY, D

Online disability training and individual support for service providers in rural NSW

1:00pm, Friday 9th December 2016, Wilsmore Lecture Theatre

Background: Considerable barriers reduce access to disability support services in rural and remote areas of Australia. Researchers have indicated that this may be due to a short supply of allied health professionals in the region, which may be exacerbated by professional isolation, including lack of access to continuing professional development and support. Technology may provide low-cost and widely-accessible platforms for training and support for professionals, as well as for building general community capacity. However, the nature and extent of such support requires examination.

Methods: Participants included 60-80 health, education and community support staff working with children with autism and developmental disability. Participants were randomly assigned to one of two groups; webinars + 1:1 support or webinars alone. At 0, 6 and 12 months, we administered online surveys and structured interviews to measure participants' perceived confidence, skills and knowledge; levels of occupational stress; and beliefs regarding accessibility and acceptability of the technology platform. Two cohorts of participants were recruited and took part in the program (Cohort 1: 2015 - 2016, Cohort 2: 2016 - 2017).

Results: Preliminary results will be collated from Cohort 1 in October 2016 and presented at the ASfAR Conference in Dec 2016.

Conclusions: Findings will guide researchers in the development of an evidence-based model of support for rural and remote staff working with children with autism and developmental disability. The resultant model will contribute to equal access to quality training and support opportunities for all disability and community support workers across Australia.

KENNY, L; CRIBB, S & PELLICANO, E

Childhood theory of mind planning and cognitive flexibility predict later behavioural outcomes in autistic adolescents

2:15pm, Friday 9th December 2016, Tattersall Lecture Theatre

Background: Longitudinal studies of autistic people show that the behavioural features of autism generally endure into adulthood. It remains unclear, however, whether individual differences in early cognitive skills are longitudinally related to individual differences in specific aspects of the behavioural phenotype. Here, we test the predictive validity of childhood theory of mind (ToM) and executive function (EF) on adolescents' later behaviours in a cohort of autistic youth over a 12-year period.

Method: Twenty-eight young autistic people (2 female) took part in a prospective longitudinal study. Participants were assessed on a battery of tasks measuring components of EF (planning, set shifting, inhibition) and ToM (1st- and 2nd-order false belief) at Time 1 (M=5.6 years, SD=0.95 years) and completed a behavioural assessment at Time 2 (M=17.8 years, SD=1.19 years). We conducted a stepwise linear regression to test whether individual differences in childhood ToM and EF predicted variation in behavioural difficulties in adolescence over and above that explained by verbal IQ and age.

Results: Individual differences in childhood ToM uniquely predicted variance in adolescent autism symptomatology (as indexed by the Autism Diagnostic Observation Schedule) and individual differences in planning and cognitive flexibility uniquely predicted variance in daily living skills (as indexed by the Vineland Daily Living Skills scale).

Conclusions: These findings raise the possibility that early-emerging cognitive atypicalities could cause behavioural disruptions that persist into early adulthood, possibly even persisting beyond the cognitive atypicalities themselves.

KIRKOVSKI, M; ENTICOTT, P; SOU, C; YUCEL, M & FITZGERALD, P

A magnetic resonance spectroscopy investigation of gamma aminobutyric acid at the dorsolateral prefrontal cortex and temporoparietal junction in ASD

In the Symposium: **Biological markers for ASD**

11:15am, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Recent investigations have shown a relationship between gamma-aminobutyric acid (GABA) concentration and behavioural measures of autistic symptomatology. This study used magnetic resonance spectroscopy (MRS) to investigate GABA concentration between high functioning adults with autism spectrum disorder (ASD) and neurotypical (NT) controls, with a particular focus on brain areas involved in social processing. Considering the increasing literature investigating sex differences in neurobiological mechanisms underlying ASD, sex differences were also investigated.

Methods: GABA was measured from voxels placed at the right dorsolateral prefrontal cortex (rDLPFC) and right temporoparietal junctions (rTPJ), both regions have been heavily implicated in symptomatology of ASD, particularly social impairment. rDLPFC GABA concentration was obtained for 25 participants (9 ASD, 16 NT), and rTPJ GABA concentration was obtained for 26 (12 ASD, 14 NT) participants.

Results: There were no differences in GABA concentration at either of these sites between groups, nor when data were stratified by sex. There was however, a significant positive relationship between GABA concentration at the rTPJ and level of social impairment in females with ASD. This was not identified in the male sub-groups, nor in female controls.

Conclusion: This finding provides preliminary support for sex differences in neurochemical mechanisms underlying social cognition in ASD. Further investigation in this area is warranted.

LANE, A & SCHAAF, R

Autonomic correlates of sensory subtypes in autism

In the Symposium: **Biological markers for ASD**

11:30am, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: The inclusion of sensory difficulties in the diagnostic criteria for autism necessitates a more thorough understanding of their underlying mechanisms. The findings from literature describing the autonomic underpinnings of sensory difficulties in autism are variable. One explanation for this variability may be that behaviours associated with sensory difficulties have been only broadly categorised utilising caregiver reports (Schaaf & Lane, 2015). Recently, there have been several reports of subtypes of sensory difficulty in autism (Ausderau et al, 2014; Lane et al, 2014). The overall objective of this study was to explore whether sensory subtypes in autism had specific autonomic correlates.

Method: Fifty-nine children with autism (mean age = 7 yrs. 6 mos.) were included. Participants' sensory subtype was determined using Lane et al's algorithm based on the Short Sensory Profile (McIntosh et al, 1999) and then all were administered the Sensory Challenge protocol (McIntosh, et al; 1999). Non-invasive parasympathetic and sympathetic measures from the heart were collected at baseline and during the sensory challenges. Parasympathetic activity was measured via respiratory sinus arrhythmia (RSA) and sympathetic activity was measured via pre-ejection period (PEP).

Results: Participants classified as having high sensory reactivity displayed lower PEP (higher sympathetic activity) at baseline, across each sensory domain during the sensory challenge and during recovery when compared with participants with low sensory reactivity ($p=0.008$). There were no differences between high and low sensory reactive groups on RSA (parasympathetic activity), however.

Conclusion: Preliminary findings support the conclusion that autonomic function in autism varies by sensory subtype.

LANE, A; HAND, B & DENNIS, S

Latent constructs underlying sensory subtypes in autism: an independent components analysis

4:15pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Sensory features are atypical responses to daily sensory stimuli and are reported in up to 96% of children with Autism Spectrum Disorder (ASD; Schaaf & Lane, 2015). Recent reports identify distinct patterns of sensory features in children with ASD, named sensory subtypes, using parent report measures (Ausdereau et al, 2014; Lane et al, 2014). Lane et al. propose that two broad sensory dimensions: sensory reactivity and multisensory integration best explain the variation in sensory features across subtypes. The present study tests this hypothesis by examining the latent constructs of Lane's sensory subtype schema.

Methods: Participants for this study were the caregivers of children with ASD aged 2-12 years. Caregiver responses on the Short Sensory Profile (SSP), used to establish Lane's sensory subtypes, were extracted from two existing datasets (total n=287). Independent component analyses (ICA) were conducted to test our hypothesis of a two-component structure on SSP domain z-scores. Item-level data were further analyzed via ICA to determine which SSP items contributed most to the latent constructs.

Results: The first component was largely comprised of the taste/smell sensitivity domain as well as items 6 and 9, which describe hyper-reactivity to tactile input and tastes, respectively. The second component had a significant contribution from the low energy/weak domain with the largest contributions from items 28, 29, 31, and 33, which describe behaviors that may be indicative of difficulties with multisensory integration.

Conclusion: Findings provide initial support for our hypothesis that sensory reactivity and multisensory integration underlie sensory subtypes in ASD.

LIM, Y; MORRIS, S; LEE, H; FALKMER, T; ALLISON, G & TAN, T

Vision balance and autism: How do they all come together?

In the Symposium: **The eyes have it? Emotion recognition and visual perception in autism**

11:30am, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: Atypical postural control is a characteristic of the autism spectrum disorders (ASD). It has the potential to hinder a person's functional mobility and participation in sporting activities. Postural control is dependent on the integration of information from the vestibular, somatosensory and visual systems. Of all the sensory systems, vision has an important role in stabilising postures in typically developed individuals. However, it is not clear if vision has the same effect of influencing postural control in the ASD group as they are known to have atypical visual perception ability. The aim of this study was to investigate the effect of vision, presented in full field, in the peripheral and central visual field, on quiet standing postural control in adults with ASD.

Methods: Nineteen adults with ASD and thirty adults with typical development performed quiet standing with eyes open or closed on a force platform. Participants were tested for overall postural instability to different visual environments while fixating at the centre of the stimuli. Visual fixation was monitored with an eye-tracker. Sway velocity, sway area, and direction specific sway displacement of the centre-of-pressure were calculated from the force output.

Results: Significant group differences in postural responses between ASD and TD regardless of visual environments. No significant difference in postural response between eyes open and closed condition in adults with ASD.

Conclusion: Impairment in postural control is likely a cardinal feature of ASD. Vision does not have the same effect of influencing postural in ASD as with typically developed adults.

MAGIATI, I; LERH, J; HOLLOCKS, M; ULJAREVIC, M; RODGERS, J; MCCONACHIE, H; OZSIVADJIAN, A; SOUTH, M; VAN HECKE, A; HARDAN, A; LIBOVE, R; LEEKAM, S & SIMONOFF, E

The measurement properties of the Spence Children's Anxiety Scale- Parent version in a large international pooled sample of young people with Autism Spectrum Disorder

1:30pm, Friday 9th December 2016, Wilsmore Lecture Theatre

Anxiety-related difficulties are common in ASD, but measuring anxiety reliably and validly is challenging. Despite an increasing number of studies, there is no clear agreement on which existing anxiety measure is more psychometrically sound and what is the factor structure of anxiety in ASD. The present study examined the internal consistency, convergent, divergent and discriminant validity, as well as the factor structure of the Spence Children Anxiety Scale-Parent Version (SCAS-P), in a large international pooled sample of 870 caregivers of youth with ASD from 12 studies in the UK, USA and Singapore who completed the SCAS-P. Most were community recruited and had at least one measure of ASD symptomatology and either cognitive or adaptive functioning. Existing SCAS-P total scale and subscales had excellent internal consistency and good convergent, divergent and discriminant validity similar to or better than SCAS-P properties reported in typically developing children, except for the internal consistency of the physical injury subscale, which was poor. Confirmatory Factor Analysis (CFA) found a poor fit between this sample's and the existing SCAS-P six-correlated factor structure. Principal component analysis using half of the pooled sample identified a 30-item five correlated factor structure, but a CFA of this PCA-derived structure in the second half of this pooled sample revealed a poor fit. Nevertheless, the PCA-derived SCAS-P scale and subscales had stronger validity and better internal consistency than the original SCAS-P. The study's limitations, the use of the SCAS-P to screen for DSM-derived anxiety problems in ASD and future research directions are discussed.

MAGIATI, I; SIM, S; HONG, R; GOH, D; AGARWAL, P; RIFKIN-GRABOI, A; SAW, S; CHONG, Y-S; KWEK, K; MEANEY, M; BROEKMAN, B ON BEHALF OF THE GUSTO STUDY GROUP

Continuity, Change and Developmental Trajectories of caregiver-reported Autistic Traits using the Q-CHAT in Singaporean Toddlers

2:15pm, Friday 9th December 2016, Wilsmore Lecture Theatre

Background: Autistic Traits (ATs) are heritable and continuously distributed in the general population. Understanding their trajectories and relationship with other developmental variables may further our understanding of the early development of ASD symptomatology in both clinical and non-clinical populations. Yet few studies have examined ATs' continuity, change and trajectories in unselected samples over multiple time-points. The present study examined the early trajectories of ATs in Singaporean toddlers and whether children's cognitive functioning, gender, baseline AT severity, and ethnic group membership were associated with different AT trajectories.

Method: 229 Singaporean toddlers from a longitudinal cohort study (GUSTO – Growing Up in Singapore Towards healthy Outcomes) who had complete parent-report data on the Quantitative Checklist for Autism in Toddlers (Q-CHAT) at 18, 24 and 36 months participated. Other information was obtained through caregiver report and the Bayley Scales of Infant Development.

Results: Social/ communication ATs were generally stable, while significantly fewer behavioral ATs were reported over time. Using latent class growth modelling, four distinct trajectory classes were obtained for the behavioural AT domain, while social-communication AT symptoms were better represented by a single growth trajectory. 18-month AT severity was the only covariate to exert significant effects on change over time.

Discussion: Patterns of continuity and change of ATs in early childhood appear to be consistent with trajectories reported in clinical samples, especially regarding the general stability of social and reduction of

behavioral ATs over time. Strengths, limitations, future directions and possible implications of the present study are also discussed.

MANGAN, C; HAAR, T; GATFIELD, O; KINNIBURGH, A & RODGER, S

Autism CRC Research Priorities Survey: What are the priorities of the community?

12:00pm, Thursday 8th December 2016, Tattersall Lecture Theatre

The Research Priorities survey, is Australia's first national co-produced survey of the research and development priorities of the autistic and autism communities. The survey ran from June to September 2015 and was widely distributed through the Autism CRC network including university, service provider and industry partners as well as promotion via social media to the community. Based on the UK's largest survey by Autistica, our study enabled identification of research and development priorities that will optimise outcomes for people on the autism spectrum and those who support them.

158 respondents completed the survey including, 50 adults on the spectrum, 88 people living with autism, including parents, partners and carers, and 20 professionals. A total of 323 responses were coded using content and thematic analysis involving four researchers including two graduates from the Autism CRC Research Academy who are on the spectrum.

Co-presenting with one of the researchers on the autism spectrum, this presentation will provide a brief overview of the co-production process and summary of the findings including a comparison between stakeholders groups. Three emerging priorities aligned with Autistica's top ten research priorities: Therapies, issues and management related to anxiety and coping; Understanding autism, causes, diagnostic criteria and practices; and Educating children on the spectrum, teachers and schools. This study indicates the priorities of the autistic and autism community in late 2015 and enables an important discussion to ensue about the future and focus of autism research that truly transforms lives.

MAVROPOULOU, S

Is theory of mind related to mental state discourse during book reading and story-telling tasks in typically developing children and those with autism?

3:45pm, Thursday 8th December 2016, Bayliss Building G.33

Background: This presentation will report findings from two studies evaluating the spontaneous mental state discourse of children with typical development (TD) and children with autism spectrum conditions (ASC) in two interactional contexts. Relevant research in typical development and autism remains scarce.

Methods: In Study 1, 20 TD children (Mage= 8.4yrs) jointly read four stories with their mothers and also participated in a story-telling task with the researcher. In Study 2, 15 TD children (M age= 9.2 yrs) and 15 (M age = 10.4yrs) children with ASC, matched on verbal ability, maternal age and education, were compared on their mental state discourse during a story-reading task with their mothers and a story-telling activity with the researcher. In both studies, ToM was concurrently measured with a 6-step developmental ToM scale (Peterson, Wellman & Slaughter, 2012) and an additional test of false belief.

Results: In both studies, the analysis of discourse revealed significant correlations between mothers' elaborations about mental states and children's mental state talk as well as their ToM performance. Additionally, children's mental state talk outside the interactional context was found to be related with their ToM task performance.

Conclusion: The main research findings offer further evidence for the crucial scaffolding role of mothers in ToM acquisition and also underscore language as a significant pathway for exploring mental state understanding through the narratives of school-aged children with TD and those with ASC in different interactional contexts.

MAY, T; PANG, K; O'CONNELL, M & WILLIAMS, K

Puberty onset and sexual attraction in a nationally representative Australian sample of adolescents

3:45pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Past research suggests more variation in sexual attraction and puberty onset in individuals with Autism Spectrum Disorder (ASD) using clinical, community and online samples.

Method: This study utilised a population representative sample to explore sexual attraction and puberty timing in 14/15 year old adolescents with ASD relative to adolescents without ASD. Secondary analyses were undertaken using data from the Kindergarten (K) cohort from the Longitudinal Study of Australian Children (LSAC). Ninety-four adolescents (73 males, 21 females) with parent reported ASD and 3454 adolescents (1,685 males, 1,675 females) without ASD were included. Adolescents self-reported on sexual attraction. Timing of pubertal events included facial hair growth, growth spurt, breast development, body hair, and menstruation, and maternal puberty collected by parent report at ages 8-9, 10-11, 12-13, and self-report at 14-15, which were compared in those with and without ASD adjusting for demographic and child factors.

Results: Males with ASD reported lower rates of heterosexual attraction (adjusted odds ratio: 0.384, $p=.002$) compared to non-ASD males. Females with ASD also reported lower rates of heterosexual preference (adjusted odds ratio: 0.14, $p<.001$), higher rates of bisexuality (adjusted odds ratio: 6.05, $p<.001$) and uncertainty in whom they were attracted to (adjusted odds ratio: 10.44, $p<.001$) compared with non-ASD females. There were some indications of faster completion of androgen and estrogen driven puberty in females with ASD relative to non-ASD females.

Conclusions: Findings will be discussed in regard to the androgen theory of autism and the implications for clinical practice.

MAY, T; BRIGNELL, A; SCIBERRAS, E & WILLIAMS, K

The prevalence of parent-reported autism in Australia using a nationally representative sample

2:00pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: This study aimed to 1) provide an update on the prevalence of parent and teacher reported Autism Spectrum Disorder (ASD) diagnosis in two nationally representative Australian cohorts at ages 10-11 years; 2) examine differences in cohort demographic and clinical profiles, and (3) explore the possibility of diagnostic substitution using teacher report.

Method: Secondary analyses were undertaken using data from the Longitudinal Study of Australian Children (LSAC). Children were recruited at kindergarten age (K cohort; birth year 1999/2000) and birth (B cohort; birth year 2003/2004), with follow-up every two years for 6 waves. Parent and teacher reported ASD diagnosis was ascertained at three time points (waves 4-6).

Results: At age 10-11 years the adjusted prevalence of parent-reported ASD diagnosis was 3.9% (95% CI 3.2-4.5) and 2.4% (95% CI 1.6-2.9) in the B and K cohorts, respectively. Teacher reported prevalence of ASD was 1.7% (95% CI 1.2-2.1) in the B cohort and 0.9% (95% CI 0.56-1.14) in the K cohort. Parents reported fewer conduct and peer problems and teachers more pro-social behaviour in B relative to K cohort ASD children. Teachers reported more ASD in the B than K cohort ($p=.001$), and more emotional/behavioural disturbance in the K than B cohort (B 1.6%, K 2.3%, $p=.03$). There was no difference in the combined number with ASD and emotional/behavioural disturbance in the two cohorts (B 3.3%, K 3.2%, $p=.8$).

Conclusions: Diagnosis of children with milder emotional/behavioural problems and diagnostic substitution may contribute to the increased ASD prevalence in the B cohort.

MORRIS, S; PARKIN, T; LYNN, G; CICCARELLI, M & FALKMER, T

Time series analysis of fixation duration in children with ASD

In the Symposium: **The eyes have it? Emotion recognition and visual perception in autism**

11:45am, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: A pattern of visual attention and focus is thought to reflect optimised information processing. Children with Asperger syndrome/high functioning autism (AS/HFA) demonstrate an unusual pattern of spatial allocation of visual attention when watching a purposeful task. The pattern of fixations over time potentially provides further information about the uptake of visual information in children with (AS/HFA). This study compared the dynamics of the fixation duration time series for children with and without (AS/HFA) for a previously reported magic tricks study.

Methods: Children (8-10 years of age) with AS/HFA (21[17 males]) and 31 typically developing (TD) children (24 males) watched a video of a magician performing a gaze-cued magic trick on a flat screen TV. Eye movements were recorded using a head-mounted eye-tracker (Arrington ViewPoint™). For each participant the sample entropy (complexity) and autocorrelation (correlation of a signal with itself) of the fixation duration time series were calculated (using R) and groups compared using independent t-tests assuming unequal variance with $\alpha < 0.05$.

Results: The time series of fixation durations of children with AS/HFA demonstrated higher sample entropy ($p < 0.001$; Cohens $d = -1.1$); lower autocorrelation ($p < 0.001$, Cohen's $d = 1.1$) and less nonlinearity ($p = 0.008$; Cohen's $d = 0.717$) compared with TD children.

Conclusion: Children with AS/HFA demonstrated a less complex time series of fixation durations more similar to noise compared with TD children. This finding indicates that not only were the children with AS/HFA looking at different areas of interest, they were also not demonstrating a pattern of fixations in time consistent with optimal foveal visual information processing.

PALERMO, R; MCKONE, E; DAVIS, J; SKUK, V; ZIRNSAK, M; MOORE, T; O'KEARNEY, R; APHORP, D; BROEMER, L & SCHWEINBERGER, S

Subclusters of Autistic Traits: Links with Looking at the Eyes and Face and Voice Identity Recognition Ability

In the Symposium: **Cognition and the Broader Autism Spectrum**

2:45pm, Thursday 8th December 2016, Bayliss Building G.33

Background: Autistic traits, as measured with the Autism Quotient (AQ) (Baron-Cohen et al., 2001) vary across the general population, and can be split into two subclusters - social aspects (related to communication and social interaction; AQ-Social) and non-social aspects (particularly, attention-to-detail; AQ-Attention). These subclusters of autistic traits may have opposite-effects on the amount of looking at the eyes of faces, which may differentially affect face recognition ability. The subclusters may also be differentially related to ability to recognise voice identity.

Method: We used an eye-tracking paradigm to measure looking time to the eyes of faces, and used regression and mediation to link these with AQ subclusters and face recognition ability. In another study, we linked AQ subclusters with the ability to discriminate and identify familiar and unfamiliar voices.

Results: The social and non-social aspects were differentially associated with looking at eyes of faces: AQ-Social was linked with a tendency to reduced looking at eyes, whereas AQ-Attention was associated with increased looking at eyes. Moreover, higher AQ-Attention was then indirectly related to improved face recognition, mediated by increased number of fixations to the eyes during face learning. In contrast, higher levels of AQ-Social were related with poorer recognition of faces, and also poorer recognition of familiar voices.

Conclusion: These studies highlight the value of distinguishing between different sub clusters of traits when attempting to understand the complex links between autistic traits and person perception in the general population, and suggest that clinical studies might similarly benefit from considering symptom sub-clusters.

PECORA, L, HANCOCK, G, MESIBOV, G. & STOKES, M

A Meta-analysis of sex-differences in sexual behaviour within High Functioning Autism Spectrum Disorder

3:30pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Research examining sexuality within High-Functioning Autism Spectrum Disorder (HFASD) has yet to consider the differences in sexual and romantic functioning due to biological sex.

Methods: A systematic database search was carried out to identify 27 observational and cross-sectional publications meeting predetermined inclusion criteria. A total 27 articles were evaluated, and 9 eligible were included. Standardised mean differences were evaluated to develop a random-effects meta-analysis of pooled data.

Results: Females with HFASD exhibited higher levels of sexual knowledge ($d=0.22$; $p<0.001$); higher sexual anxiety ($d=0.78$, $p<0.005$); and more sexual problems ($d=0.71$, $p<0.001$). Qualitatively females with HFASD were also subject to more adverse sexual experiences than males with HFASD and their neurotypical counterparts. Males reported greater desire for ($d=1.29$; $p<0.001$), and engagement (includes masturbation, $d=1.45$; $p<0.001$) in both solitary and dyadic sexual contact.

Conclusion: Findings suggest females with HFASD think more about and experience more problems and harassment than males with HFASD and neurotypical counterparts. On the other hand, males with HFASD, seek and engage in more sexual behaviour either with others or themselves than do females with HFASD.

RICHDALE, A; ULJAREVIC, M; FOLEY, K & TROLLOR, J

Does Intolerance of Uncertainty contribute to Insomnia Symptoms in Adults on the Autism Spectrum?

In the Symposium: **Mental Health and Well Being of Adolescents and Adults with Autism and their Parents**

9:45am, Friday 9th December 2016, Tattersall Lecture Theatre

Aim: Insomnia is a common comorbid condition in autism. Anxiety, depression, and sensory sensitivity (SS) are associated with insomnia, while recent research indicates that intolerance of uncertainty (IU) mediates the relationship between SS and anxiety. We examined whether IU also contributes to insomnia.

Method: Two Australian longitudinal studies of adults with autism (school leavers and older adults) are ongoing within the Autism-CRC. To date, we have analysed data for 52 individuals 15-24 years ($M = 18.4$ yrs), 66.7% with autism, who have completed the autism quotient-short form (AQ-28), sleep (PSQI), depression (PHQ-9), anxiety (DSM-5-Cross Dimensional), SS (RBQ-2A), and IU questionnaires. Sleep problem ($n=29$) and No-Sleep problem ($n=23$) groups did not vary on age, sex, diagnosis or AQ-28 ($p: .17 - 1.00$): Relationships with sleep were examined using Pearson correlation and the sleep groups were compared on psychopathology, SS and IU using MANCOVA (covariate: AQ-28). For our presentation we will also be including an older adult cohort (25+ yrs).

Results: Sleep was associated with AQ-28, anxiety, PHQ-9, SS and IU ($p: <.001 - .009$). AQ-28 was a significant covariate ($p < .001$) and was related to all variables ($p: <.001 - .03$). After adjusting for autism symptoms the sleep groups differed on PHQ-9 ($p = .002$) and IU ($p = .013$) with strong effect sizes.

Conclusion: IU and depression contribute to insomnia in young adults with and without autism while anxiety and SS overlap with IU. This has implications for targeting interventions for insomnia in individuals with autism which will be discussed.

RODGER, S

Ten Tips in Twelve Minutes: Making peer research work

12:15pm, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Autism CRC aims to undertake research in a way that is inclusive and focuses on partnership with those on the spectrum and or their parents/carers. In so doing, there is much to learn about working together. If we are to be truly inclusive, there are a range of actions that can make this process more authentic and engender enduring relationships.

Method: We will share ten tips that we have found useful in making peer research work. Drawing from our experiences with the Research Academy Workshop in 2015, our Inclusive Research Practice Guides and Checklists (autismcrc.com.au) and the authors' own experience, we will provide ten tips to assist peer research.

Findings: An evaluation of the Workshop attended by 14 autistic adults and 14 researchers revealed ratings of good to excellent on all aspects of merit and quality of sessions over the five days, content of sessions, and autistic participants were likely to engage in peer research post workshop (80%), give input to researchers (90%) and 100% felt competent to provide an opinion on research techniques and become advisory group members.

Our tips are:

1) Being prepared 2) Engaging Early 3). Having Clear Expectations 4) Planning Together 5) Member Checking 6) Iterative processes 7) Having a Plan B 8) Debriefing 9) Considering the environment 10) Disseminating findings

Conclusion: These ten tips will assist you to develop more inclusive research work practices.

ROSE, V; TREMBATH, D; PAYNTER, J & KEEN, D

Word Learning and Expressive Language in children with ASD

9:45am, Friday 9th December 2016, Wilsmore Lecture Theatre

Background: There is evidence to suggest that children with ASD have difficulty understanding the symbolic (picture-referent) nature of pictures, which may in turn imply difficulties understanding the symbolic nature of spoken language. This study investigated whether preschool children with ASD, (a) demonstrate word-picture associations, (b) generalise novel word learning to objects depicting the target word, and (c) extends previous research by investigating the relationship between these skills and spoken performance on standardised language measures.

Methods: 23 children with ASD were assessed using an established word learning measure in which children are taught associations between words, pictures, and object referents. Children's expressive language was assessed via direct child assessment (MSEL) and parent report (MB:CDI).

Results: 17.39% of children formed an association only between the novel word and picture and 65.22% successfully mapped the novel word to an object. Using a Mann-Whitney test to compare groups, we found a medium effect ($d = 0.45$) of word learning on spoken language using direct assessment (MSEL), and a large effect ($d = 0.61$) using parent report (MB:CDI).

Conclusion: Contrary to previous investigations, the majority of children in our study were able to map the novel word to an object not shown during initial teaching. Children who showed symbolic understanding on word learning tasks also had higher levels of expressive language as assessed via direct assessment and parent report. Future research with larger samples is needed to test whether this association reaches statistical significance.

SIDJAJA, F

Diagnosing Autism Spectrum Disorder in Developing Countries: The Validation of Autism Detection in Early Childhood-Indonesian Version (ADEC-IND)

In the Symposium: **Improving the Early Detection of Autism Spectrum Disorder: Methods and Challenges**

4:15pm, Thursday 8th December 2016, Wilshire Lecture Theatre

A central component in the diagnosis of autism is having validated tools and this is an urgent need encountered by health practitioners in developing countries. The current study aimed to evaluate whether the Indonesian version of Autism Detection in Early Childhood (ADEC-IND) was valid and reliable in distinguishing between children with Autism Spectrum Disorder (ASD), and those who do not have ASD within a sample of Indonesian children. A total of 82 children aged 14 to 72 months (M=45.23 months, SD=14.51) with a range of diagnoses were assessed using the ADEC-IND. The ADEC-IND showed good sensitivity (.92 to .96) and good specificity (.85 to .92) in the current sample. Inter-rater reliability was high at $r = .94$, $p < .001$ and concurrent validity, using the Cohen's kappa agreement between the ADEC-IND and the Autism Diagnostic Interview-Revised (ADI-R) diagnoses, was moderate at .64. The ADEC-IND is recommended as a potential tool to assist in diagnosing ASD in Indonesia. Cultural issues and challenges in validating the ADEC-IND are discussed and suggestions for further research are highlighted.

SIMPSON, K & KEEN, D

Children on the autism spectrum with severe language delay: Variability in learning responses

3:30pm, Thursday 8th December 2016, Bayliss Building G.33

Background: A number of interventions have been identified as efficacious in promoting learning outcomes for children on the autism spectrum with severe language delay. There remains, however, a group of children with autism who demonstrate variable or little learning using these practices. To date, limited research has focused on this group of children.

Methods: Twenty-two children (mean age 5.9yrs) on the autism spectrum with severe language delay participated in a computer based intervention designed to teach receptive labelling skills. The intervention was presented in both song and spoken conditions.

Results: Examination of correct responses based on high, mid, and low responders identified children's responses were differing and highly individual. In particular children in the mid responder group demonstrated fluctuating correct responses and followed different learning trajectory patterns across the sessions. Furthermore, correct responses were not reliable predictors of generalisation and maintenance of learning.

Conclusion: Overall condition (song/spoken) had little impact on performance suggesting other factors impacted on individual responsiveness to the intervention. Findings from this study will be discussed in terms of the individual's differing responses to interventions and how this impacts on developing and evaluating effective intervention practices for this group of children.

SOUTH, E; HEPPELL, S; GRAFTON, B; MACLEOD, C & MAYBERY, M

Anxiety-Linked Attentional Bias to Threat in the Broader Autism Phenotype

In the Symposium: **Cognition and the Broader Autism Spectrum**

2:15pm, Thursday 8th December 2016, Bayliss Building G.33

Background: Autism is associated with elevated anxiety. Current cognitive models of anxiety emphasise the role of attentional biases towards threatening stimuli in the aetiology and maintenance of anxiety vulnerability. However, studies investigating anxiety problems in children with Autism Spectrum Disorder (ASD) have failed to demonstrate a significant anxiety-linked attentional bias to threat in this population, compared to low-anxious non-ASD controls.

Methods: The current study investigated attentional bias to threat, using a modified version of the dot-probe task, in samples of adults selected for extreme scores on autistic-like traits and trait anxiety. Additionally the current study expanded on previous studies by testing samples both high

in autistic-like traits and low in trait anxiety, and low in autistic-like traits and high in trait anxiety.

Results: Results of the current study suggest that individuals high in trait anxiety and high in autistic-like traits do not show a significant attentional bias to threat compared to controls scoring low on these two dimensions.

Conclusions: The findings replicate previous studies in ASD children. However, results from the additional samples examined in this study indicate a more complex relationship between autistic traits, anxiety vulnerability and attention to threat.

SU, S; GILMORE, L & PAYNTER, J

Chinese parents' understanding of Autism Spectrum Disorder

9:15am, Friday 9th December 2016, Wilsmore Lecture Theatre

This study investigated family perceptions of Autism spectrum disorder (ASD) in China. A survey with open-ended questions assessing knowledge of ASD and its causes was distributed via eight autism organisations across five different cities in Southern China. Results were analysed from a total of 104 Chinese caregivers who reported on their children or grandchildren with an ASD diagnosis. Overall, the results suggested that a large proportion of these families had not yet established a good understanding of ASD. A number of misconceptions were also evident in the sample. Without easy access to reliable resources and professional services in China, parents demonstrated lower levels of knowledge about ASD and a tendency to blame themselves for the condition, which might have been further exacerbated by cultural expectation of the parental role. The implications of these findings in addressing misconceptions are discussed.

SULEK, R; TREMBATH, D; PAYNTER, J & KEEN, D

Knowledge and use of Empirically-Supported Treatments in Australian Primary Teachers

9:30am, Friday 9th December 2016, Wilsmore Lecture Theatre

Background: Autism Spectrum Disorder (ASD) is a high incidence, developmental disorder. With legislation that exists to ensure the inclusion of children with ASD in mainstream school environments, there are increasing demands on teachers to provide appropriate support for these children. However, there is little available evidence regarding the extent of teacher knowledge and use of evidence based practices (EBPs) suitable for supporting children with ASD as they enter their first year of formal schooling. Thus the aim of our research was to explore levels of knowledge and use of intervention practices, along with teacher perceptions of social validity of interventions, their links with demographics, and sources of information used to inform practice.

Method: A questionnaire conducted with Australian teachers of the first year of formal schooling will be discussed. Over 150 responses were collected from teachers across Australia, from a range of school settings. Participants completed measures of knowledge, use and social validity of ASD intervention strategies, sources of information, behaviour rankings and demographics.

Results: Participants reported using all strategies sometimes, with higher reported use of EBPs compared to practices with insufficient evidence. Knowledge and perceived social validity of EBPs were significantly linked to use of interventions. Links between use of EBPs and demographic variables will also be discussed.

Conclusion: These results provide interesting insight into the current state of Australian teachers working with children with ASD in mainstream classrooms and highlight the need for continued education and training to assist teachers in implementing EBPs in a classroom environment.

TAN, D; GILANI, S; MAYBERY, M; MIAN, A; HUNT, A; WALTERS, M & WHITEHOUSE, A

Masculinised facial morphology in prepubescent boys with autism spectrum disorder

In the Symposium: **Biological markers for ASD**

10:45am, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Increased levels of prenatal testosterone have been found to be associated with both Autism Spectrum Disorder (ASD) and facial masculinity. The current study investigated whether boys with ASD may also present increased masculinity in facial morphology compared to typically-developing boys using the state-of-the-art 3D photogrammetry.

Methods: There were two phases in this study. In the first phase, we identified a set of three linear and eight geodesic distances on 3D facial images which best distinguished 48 age-matched control boys and 53 girls, aged between 3.01 and 12.44 years, with an average accuracy of 98.1%. We also generated a continuous 'gender score' for each face which indicates the degree of facial masculinity or femininity. In the second phase, we mapped these 11 distances on the faces of 54 boys with ASD and 54 age-matched control boys aged between 3.01 and 12.52 years, and compared the gender scores between the groups.

Results: The ASD group presented increased facial masculinity compared to the control group. Further analyses revealed that increased facial masculinity in the ASD group was related to higher Total scores on the Autism Diagnostic Observation Scale-Generic (ADOS-G), as well as the higher derived scores for the Social Affect domain. There was no statistically significant association between facial masculinity and the derived scale of Restricted and Repetitive Behaviour

Conclusion: The findings from the current study provided evidence for facial masculinisation in ASD, and a relationship between facial masculinisation and behavioural phenotype, especially social-communication deficits.

THOMPSON, C; BÖLTE, S; FALKMER, T & GIRDLER, S

Transition to adult life for young on the Autism spectrum: A parents' perspective

In the Symposium: **Coming of age: Transition to adulthood for people on the autism spectrum**

10:45am, Thursday 8th December 2016, Wilsmore Lecture Theatre

Transitioning to adulthood can be an exciting albeit challenging time particularly for those on the Autism spectrum. These young people are underrepresented in employment, further education and independent living. This study aimed to explore the views of parents of young people on the Autism spectrum on the enablers of the transition to adulthood for this group. Four structured focus groups with 19 parents regarding 23 young adults revealed 132 condensed meaning units. Secondary analysis linked condensed meaning units to the International Classification of Functioning, Disability and Health (ICF). In-vivo analysis identified the themes as to be understood, to understand the world and to succeed. The theme of to be understood recognised the social marginalisation of young people on the Autism spectrum due to their core symptoms. To understand the world pointed to the parents' recognition that young adults on the Autism spectrum often have difficulties with social communication. The study highlighted that young adults on the Autism spectrum needed to be able to succeed in adult life. Secondary analysis revealed that the majority of the condensed meaning units linked to the Environment and Participation components of the ICF. Findings from this study suggest that individualised and strength-based approaches could be utilised to maximise participation in employment, future education and independent living. This study also serves to further demonstrate the utility of the ICF in research regarding people on the Autism spectrum.

TREMBATH, D

Intervention Theory: Avoiding Assumptions about why Things should Work

In the Symposium: **Innovating Autism Intervention Research**

1:45pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: A key step in establishing the evidence for a new, or existing, intervention is to identify the reasons for 'why it should work.' This process of linking individual child and environmental factors with hypothesised mechanisms of intervention action helps to ensure that interventions are theoretically sound and likely to have positive and intended consequences. In contrast, failing to establish the reasons for why an intervention should work, including relying on longstanding untested assumptions, has the potential to expose children to ill-conceived, ineffective, and even harmful interventions. In this paper, I will illustrate these issues with reference to the findings of a published study that call into question a commonly expressed assumption, that 'children with ASD are visual learners.'

Method: In the study, 25 children with ASD, 19 children with GDD, and 17 TD children were presented a series of videos via an eye-tracker in which an actor instructed them to manipulate objects in speech-only and speech+pictures conditions. We measured the children's visual attention to the stimuli and their task performance.

Results: We found no group differences in children's visual attention to the actor's face or pictures during the videos. Children with a GDD and TD children demonstrated better task performance during the speech+pictures condition, whereas the children with ASD did not.

Conclusion: The findings demonstrate the need for clear identification, followed by rigorous evaluation, of the reasons for 'why' interventions 'should work' as a foundation for improving intervention science and clinical outcomes for children with autism.

TRIMMER, E; McDONALD, S; KELLY, M & RUSHBY, J

Enduring effects of Ostracism in ASD: A physiological approach

1:00pm, Friday 9th December 2016, Tattersall Lecture Theatre

Background: Ostracism is commonly experienced by most people in their lifetime. This is even greater for individuals with Autism Spectrum Disorder (ASD). These individuals experience difficulties making and maintaining friendships, and along with social communication difficulties, lead to feelings of isolation and social exclusion. Little research has examined the perceptions and emotional experience of individuals with ASD when they are ostracized. This study explores the emotional and physiological responses to ostracism in adults with ASD.

Methods: Twenty-five individuals aged 16+ (20m; mean age 27 years) with a diagnosis of ASD, and twenty-six matched controls (21m, mean age 26), participated in an online ball tossing game, Cyberball. Each participant played two games against fictional players: in one game they were excluded and the other they were included equally. Whilst playing, participants' arousal was monitored. Participants also completed a self-report questionnaire about their experiences and mood after both games.

Results: Compared to controls, individuals with ASD showed increased arousal when they were excluded and included. Furthermore, individuals with ASD, but not controls, demonstrated higher levels of arousal when excluded compared to included and did not demonstrate habituation of arousal over the course of the game, whereas controls did. Individuals with ASD self-reported similar patterns of responses to controls regarding social needs but reported reduced mood.

Conclusion: Our findings suggest that, when excluded, individuals with ASD exhibited greater emotional response to exclusion compared to controls. This would suggest they are more sensitive to ostracism and this do not habituate as quickly as controls.

ULJAREVIC, M; CAI, R & RICHDAL, A

Sources of Individual Variability in Well-Being of Parents of Adolescents and Young Adults on the Autism Spectrum

In the Symposium: **Mental Health and Well Being of Adolescents and Adults with Autism and their Parents**

10:00am, Friday 9th December 2016, Tattersall Lecture Theatre

Background: Parents of individuals on the autism spectrum have been found to have higher prevalence of affective disorders, in particular depression, and lower self-reported positive well-being. However, the patterns of individual and environmental differences that might be associated with positive and negative aspects of well-being are currently not well understood. Identifying such factors is a crucial first step in informing programs that would provide support for parents. Our aim was to investigate the contribution of individual parental characteristics (Broader Autism Phenotype [BAP] traits, mindfulness and intolerance of uncertainty [IU]), and levels of social support in predicting positive and negative aspects of well-being in parents of children with autism.

Methods: Seventy two parents of school leavers on the autism spectrum completed questionnaires assessing depression (PHQ-9), positive well-being (WEWBS), BAP (AQ), mindfulness (MAAS), social support (SSQ-6), and IU (IU-12) as a part of an ongoing longitudinal study.

Results: Hierarchical regression was used to examine the predictors of PHQ-9 and WEWBS. The final model accounted for 48.6% of variance for PHQ-9 with IU-12 ($p < .001$), MAAS ($p = .002$) and SSQ-6 ($p = .013$) being unique independent predictors and 51.1% for WEWBS with IU-12 ($p < .001$), and SSQ-6 ($p < .001$) as independent predictors.

Discussion: Increased levels of IU and lower availability of social support significantly predicted both depression and positive well-being, with lower levels of mindfulness being additional predictor of depression symptoms in parents of school leavers with autism. These findings have potential to inform the development of support programs for parents.

UPSON, S; VIVANTI, G; CAPES, K; DUNCAN, E; FEARY, J; PYE, K; RODSET, D; DISSANAYAKE, C; HUDRY, K & THE VICTORIAN ASELCC TEAM

Early Start Denver Model (ESDM) delivered within a universal early childhood setting: A feasibility study with random assignment

In the Symposium: **Innovating Autism Intervention Research**

2:00pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: While international guidelines highlight the value of children with disabilities engaging with typically-developing peers (United Nations, 2006), little rigorous research considers the impact of intervention delivered within inclusive vs. autism-specific settings. Efficacy of the manualised Early Start Denver Model (ESDM) has been shown for individual and small-group (autism-specific) delivery. With National Disability Insurance Agency support, we recently evaluated the preliminary efficacy of ESDM delivered within socially inclusive settings.

Method: We tracked the progress of 16 young children, aged under 36-months, attending the Victorian ASELCC for 3 days per week across 2015. We sought to randomise children to receive their ESDM within autism-specific playrooms or socially inclusive playrooms. Children were formally assessed at intake and exit and naturalistic behaviour samples were filmed in the playrooms across the year.

Results: All parents of eligible children consented to randomisation and there was no attrition across the calendar year. All staff received ESDM training and daily support from ESDM-certified professionals. Across the year, children made significant gains in their developmental level, adaptive skills and intentional communication behaviours, with no substantive differences apparent as a function of the setting in which their ESDM was delivered.

Conclusion: These preliminary data suggest the non-inferiority of ESDM delivered within socially-inclusive settings by paraprofessionals. With Department of Social Services (DSS) support, we are continuing data collection through 2018 to determine the efficacy and potential cost-effectiveness of this socially-inclusive model. Conducting innovative,

rigorous community-based research is challenging but achievable through strong, transdisciplinary partnerships.

VARCIN, K; LEVIN, A; O'LEARY, H; TAGER-FLUSBERG, H & NELSON, N

Frontal EEG Power is Associated with Risk for Autism Spectrum Disorder

In the Symposium: **Biological markers for ASD**

10:30am, Thursday 8th December 2016, Tattersall Lecture Theatre

Background: Increasing evidence suggests that in infants at familial risk for autism spectrum disorder (ASD), alterations in brain development precede the manifestation of overt, behavioral signs of the disorder.

Electroencephalographic (EEG) studies have found differences in neural development in infants at high- versus low-familial risk for ASD as early as 6 months of age. Here we aimed to extend this work to determine whether differences in EEG power are present by 3 months in infants at high-risk for ASD, and elucidate the functional significance of EEG power at 3 months in predicting later developmental outcomes.

Methods: EEG data were acquired at 3 months in infant siblings of children with ASD (high risk; n = 29) and infant siblings of typically developing children (low-risk; n = 19) as part of a prospective, longitudinal investigation. Developmental outcomes were assessed using the Mullen Scales of Early Learning and ASD outcome determined using the Autism Diagnostic Observation Schedule.

Results: Infants at high-risk for ASD had significantly lower frontal power at 3-months compared to infants at low-risk for ASD. Lower frontal EEG power in the high alpha band at 3 months of age was associated with poorer expressive language at 12 months.

Conclusion: Lower frontal EEG power at 3 months may indicate increased risk for poor expressive language skills. This finding is consistent with prior studies suggesting reduced power is a marker for atypical brain function, and infants at familial risk for ASD are also at increased risk for altered developmental functioning in non-ASD-specific domains.

WESTERVELD, M & TREMBATH, D

The Story Retelling and Comprehension Skills of Preschoolers with Autism

10:00am, Friday 9th December 2016, Wilsmore Lecture Theatre

Background. Story retelling proficiency during the preschool years is a well-known predictor of reading comprehension in children with typical development. The current study is the first study to investigate the story retelling and comprehension skills of preschool-age children with autism. A more precise understanding of the strengths and weaknesses in story retelling skills in children with autism, who as a group are known to be vulnerable to reading comprehension difficulties, will help guide early intervention services.

Methods. 57 preschool-age children with autism, who were able to speak in short sentences, participated in a story retell and comprehension task. Children listened to the story twice. Following the first exposure, children were asked eight questions to test their story comprehension. After the second exposure, children were asked to retell the story without the use of the pictures. The stories were transcribed and scored for story quality. Children's spoken language performance was also measured on the communication domain of the Vineland Adaptive Behavior Scales, Second Edition – Parent Survey and on the Peabody Picture Vocabulary Test – Fourth Edition.

Results. Although the mean performance of the group of children was in the low average range on standardised language tasks, only 1 in 6 children was able to adequately retell or comprehend an oral narrative.

Conclusions. Results from this study revealed that preschoolers with autism demonstrate significant difficulties understanding and/or retelling a fictional story. These results indicate that assessment of oral language proficiency in preschool children with autism should not rely solely on standardised language tests.

WHITEHOUSE, A; HUDRY, K; GREEN, J; WRAY, J & THE AICES TEAM

Intervention for infants showing social and communication delay: The AICES trial

In the Symposium: **Innovating Autism Intervention Research**

2:30pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: Social and communication therapies during early childhood are critical for promoting favourable longer-term outcomes in ASD. However, until very recently we have not had interventions tailored towards infants (≤ 14 months of age) who are at increased risk for ASD. The AICES project is the first Australian trial of an intervention specifically designed for infants with early social and communication delays.

Methods: The study design is a two-site (Perth, Melbourne), two-arm, single-blind (rater) randomized controlled trial (RCT). We will recruit 132 infants ($n = 66$ at each site) who are between 9 and 14-months-of-age and showing ASD-risk behaviours (social and/or communication difficulties). Consenting families will be randomized into receiving either the 'Experimental Therapy' ($n = 66$) or 'Treatment as Usual'. Families in the 'Experimental Therapy' group will receive 10 home-based sessions with a Speech Pathologist or Psychologist over five months, and undertake 30-minutes daily home practice. Families in the 'Treatment as Usual' group will receive a parent information seminar, which is the current 'best practice' protocol for these infants. Infants in both groups will be re-assessed at 6, 12 and 24 months post-baseline. The primary outcome will be autistic symptom severity immediately post treatment. Secondary outcomes will be a range of social and communicative behaviours relevant to ASD at each of the three follow-up points.

Result and Conclusions: The trial commenced recruitment in June 2016. This presentation will outline the theory underpinning the intervention, and highlight the study design and progress.

YOUNG, R & NAH, Y

Development of a Brief Version of the Autism Detection in Early Childhood (BADEC) for Ages from One to Six Years

In the Symposium: **Improving the Early Detection of Autism Spectrum Disorder: Methods and Challenges**

4:00pm, Thursday 8th December 2016, Wilsmore Lecture Theatre

Background: Motivated by practitioners' complaints about the time taken to administer available screening tools we set out to develop a brief version of the Autism Detection in Early Childhood (ADEC).

Method: The dataset included 457 participants aged 12–71 months of age. 204 children had Autistic Disorder (AD), 55 children had pervasive developmental disorder - not otherwise specified, 20 children had Asperger's Disorder, 91 children had other developmental disorders based on DSM-IV-TR diagnosis and 87 were considered typically developing.

Results: Five key behaviours (i.e., response to name, gaze switch, eye contact, social smile and use of gesture) formed the brief version (BADEC). Results from the logistic regression analyses indicated that the BADEC versions' total scores (with the exception of the 60-71 months group) were able to predict DSM-5 ASD classification just as well as the more time-intensive ADOS and ADI-R diagnostic tools.

Conclusion: Clinicians and paediatricians may find the BADEC a suitable screening tool to help them to identify young children presenting with possible ASD in their practice settings.

THREE MINUTE RAPID PRESENTATION AND POSTER ABSTRACTS

ALBEIN-URIOS, N

Exploring the Association Between Autistic Traits and Executive Function Among Typically Developing Adults

Three minute rapid presentation + Poster

Background: The investigation of autistic traits in the “typically developing” population has shown that people with sub-threshold behavioural autistic traits perform poorer on some cognitive tasks. However, little is known about how these traits relate to executive functioning and self-regulation in an everyday environment.

Objectives: The present study examined whether young adults with higher autistic traits experience increased behavioural and cognitive difficulties associated with poorer executive function.

Methods: 57 young adults (18-25 years old) were administered the Autism Spectrum Quotient (AQ), and designated as high autistic traits (n=22) or low autistic traits (n=35). The Behavior Rating Inventory of Executive Function (BRIEF-A) was used to evaluate executive function. The BRIEF-A self-report was compared with the BRIEF-A informant-report to evaluate the construct of self-awareness. Cognitive flexibility skills were also measured using the Trail Making Test (TMT), Gender-Emotion Switch Task, and the Intra-dimensional/extra-dimensional (ID/ED) task.

Results: Individuals with higher autistic traits reported having more difficulties than the low autistic traits group in the BRIEF-A self-report in three scales: Shift ($p<0.01$), Emotional Control ($p<0.01$) and Behavioural Regulation Index (BRI; $p<0.05$). Four scales were found to be significant only in the high autistic traits group in the BRIEF-A informant-report: Inhibit ($p<0.05$), Emotional Control ($p<0.01$), Self-monitor ($p<0.05$) and BRI ($p<0.01$). Significant differences were found in the emotional control scale within the group of high autistic traits when comparing the BRIEF-A self-

report with the BRIEF-A informant-report ($p<0.05$). No significant differences were found in cognitive flexibility tasks between the two groups.

Conclusions: Individuals with higher autistic traits reported having more executive functioning difficulties, suggesting that difficulties with executive function might extend beyond those meeting clinical criteria for autism spectrum disorder. Parents and close friends of individuals with higher traits in autism also reported poorer executive function of their children/friends. Individuals with high autistic traits were found to have lower self-awareness associated with difficulties on the emotional control domain. These findings call for further research on the relationship between autistic trait and executive abilities, particularly with respect to underlying mechanisms that might mediate this association.

AMOS, G; CHOUINAD, P & GODBER, T

Autism Traits, Sensory Over-Responsivity, Anxiety and Stress: A Test of Three Explanatory Models.

Three minute rapid presentation + Poster

Background: Sensory over-responsivity (SOR), anxiety, and stress, are recognised as significant comorbidities of Autism Spectrum Disorder (ASD). Relationships between these symptoms in children with ASD have undergone extensive theoretical speculation. Less attention has been directed toward explaining these relationships in sub-clinical autism traits (SAT).

Methods: Explanatory models for the role of SOR and anxiety in ASD suggested by Green and Ben-Sasson (2010) were tested using $n = 458$ community dwelling adults (50% female). Three models were tested: the first predicting that SATs would produce anxiety and stress which would then result in SOR; the second predicting that SATs would produce SOR which in turn would produce stress and anxiety; and, the third predicting that the relationship between SOR and anxiety is completely explained by the common association of these symptoms with SATs and stress. Models

1 and 2 were measured using Hayes Process (model 6) for testing mediation. Model 3 was tested using partial correlations.

Results: Our results revealed that Model 2 was the best explanation of the data as indicated by a drop in significance in the relationship between SATs and Anxiety ($p < .00$ to $p = .36$) after taking into consideration the effects of SOR and Stress. This indicates a full mediative effect. Model 1 and Model 3 were not supported by drops in significance by accounting for their respective mediators.

Conclusion: Based on these data, we suggest that sensory inducing environments should be considered for the prevention and management of anxiety and stress symptoms for people in the general population with higher levels of SATs.

BOVIS, M; ALEXANDER, A & PELLICANO, E

"My brain helps me think about stuff": Autistic children's understanding of the brain and its role in behaviour

Three minute rapid presentation + Poster

Background: Very little is known about autistic children's knowledge of their own and other people's brains. The only study (Baron-Cohen 1989) conducted suggested that autistic children have a relatively limited view of brain function, ascribing it with behavioural rather than mentalistic functions. Here, we sought to replicate this task and extend it to investigate children's perception of the brain and its role in shaping behaviour.

Method: Cognitively able autistic ($n=21$) and neurotypical ($n=39$) children, aged between 6 and 11 years, took part in structured interviews assessing knowledge of the functions of the brain and heart (cf. Baron-Cohen, 1989) and its perceived role in their own behaviour and, using vignettes of neurodiverse children to prompt discussion (e.g., boys with possible autism, girl with possible autism, boy with possible ADHD), its role in other people's behaviour.

Results: Contrary to Baron-Cohen (1989), we found no significant differences in the number of autistic and neurotypical children ascribing mentalistic functions to the brain. There was wide variability in children's responses, within both groups, ranging from full agency (e.g., "my brain was in control of making the right choice") to exerting influence (e.g., "it tells me to do things"). Both groups of children also identified the boys with possible autism and ADHD (but not the girl with possible autism) in the vignettes as not being personally responsible for their behaviour.

Conclusion: School-aged children on the autism spectrum show a qualitatively similar conceptualisation of the nature of the brain and its functions than previously suggested.

CHETCUTI, L; HUDRY, K; GRANT, M & VIVANTI, G

Imitation Impairments in Autism Spectrum Disorder: A Social Motivation or Motor-Execution Problem?

Three minute rapid presentation + Poster

Background: Imitation deficits are a characteristic feature of autism spectrum disorder (ASD), and while several explanatory theories have been put forward, the mechanisms underlying these difficulties remain unclear. This study examined the contribution of abnormal social motivation and motor-execution difficulties to imitation performance among children with ASD.

Methods: Among 55 child participants – 35 with ASD and 20 typically developing (TD) – a novel imitation task was delivered using an Apple iPad. To-be-imitated actions were presented by a social and asocial model, and under low- (single action) and high motor-demand conditions (multiple, sequential actions). Fine motor coordination was assessed using the Vineland Adaptive Behavior Scales (VABS-II) and Mullen Scales of Early Learning (MSEL), and social motivation was assessed among children with ASD using the Autism Diagnostic Observation Schedule, Social Affect domain (ADOS-2 SA).

Results: There was a nonsignificant trend towards overall reduced imitation by children with ASD vs. TD children. A significant three-way interaction term revealed that children with ASD imitated more poorly on the high motor-demand condition, relative to the low motor-demand condition, when demonstrated by a social model. Among children with ASD, imitative performance was not associated with ADOS-2 SA scores, and showed a conflicting pattern of correlations with fine motor skills, as assessed via the MSEL (positive association) and VABS-II (non-significant).

Conclusion: These data suggest that imitative performance in ASD may stem from a complex interaction between social motivation and motor-execution factors, as imitation appeared poorer as both the social-processing and motoric task demands increased for children with ASD.

CLARK, M; BARBARO, J & DISSANAYAKE, C

Parental and Teacher Perspectives of Social Skills and Problem Behaviours in school age children with Autism Spectrum Disorder

Poster

Background: Early socialisation is facilitated by parents, siblings, and supportive adults. However by school age children are expected to handle themselves independently in social situations. For children with and Autism Spectrum Disorder (ASD) interactions with same age peers are more confronting than interactions with an adult (Sigman & Ruskin 1999).

Aim/Hypotheses: The social skills and problems behaviours in a school age cohort of children on the spectrum was investigated. Parents and teachers reported on each child's abilities as these informants reportedly differ in their accounts of child behaviour with parents often reporting more significant concerns (Barnhill et al. 2000). Therefore parents are expected to report more problem behaviours than teachers and both informants are expected to report similar social competencies.

Method: Forty-eight parents and teachers of children with ASD completed the Social Skills Improvement System (SSIS; Gresham & Elliott 2008)

reporting on their social skills and problem behaviours across the home and school environments.

Results: As expected parents and teachers reported similar social skills. Parents reported higher communication and assertion skills while self-control was identified as the greatest deficit. Teachers reported strength in the areas of communication and cooperation while empathy was the most profound deficit. Externalizing behaviours and hyperactivity/inattention were identified as the most challenging behaviours by both parents and teachers. However overall, parents reported a higher occurrence of problem behaviours in the home environment when compared to teacher reports.

Conclusions/Learning Outcomes: Identifying social behavioural strengths and weaknesses provides a framework for provisions to be secured both at home and in the school environment to foster the ongoing learning and development of children with ASD.

CLARKE, R; SOFRONOFF, K & BAEUMONT, R

The Secret Agent Society: Whole of Classroom Program

Three minute rapid presentation + Poster

"Autism Spectrum Disorders (ASD) are characterised by social, emotional and behavioural symptoms such as deficits in social communication, social interaction, and maintaining and understanding relationships (DSM-V Taskforce, 2013). A link between ASD and the presence of comorbid anxiety has also been found, where ASD populations have an increased prevalence of this disorder compared to a typically developing population (Kim et al., 2000; White et al., 2013). The Secret Agent Society is a program designed to help those with ASD improve their social and emotional functioning with demonstrated effectiveness in clinical and small group settings for children on the spectrum (Beaumont & Sofronoff, 2008; Sofronoff, Silva & Beaumont, 2015). The current research investigated a 'Whole of Classroom' variant of the program (SAS-WOC) delivered in an inclusive classroom setting and designed to improve the social-emotional

function of students on the spectrum as well as their typically developing peers. This type of program delivery allows real time development and generalisation of social-emotional skills and involves collaboration with schools and teachers as the program is delivered as a subject in school curriculum. The current study is a randomised controlled trial of SAS-WOC, delivered to 17 grade 5 primary school classrooms within the state of Queensland. Preliminary outcomes are qualitative, where program satisfaction questionnaires investigate SAS-WOC fit within school curriculum and teachers' experience of program delivery and utility for students. Prospective research will focus on program delivery in grade 5 classrooms throughout Australia as well as monitoring the progress of the original Queensland school participants."

DIMOV, S; KRISTELLE, H & IACONO, T

Scoping review of joint attention skills and language development in children with autism

Poster

Background: Joint attention and language have gained significant importance in research on children with autism. Approximately one quarter of children with autism do not develop functional language and joint attention difficulties are among the earliest indicators of autism. Although ample research exists in children with autism there has been little review into the existing literature on joint attention as a precursor to language development in children at risk for autism. Using a structured literature search this study aims to determine the association between joint attention skills and language development in children at risk for autism.

Method: Several search methods will be employed to retrieve relevant studies. The main search method will be through electronic databases including PsycINFO and PubMed. Studies published between 2000 and 2016 will be gathered. Search terms will include combinations of autism, autism spectrum disorder, ASD, association, correlation, predict, joint-attention, joint engagement, language, speech, communication, receptive and expressive. Studies will be selected if they meet the following criteria:

(1) published after 2000; (2) written in English; (3) full access peer-reviewed articles; (4) included a group of children deemed at risk for autism (e.g. siblings BAP); (5) included measures of joint attention and language; (5) included children aged 0-5 years.

Results & Conclusion: Results will discuss the degree to which joint attention skills predict language development among children at risk for autism. Result will also address the relative strengths and weaknesses of the literature.

EDWARDS, C

Implementing a Tele-Classroom Consultation Approach in Rural and Remote Regions to Support a Community of Practice for Teachers Supporting Young Children on the Autism Spectrum and Complex Needs in Mainstream Settings

Poster

The rise in the prevalence of young children diagnosed with an autism spectrum disorder (ASD) and their education within mainstream settings is now well documented. While inclusion has demonstrated some positive results for many young children on the spectrum one key determinant of success identified is the ability of the educator to effectively meet the child's needs within mainstream settings. However, many educators lack the necessary skills, training and confidence to successfully support many of the more complex needs of young students on the spectrum. Often further intensifying these issues is the isolation teachers may experience when teaching in rural and remote regions. Professional development has attempted to overcome these difficulties by creating 'communities of practice' that offer support and training to these educators. Given the geographic isolation of rural and remote schools, teleconsultation has grown as a cheap and effective alternative method to service delivery yet its application to promote and develop communities of practice is limited. The proposed study assesses teleconsultation to develop a community of practice to equip teachers in rural and remote regions with the skills to support the more complex needs of students on the spectrum.

FLEMING, S; LANDRY, O; JOHNSON, K; CREWTER, S & CHOUINARD, P

Orienting of Visual Attention in Autism Spectrum Disorder

Three minute rapid presentation + Poster

Background: Previous research suggests that people with ASD display differences in their use of symbolic cues in endogenous orienting compared with people who do not have ASD (Landry & Parker, 2013). The study examined the nature of this difference in children with ASD and typically developing children, using a range of cue-target stimulus onset asynchronies (SOAs; Landry & Parker, 2013).

Methods: Participants with ASD (n = 14, Males = 12, mean age = 9.9 years age range = 6 to 16 years) and typically developing participants (n = 14, Males=9 mean age = 9.8 years, age range = 7 to 16 years) completed a variation of the Posner (1980) endogenous orienting task consisting of valid (75%) and invalid (25%) cues at different cue-target SOAs (150ms, 300ms, 450ms, 600ms, 750ms, 900ms). Both groups were matched on raw scores for the Raven's Progressive Matrices, age and gender. The orienting effect was calculated at each SOA as the difference in reaction time between invalid and valid trials.

Results: One sample t-tests performed separately on ASD and typically developing groups revealed that the group of children with ASD displayed a significant orienting effect at the 450 ms and 600 ms SOAs (all $p < .05$; Bonferroni-corrected). In contrast, the group of typically developing children displayed an orienting effect at all SOAs except 900 ms (all $p < .05$; Bonferroni-corrected).

Conclusions: From these results it can be concluded that temporal pattern of endogenous visual orienting is likely to vary between typically developing individuals and individuals with ASD.

FLOWER, R & YOUNG, R

Intensity of circumscribed interests among adults with autism spectrum disorder

Three minute rapid presentation + Poster

Background: Circumscribed interests (CIs) form a part of the diagnostic criterion for the autism spectrum disorder (ASD; DSM-5; APA, 2013). Despite a number of studies finding that upwards of 90% of individuals with ASD have CIs (e.g., Billstedt, Gillberg, & Gillberg, 2011; Turner-Brown, Lam, Holtzclaw, Dichter, & Bodfish, 2011), limited research has been conducted investigating the frequency of CIs, presentation, and the influence they have on individuals' lives, particularly among adults.

Method: As a part of a large two phase study, data regarding CIs was collected from individuals aged 16-78 years with a diagnosis of ASD (Phase 1 n = 182; Phase 2 n = 101). Data was collected using a questionnaire created for the study, which, along with content and method of pursuit, included questions assessing four areas of intensity: number of hours spent pursuing the CI weekly, level of absorption in the CI, response to interruption, and importance of the interest.

Results: 91% of participants reported at least one interest. Participants (Phase 1) reported spending up to 112 hours weekly in pursuit of their CI (M = 28.74, SD = 22.08). Relatively low scores were found for the Absorption and Interruption measure, although participants reported their CI as being of great importance.

Conclusion: Issues regarding the current understanding of CIs among adults, and measurement of this feature of the disorder will be discussed.

GRANT, M & HUDRY, K

Predictors for Parent Wellbeing Around the Time of Young Child ASD Diagnosis

Three minute rapid presentation + Poster

Background: Research has established that the parenting stress associated with raising a child with an Autism Spectrum Disorder (ASD) has considerable impact upon parent wellbeing. However, there is a

paucity of studies investigating parent wellbeing around the time a child is diagnosed, resulting in a limited understanding of the factors that have the greatest impact upon parent wellbeing at this particular point in time. This study investigated a variety of parent factors as predictors of concurrent wellbeing around the time their child was assessed for an ASD.

Methods: Forty-seven parents with children aged 2-4 years who were recently diagnosed/assessed for an ASD participated in the study. Parents completed questionnaires regarding vulnerability factors, coping styles, and current wellbeing.

Results: Parents who reported more symptoms of depression and stress were those with greater vulnerability – indicated by having lower parenting self-efficacy – and those who used distraction/disengagement coping. Furthermore, parents who reported more symptoms of anxiety and negative affect were also at increased vulnerability - indicated by increased ASD trait expression - and also used distraction/disengagement coping. By contrast, parents who reported more positive affect were those with higher parenting self-efficacy and used reframing to cope.

Conclusion: There were clear patterns of association between elevated vulnerability factors, the use of less adaptive coping styles, and poorer wellbeing measured concurrently among parents of young children with ASD. Targeting parents to support parenting confidence and to promote more adaptive styles of coping is clearly indicated in order to improve wellbeing outcomes at this point in the family's journey with ASD.

GROVE, R; HOEKSTRA, R; WIERDA, M & BEGEER, S

Exploring sex differences in autistic traits: A factor analytic study of adults with autism

Poster

Background: Research has highlighted potential differences in the phenotypic and clinical presentation of autism spectrum conditions (ASC) across sex. Furthermore, the measures utilised to evaluate ASC may be biased towards the male autism phenotype. It is important to determine

whether these instruments measure the autism phenotype consistently in autistic men and women.

Methods: This study evaluated the factor structure of the Autism Spectrum Quotient short form (AQ-Short) in a large sample of autistic adults (265 males and 285 females). It also systematically explored specific sex differences at the item level, to determine whether the scale assesses the autism phenotype equivalently across males and females.

Results: A two-factor structure consisting of a social behaviour and numbers and patterns factor was consistent across groups, indicating that the latent autism phenotype is similar amongst both autistic men and women. Subtle differences were observed on two social behaviour item thresholds of the AQ-Short, with women reporting scores more in line with the scores expected in autism on these items than men. However, these differences were not substantial.

Conclusions: This study showed that the AQ-Short detects autistic traits equivalently in males and females, and is not biased towards the male autism phenotype. This has implications for our understanding and evaluation of autistic traits in women.

KIRBY, N; HARRIES, J & PURMER, M

Evaluating the implementation in schools of a video-based social communication group program for students with Autism Spectrum Disorders (ASD).

Three minute rapid presentation + Poster

Background: A video-based social communication group program was implemented in schools by school staff to determine the feasibility of program delivery and its effectiveness in facilitating integration of learning into classrooms. Program effectiveness had previously been demonstrated when delivered by facilitators in a specialist ASD organisation, whereas this study aimed to determine its effectiveness and requirements for program delivery in school contexts.

Method: Three schools (N=19 ASD students aged 7-13 years) trialled the 18-week program and participated in the evaluation at program beginning, end and three months after completion using a social skills questionnaire and qualitative data from teachers, parents, and students. Video modelling using iPads constituted the primary intervention strategy. Targeted and non-targeted social skill comparisons were used to provide discriminant support for program effectiveness.

Results: Improvements were evident in questionnaire results and in qualitative results from teachers, parents and participating students, although to variable degrees depending on baseline social skills and presence of challenging behaviours. In particular, qualitative comments indicated that social skills improvements were evident in classroom and playground behaviours that improved social interactions between the participating students and their teachers and with other students.

Conclusions: Findings indicate the effectiveness and feasibility of implementing a video-based social communication group program in schools. Recommendations to improve intervention fidelity and program delivery in different school contexts made by school facilitators and teachers are discussed, including mechanisms to enhance skill transfer to classroom environments. Future research issues and recommendations associated with conducting group video-based programs in schools are also discussed.

LAMI, F; EGBERTS, K; WILLIAMS, K & CONROY, R

A systematic review of the measurement properties of instruments that assess "participation" in young people with autism spectrum disorder.

Three minute rapid presentation + Poster

Background: The ICF-CY defines participation as involvement in life situations. This is an important outcome measure in young individuals as it is thought to influence quality of life and independence in adulthood.

There is a lack of clarity regarding how tests of participation perform in individuals with autism spectrum disorder (ASD).

Aims: To systematically review the evidence surrounding the measurement properties of tests assessing participation in young individuals with ASD.

Methods: A systematic search was performed in three databases (Psycinfo, Medline, Pubmed) combining three constructs ("autism spectrum disorder", "test of participation", "measurement properties"). Results were restricted to articles involving a population aged 6 to 29 years, producing 698 articles, independently screened by two reviewers. Six articles were selected and data were extracted, using standard forms and the COSMIN rating scale.

Results: Five different tests were assessed from these six studies, which were mostly cross-sectional (83%). Overall, the age range of the sample investigated was from 3 to 58 y. o. (M: 12.03; SD: 1.94), and two studies focused specifically on adolescents (age range: 11 – 18 years old). The tests we looked at were the School functioning assessment, CAPE, PEDI-CAT, SIB-R, Columbia impairment Scale. The PEDI-CAT has excellent measurement properties ($0.85 \leq ICC \leq 0.95$) when used with young individuals with ASD. Most studies (83%) assessed both reliability and validity; none assessed responsiveness or interpretability. Most (83%) had methodological limitations, and had high risk of bias.

Conclusion: Measures of participation should be used with caution in young individuals with ASD.

LANE, A & DORROUGH, G

How Does Tactile Functioning in Autism Spectrum Disorder Relate to or Influence Other Traits of the Disorder? A Scoping Review

Poster

Background: Abnormal tactile functioning is a distinguishing feature of Autism Spectrum Disorder (ASD) in infancy, is frequently reported throughout the lifespan yet is the least researched sensory issue. The aim of this scoping review was to summarise available research on how tactile

functioning in ASD relates to or influences common traits of the disorder which may help predict and prevent ASD severity.

Method: Six electronic databases were systematically searched for English, peer reviewed journal articles published since 2000, concerning human tactile perception in ASD. Twelve research studies were reviewed.

Results & Conclusion: Results indicate that tactile abnormalities increase with severity of the disorder across all core diagnostic features and reactions may differ from individuals without ASD on the basis of social and non-social tactile stimuli.

LUM, M; GARNETT, M; O'CONNOR, E & SHERIDAN, J

Healthcare Distress in Adults with High Functioning Autism

Three minute rapid presentation + Poster

Background: Efficient communication in primary healthcare is vital to promote positive health and well-being outcomes, including daily psychological functioning. Lower health-related quality of life is suggested for individuals with high functioning autism (HFA). However research into healthcare, and associated physical, psychological, and behavioural outcomes, is limited. Existing healthcare research measures do not account for social, cognitive, and emotional challenges of autism. Further, the impact of sensory distress in healthcare remains hypothetical.

Methodology: A 16-item questionnaire was based on pilot study data from adults with HFA; clinical guidance; and evidence relating to challenges likely to impact communication. Items measured emotional responses to primary healthcare experiences to overcome limitations of current measures. An on-line cross-sectional sample (N=214) completed the questionnaire and measures of anxiety, psychological distress, and body vigilance.

Results: Exploratory factor analysis and regression analyses explored underlying constructs and psychometric properties of the questionnaire. Nine items loaded strongly onto two reliable factors: communication

distress ($\alpha = .83$) and environmental distress ($\alpha = .82$). Psychological distress was a statistically significant predictor of communication distress; however environmental distress was the most important predictor uniquely explaining 14.3% of variance in communication distress.

Conclusions: Results support scale development to measure emotional perceptions within healthcare and account for characteristic challenges of HFA. Measuring such perceptions could be useful for applied research into behavioural and health outcomes. Identifying and measuring distress specific to primary healthcare also offers clinical utility, and potential within resource development to improve experiences and communication efficiency for healthcare patients with and without HFA.

MACDONALD, L; TREMBATH, D; ASHBURNER, J; COSTLEY, D; HAAS, K & KEEN, D

The use of visual schedules and work systems to help students on the autism spectrum to stay on-task in mainstream classrooms

Three minute rapid presentation + Poster

Background: Students on the autism spectrum can experience difficulties in mainstream classrooms with activities involving executive functioning such as maintaining attention to task and moving between tasks independently. Students' participation in these activities is often supported in autism specific and special education settings through the use of visual aids, however, the consistent use of such strategies is less common in mainstream classes. Research into the effectiveness of visual schedules and work systems suggests that these strategies could be used as an inclusive, whole-class approach, implemented by classroom teachers, to help students on the spectrum, and their peers, stay on-task and work independently.

Method: This presentation will discuss the findings of a multiple baseline study conducted across four mainstream classrooms, which looked at the effect of visual schedules and work systems on the productivity and independence of students on the spectrum during a literacy task.

Results: The results indicate that students engaged in more on-task behaviour after teachers had been provided with an information package with instructions on the use of visual schedules and work systems.

Conclusion: While there is a need to further examine the social validity of these strategies and their implementation across the school day, there does appear to be potential for these relatively simple, low-tech and inclusive strategies to make a difference for students on the spectrum in mainstream settings.

MARKS, D; ZANDT, F; SAUNDERS, F & ANDREWS, C

A Survey of Complexity in ASD Diagnostic Assessments

Three minute rapid presentation + Poster

Background: The gold standard of assessment for Autism Spectrum Disorder remains a multidisciplinary assessment, using a variety of data sources and well-researched clinical tools. Biological, psychological and social factors often complicate this process and affect the gathering of data, differential diagnosis and how management plans are presented and enacted. This pilot survey investigated complicating factors and degree of complexity over a six month period in the Specialist Autism Assessment Team (a Melbourne metropolitan ASD assessment service) as part of a quality improvement process.

Methods: Data about complexity was gathered at time of diagnosis, using a questionnaire and Health of Nation Outcome Scales for Children and Adolescents and Factors Influencing Health Status, two scales used as outcome measures throughout the Victorian Child and Adolescent Mental Health Services.

Results: Of the 66 clients assessed (aged between 2 and 14 years), 80% received a diagnosis of ASD. Within this group, 43% had one or more comorbid diagnosis, 13.5% had complex medical issues, 45% had parents with mental health issues, 43% had cultural and linguistically diverse backgrounds, 15% had been reportedly exposed to maltreatment and 36%

of children experienced negative childhood events. Eighty percent of children who suffered maltreatment received an ASD diagnosis.

Conclusions: There is considerable complexity in the presentation and family situations of children assessed through the Specialist Autism Assessment Team service. These complicating factors impact significantly on the assessment, feedback and management process. These data highlight the need to consider complicating factors in structuring an ASD assessment process.

MAVROPOULOU, S; STEVENSON, A; SUCIU, M & STEWART, K

Exploring the experiences of undergraduate mentees with autism spectrum conditions and their mentors.

Three minute rapid presentation + Poster

Background: It is well recognised that individuals with autism spectrum conditions (ASC) face considerable challenges in coping with the demands of the social and academic life as students in higher education and peer mentoring programs can offer valuable benefits to them. Yet, little is known about the views and experiences of persons with ASC, who are enrolled in Australian universities and receive peer mentoring support. This qualitative investigation explores the challenges of students with ASC and their experiences as mentees. A secondary aim of this study has been to explore the views and experiences of students acting as mentors of persons with ASC.

Methods: We conducted semi-structured individual interviews with eight mentees with ASC and five mentors in a regional Australian university. Thematic analysis was used in the interview transcripts from each group to gain insight into the views and experiences of students participating in a peer mentoring program targeted only for persons with ASC.

Results: Themes relating to the positive and challenging sides of the role of the mentor and mentee as well as the difficulties of university students with ASC will be presented. Additionally, themes emerged in relation to the

ways that ASC affects students' life and their future life aspirations after graduation.

Conclusion: The analysis of the qualitative data will generate much needed insight into the challenges of students with ASC in higher education and will also inform the delivery of peer mentoring programs for the academic and social support of Australian students on the autism spectrum.

MAZZONI, A; EAPEN, V & GROVE, R

The relationship between intervention duration and outcomes in young children on the Autism Spectrum

Three minute rapid presentation + Poster

Background: Previous research has shown that early intervention results in improved outcomes for children with autism. However there is limited data on the impact that duration of time spent in therapy has on treatment outcomes. The current study aimed to evaluate the relationship between duration of intervention and various outcomes including symptoms of autism, cognitive ability and adaptive behaviours.

Method: Children on the Autism Spectrum attending an autism specific preschool program receiving Early Start Denver Model intervention (ESDM) were evaluated at the entry to the intervention program and again when they exited the program. Outcomes were assessed using the Autism Diagnostic Observation schedule, the Mullen Scales of Early learning, Vineland Adaptive Behaviour Scales, Social Communication Questionnaire and the Repetitive Behaviour Scale.

Results: Increased time spent in therapy was associated with improved outcomes across a number of domains including communication skills, daily living skills, interpersonal relationships, coping skills and adaptive behaviours. However, there was no association between improvement in receptive and expressive language and the duration of intervention.

Conclusion: Our findings demonstrate that early intervention is beneficial for preschool children with Autism with increased duration of intervention associated with improved outcomes across specific domains of functioning. These associations are in keeping with the domains that were the target of the intervention except for receptive and expressive language which surprisingly did not show an association with the duration of intervention. Future studies are indicated to explore the predictors and the reasons behind such differential outcomes in relation to treatment duration.

NICOLLET, N; URBANOWICZ, A; BEAUMONT, R; SOFRONOFF, K & LENNOX, N

An anxiety intervention program for adults on the Autism Spectrum: A pilot study

Three minute rapid presentation + Poster

Background: The occurrence of anxiety for individuals on the autism spectrum is well documented. However limited evidence exists for efficacious anxiety programs for adults on the autism spectrum. The aim of this poster is to outline the development of a pilot Acceptance and Commitment Therapy (ACT) based program for adults on the spectrum with anxiety.

Method: Eligible participants are adults aged 18 or older, with a diagnosis on the autism spectrum and a current anxiety disorder. All potential participants complete three assessments to establish their eligibility for the program. Pre and post measures of anxiety are collected, as well as a survey evaluating the acceptability and appropriateness of the pilot program.

Results: The program design and content, as well as details of the pre- and post-assessments used will be presented.

Conclusion: To the best of our knowledge, this is the first program developed specifically for adults on the spectrum with anxiety and the first to explore the appropriateness of ACT as a therapeutic framework for the autism population. The results from the pilot program will provide new

knowledge in relation to available options for adults on the spectrum seeking assistance with their anxiety.

PAYNTER, J; TREMBATH, D; KEEN, D & SULEK, R

Use of Evidence-Based Practices by Australian Allied Health Professionals

Three minute rapid presentation + Poster

Background: Recent reviews of the autism spectrum disorder (ASD) intervention research have classified intervention practices into evidence-based (EBP), emerging, and unsupported. However, despite such guidelines, parents and professionals report continuing to use a range of interventions, including those shown to be ineffective or even harmful. The extent of this challenge, and reasons allied health professionals use such treatments is unknown in Australia. Thus, we aimed to explore levels of knowledge and use of intervention strategies and the impact of organisational culture, attitudes, demographics, and sources of information to inform practice.

Methods: Allied health staff who reported working with people with ASD completed an online survey of their use of a range of intervention practices (EBP, emerging, and unsupported) and perceived evidence-base along with measures of organisational culture, attitudes, demographics, and sources of information accessed.

Results: Participants reported greater use of EBP than emerging or unsupported practices. However, continued use of some unsupported practices, such as facilitated communication, was reported. Use of EBP, emerging, and unsupported practices was significantly linked to their perceived evidence-base. Participants varied in their knowledge of the scientific evidence for each strategy with a significant minority reporting strategies shown to be ineffective in research to be (incorrectly) established treatments. Links between use, organisational culture, attitudes, and differences between professional groups will be discussed.

Conclusion: This study highlights the continued challenge of translating research to practice in ASD and the need for more effective knowledge translation to allied health staff working in the field.

REZAE, M; MCMEEKIN, D; LEE, H & TAN, T

Environmental Scan to Review Existing Public Transport Mobile Technologies

Three minute rapid presentation + Poster

Individuals on the Autism Spectrum and people with cognitive deficits (e.g. stroke, dementia, acute brain injuries or Parkinson's) find public transport use challenging. Successful utilisation of public transport requires detailed planning, accurate interpretation of travel schedules, timely management of transfers between interchanges, and problem-solving unpredictable changes. Modern technological applications can be adopted to simplify procedures in the navigation of public transport services. Numerous commercial applications are currently available that aim to enhance the accessibility of public transportation for the general public. Through a comprehensive environmental scan and literature review, this study aims to examine and evaluate available technological applications to determine if these technologies cater to the specific requirements of individuals on the Autism Spectrum or those with cognitive deficits to independently utilise public transportation.

The analysis involved querying app stores and employing Google search engine to identify public transport navigation applications. Consecutively, pertinent applications were downloaded and assessed to determine if they consider the predefined needs and requirements of individuals on the Autism Spectrum. The findings indicate that mobile application technology, in the current market, has not been adopted to support independent public transport use for individuals on the Autism Spectrum and/or cognitive deficits. Although a few applications, included in the scan, support functionalities such as the ability to alert users when to pack bag and leave home for the nearest stop and the ability to alert to board or alight at a desired station; however, intricate features such as preventing and/or

minimising anxiety in distressing situations and provision of real-time assistance in these circumstances are crucially missing in all of the applications reviewed in this study.

ROBERTS, J; TREMBATH, D; WESTERVELD, M & WILLIAMS, K

The Longitudinal Australian study of Students with Autism (LASA)

Poster

Background: There is limited information about the education and participation trajectories of children on the autism spectrum, or what child, family and environmental factors may influence these trajectories over time. In this presentation, we will outline the development (aims and methodology) of the Longitudinal Study of Australian Students with Autism (LASA), a large prospective cohort study funded by the Living with Autism Cooperative Research Centre.

Methods: The LASA tracks the education and participation trajectories of Australian students with autism over a period of 6 years, via annual online student-, education-, and family-focused assessment tools. The fundamental hypothesis is that education and participation trajectories will be directly related to child, family, and environmental factors. The participants comprised 132 students aged 4-5 years and 140 students aged 9-10 years at intake to the study in 2015.

Results: We will present an overview of the demographic, developmental, educational, behavioural, and environmental assessment tools being used by parents, principals, and teachers to report on children's progress, and factors that may impact on outcomes over time. We will also present an overview of participant characteristics on these measures at study intake.

Conclusion: This study promises to yield comprehensive and timely insights into the education and participation of Australian students with autism, as well as an understanding of factors that influence these outcomes. The findings will help to not only identify successes and current limitations in the education of students on the spectrum, but also factors that should be targeted in efforts to improve student outcomes.

ROYALS, K; LANDRY, O; MILLARD, A; SPERANDIO, I; CREWETHER, S & CHOUINARD, P

Susceptibility to Optical Illusions in Autism Spectrum Disorder Depends on Illusion Characteristics

Three minute rapid presentation + Poster

Background: Chouinard et al (JADD, 2016) examined susceptibility to 13 optical illusions as a function of AQ traits in the general population. They demonstrated how one group of illusions with strong within-object relational properties (consisting of the Shepard's tabletops and square-diamond illusions) was associated with reduced susceptibility as a function of AQ whilst a different group of illusions with strong between-object relational properties (consisting of the Ebbinghaus and Delboeuf illusions) was not. From these results, the authors speculated that susceptibility to the former but not the latter group of illusions might also be reduced in ASD.

Methods: Susceptibility to the Shepard's tabletops, square-diamond, Ebbinghaus, Delboeuf illusions were examined in 17 children with ASD (13 males, mean age = 12.15 yrs, age range = 7.92 to 15.9 yrs, mean RPM = 36.12) and 17 typically developing children (13 males, mean age = 11.77 yrs, age range = 7.1 to 14.7 yrs, mean RPM = 35.82) matched according to chronological age and raw Raven's Progressive Matrices (RPM) scores.

Results: An interaction between group and illusion was found ($F(3) = 5.175, p = .002$). Pairwise comparisons using a Bonferroni adjustment indicated that the children with ASD ($M = .07, SD = .16$) were less susceptible to the Shepard's tabletops illusion than the typically developing children ($M = .21, SD = .05$).

Conclusions: We conclude that reduced illusory susceptibility in ASD is confined to certain groups of illusions, particularly those with strong within-object relational properties.

SCOTT, M; FALKMER, M; FALKME, T & GIRDLER, S

Effects of an employer-based intervention on employment outcomes for adults on the autism spectrum: Preliminary results from a randomised controlled trial

Three minute rapid presentation + Poster

Background and objectives: Employment is fundamental to economic independence and well-being of individuals, including those on the autism spectrum. Despite evidence that individuals on the autism spectrum can work successfully in competitive employment, many individuals continue encounter difficulties securing employment. Limited research has examined interventions and employment outcomes for individuals on the autism spectrum, particularly from an environmental perspective of the workplace. The purpose of this study was to develop and investigate an employer-based intervention modifying the work environment for employees on the autism spectrum.

Methodology: A randomised controlled trial compared the effectiveness of the Integrated Employment Success Tool (IEST), an autism-specific workplace tool, to services provided as usual. Participants were eighty employers currently employing adults on the autism spectrum.

Results: During the trial period (baseline to 12 weeks), employers using the IEST workplace tool increased their self-efficacy and knowledge regarding hiring, supporting and modifying the work environment for employees on the autism.

Conclusions: The preliminary results from the IEST are promising regarding employment outcomes for employees on the autism spectrum through modifying the work environment according to their individual needs. Future research will need to explore the efficacy of the IEST in the work environment.

SCOTT, M; JACOB, A; HENDRIE, D; PARSONS, R; FALKMER, T & FALKMER, M

Benefits and costs of employing an adult on the Autism Spectrum

Three minute rapid presentation + Poster

Background and objectives: Comparatively fewer adults on autism spectrum participate in the competitive workforce. Many employers remain hesitant hiring employees on the autism spectrum largely due to the unknown additional costs related to extensive work training, continual supervision and workplace modifications. Research has examined the benefits and costs of employing adults on the autism spectrum from the perspective of the employee, taxpayer and society, but few studies have considered the employer perspective. The current study examines the benefits and costs of hiring and supporting adults on the autism spectrum, from the perspective of the employer.

Methodology: This study undertook an online survey of fifty-nine employers employing adults on the autism spectrum in open employment. Employers were asked to compare employees with and without autism on the basis of job similarity.

Results: For employees on the autism spectrum, when compared to the employees without autism, they demonstrated increased attention to detail, had a higher work ethic and consistently produced work of superior quality. Challenges associated with employing adults on the autism spectrum included common difficulties in executive functioning such as, following instructions, being flexible and perseverating on work tasks. This study found that no significant differences between employees with and without autism were evident in the weekly supervision cost, weekly cost to the employers and costs related to workplace training.

Conclusions: Employing an adult on the autism spectrum provided many benefits to employers and their organisations without incurring additional costs over and above that associated with any new employee.

SEDGEWICK, F; HIL, V & PELLICANO, E

Gender differences in autistic and non-autistic adolescents' peer conflict

Three minute rapid presentation + Poster

Background: There is much work on bullying among autistic adolescents but we know very little about other types of conflict within their friendships. This study examined potential gender differences in the extent and nature of conflict within autistic adolescents' peer relationships and the factors underlying such conflict, including best-friendship strength and social inference skills.

Methods: Seventy-two age- and ability-matched participants (23 autistic boys, 11 autistic girls, 19 neurotypical boys, 19 neurotypical girls), aged between 11 and 17 years, completed the Friendship Qualities Scale (FQS), the Revised Peer Experiences Questionnaire (RPEQ), measuring overt and relational conflict, and The Awareness of Social Inference Test (TASIT), measuring social inference skill, lie-awareness and sarcasm-awareness. We also conducted semi-structured interviews with adolescents. The study is ongoing.

Results: Autistic adolescents were more likely to report being victims of peer conflict than neurotypical adolescents, with autistic girls subject to higher levels of relational conflict than autistic boys. Girls reporting stronger friendships and better social-inferencing skills were less likely to be victims of peer conflict, regardless of diagnosis. Autistic girls had difficulty identifying sarcasm overall, but those who had better sarcasm-awareness reported lower conflict levels. There were qualitative differences in the reporting and identification of conflict incidents between boys and girls, both in terms of conflict type and their understanding of it.

Conclusion: Autistic adolescents experienced an excessive amount of peer conflict in their relationships, which was particularly true for autistic girls. This may leave these girls vulnerable to social exclusion and victimisation.

SIMPSON, K; TREMBATH, D & KEEN, D

Participation of children with autism across home, school and community settings.

Three minute rapid presentation + Poster

Background: Children on the autism spectrum are at substantial risk for low levels of community and educational participation, due to difficulties in social-communication skills and behaviour. These risks may change over time, as the social and educational expectations, opportunities, and demands at home, school, and community settings change with age. The aim of this study was to quantify the patterns of participation within two cohorts of Australian children with autism, and to ascertain parents' views regarding the extent to which they desired change in their children's participation.

Methods: Caregivers of children with autism aged 4-5 years (n = 44) and 9-10 years (n = 128) completed the Participation and Environment Measure – Child and Youth (PEM-CY) via an online questionnaire as part of their involvement in the Longitudinal Study of Australian Students with Autism (LASA) project.

Results: Children in both age cohorts were reported to participate most successfully (both in frequency and level of involvement) at home compared with school and community settings. As a group, parents indicated a desire for more frequency and more involvement in activities across all settings, with the exception of screen activities in the home setting.

Conclusion: The findings indicate not only a discrepancy between participation across home, school, and community settings, but also a general dissatisfaction amongst parents regarding their children's frequency and level of involvement across all settings. Findings will be discussed with reference to child and family factors which may impact on children's participation and implications for research and practice.

STACEY, T; FROUDE, E; TROLLOR, J & FOLEY, K

Leisure participation, satisfaction and association with depression for adults on the autism spectrum

Background: Leisure participation is imperative for overall health and well-being and has been attributed to improved quality of life for individuals with autism. High quality studies examining autistic adults and their leisure participation are sparse. This study aimed to compare leisure satisfaction and types of leisure activities engaged in between those with and without autism and explore any association with depression.

Methods: The Australian Longitudinal Study of Adults with Autism (ALSAA) is a national, questionnaire-based study which collects data pertaining to leisure activity types and frequency, leisure satisfaction, depression and autism symptoms. Timepoint 1 includes self-report data from autistic adults (n=161), parent/carer report for autistic adults with intellectual disability (n=30) and non-autistic participants (n=109). Descriptive statistics were used to describe independent and dependent variables and regression analysis to explore the association between variables while adjusting for confounding variables.

Results: Autistic participants were more likely to engage in solitary activities, such as surfing the internet, watching TV or listening to music than their non-autistic peers. There was a significant difference in satisfaction rates between groups, whereby autistic participants were less satisfied with their leisure (M3.28±0.75) compared to non-autistic participants (M3.7±0.55). Autistic participants reported significantly more depression symptoms than non-autistic participants (M10.4±7.3; M4.1±4.7, respectively). Higher leisure satisfaction was associated with less depression for those with autism but not those without autism.

Conclusion: These findings highlight the importance of leisure participation for autistic adults and a potential area to focus intervention to improve mental health for this population.

TANG, J; FALKMER, M; BÖLTE, S & GIRDLER, S

Designing a serious game for youth on the Autism spectrum: Perspectives from end-users and professionals

Three minute rapid presentation + Poster

Computer-based interventions (CBI) have shown promise in targeting emotion recognition skills among people on the Autism spectrum, although further research is required to improve engagement and the generalisation of learnt skills to everyday environments. The Serious Game framework has identified five core design elements likely to maximise learning and support the generalisation of skills to everyday contexts. Using the Serious Game framework as a guide, this study aimed to qualitatively identify the potentially motivating features of a computer game targeting emotion recognition skills from the perspectives of youth on the Autism spectrum and professionals with experience working with people on the Autism spectrum. We conducted three focus groups, two with youth on the Autism spectrum (n=11) and one with professionals (n=5), and using directed content analysis identified the important features of a CBI in relation to each of the elements of Serious Game. The views of the youth on the Autism spectrum were compared and contrasted with the perspectives of professionals. While the youth on the Autism spectrum emphasised the importance of the 'motivating' aspects of games targeting emotion recognition, professionals focused on game features associated with the 'generalisation' of skills to everyday environments. The differences in these perspectives highlights the importance of involving end-users and consulting with experts when designing and developing CBI.

TANG, J; FALKMER, M; IYER, K; BÖLTE, S & GIRDLER, S

The experience of developers in developing a computer game for people on the Autism spectrum

Three minute rapid presentation + Poster

'Participatory design', that is actively involving stakeholders in the development process, is considered best practice in designing interventions, yet few computer-based interventions in Autism have adopted this approach. This qualitative study aimed to describe the experiences of a development team, consisting of developers on the Autism spectrum (n=4) and neurotypical developers (n=4), and followed their participation in designing an emotion recognition computer game for adults on the Autism spectrum over the period of a year. Content analysis revealed that all of the developers felt they had made several employability gains as a result of their engagement in developing the intervention, including increased confidence and improvements in their technical and social communication skills. Participants also discussed the camaraderie they experienced in working on the project as a team. Overall, the findings from this study highlight the benefits of the participatory design approach in designing computer games for people on the Autism spectrum both in terms of a useable 'product' and as an opportunity to utilise the strengths of people on the Autism spectrum.

TAYLOR, A

The Early Years Model of Practice: Translating research into practice

Three minute rapid presentation + Poster

Background: Ever increasing numbers of students on the autism spectrum are being educated in inclusive settings but research indicates that many classroom teachers do not feel they have the knowledge or skills required to effectively teach these students. The literature regarding effective educational practices for students on the spectrum is disparate and voluminous, presenting systems, schools, and teachers with an ongoing

need to translate research into practice. This presentation focuses on the development of an evidence-informed Model of Practice for Prep/Kindergarten teachers who have a student on the spectrum in their class.

Method & Results: A comprehensive and systematic review of the literature on effective educational practices for students on the spectrum was conducted and the essential elements identified. Established recommended practice listings from the fields of early childhood education and early childhood special education were also identified and reviewed. Identified elements and practices were sorted, culled, combined, and then aligned with the Early Years Learning Framework (EYLF) and the Australian Curriculum to create the Early Years Model of Practice.

Conclusion: Moving forward the Model of Practice will become an online user-friendly resource that supports teacher decision making, fosters the creation of autism-friendly educational settings, and supports the translation of research into practice.

THOMPSON, C; BOLTE, S; FALKMER, T & GIRDLER, S

Navigating university for students on the Autism spectrum

Poster

While many people on the Autism spectrum have average to high intellectual capacities they still experience many challenges in everyday life. Despite recognition of these challenges there are few evidence-based interventions. This research used Q-methodology to describe the viewpoints of university students on the Autism spectrum, their parents and their mentors on success at university for students on the Autism spectrum. A total of 57 participants completed the Q-sort task. Eleven mothers and three fathers participated (mean age=54, SD=8.67). There were six male and 15 female mentors of university students on the Autism spectrum (mean age=30.9, SD=7.85). Twenty-two students on the Autism spectrum participated in the study (15 male and seven female; mean age 24.6 years; SD=9.68). Three distinct viewpoints emerged; viewpoint one Individualised support was characterised by the supports that facilitate

success at university for students on the Autism spectrum. Viewpoint two Contextual support was distinguished by the supports that students on the Autism spectrum needed to manage university environments. Viewpoint three Social support was characterised by the supports required for students on the Autism spectrum at university. This study highlighted that support needs to be individualised and contextualised to university environments. The environment has been proposed as a potential target of intervention for people on the Autism spectrum. Peer mentoring is one approach that may have particular utility for this group. Traditionally, peer mentor programs have focused on academic supports but this study suggests that this focus should extend to include social, emotional and psychological support.

URBANOWICZ, A & LENNOX, N

The Autism CHAP: A comprehensive health assessment for adults on the autism spectrum with intellectual disability

Three minute rapid presentation + Poster

Background: Adults on the autism spectrum with intellectual disability experience unique health-related needs, difficulties accessing adequate health care and exhibit poorer physical and mental health outcomes in comparison to the general population. The aim of this project is to evaluate the feasibility and acceptability of a comprehensive health assessment program (Autism CHAP) for adults on the spectrum with intellectual disability.

Methods: This project was guided by an advisory group including adults on the spectrum and their caregivers. Adults on the spectrum with intellectual disability visited their GP/nurse to complete the Autism CHAP. Semi-structured interviews were conducted with participants including the adults, their support persons and health professionals. Interviews were digitally recorded, transcribed verbatim and analysed using thematic analysis.

Results: Feedback from advisory group members suggests the Autism CHAP is appropriate and feasible for use with adults on the spectrum with

intellectual disability. The results of the thematic analysis will be described during this presentation.

Conclusion: The Autism CHAP has the potential to improve health outcomes for adults on the spectrum with intellectual disability.

URBANOWICZ, A; PARKIN, T; VAN DOOREN, K; GIRDLER, S; CICCARELLI, M & LENNOX, N

Training needs of health professionals working with adults on the autism spectrum

Poster

Background: Adults on the autism spectrum have unique health needs and often exhibit poorer physical and mental health outcomes in comparison to the general adult population. Health professionals working in the area often experience challenges at systems and, education and training levels. The aim of this study was to undertake an assessment of the needs of Australian health professionals in relation to their provision of care to adults on the autism spectrum.

Methods: An online survey collected data on health professional and patient demographics, self-assessment of health professional competence and training needs. Descriptive data analysis was performed on closed questions. Open-ended data were analysed using content analysis.

Results: Seventy-eight health professionals completed the survey. In one year, health professionals (n=68) saw an average of 22 \pm 27 adults on the autism spectrum with mean age of 32 \pm 19 years. Over half the adults (60%, 41/68) also had intellectual disability. The most common medical conditions of the adults included mental illness; general health including check-up; and gastrointestinal, neurological, and metabolic complaints. Most (83%, 54/65) health professionals strongly agreed or agreed that they would like more training; preferably via workshops, conferences, and clinical supervision. Areas identified for training included behaviour management, mental health, communication, and patient education.

Conclusion: Most health professionals desired more training in working with adults on the autism spectrum. They currently receive training through

accumulative clinical experience and on-the-job training, but would prefer to develop their knowledge and skills via participation in workshops, attendance at conferences, and clinical supervision.

URBANOWICZ, A; VAN DOOREN, K; GRANICH, J; DASS, A; WHITEHOUSE, A & LENNOX, N

The oral health and dental needs of adults on the autism spectrum

Poster

Background: Little is known about the oral health and dental needs of adults on the autism spectrum including potential barriers to dental care. The aim of this project was to identify the oral health status and dental needs of Australian adults on the autism spectrum.

Methods: An on-line survey collected data on oral health and dental problems, dental care routines and experiences with dental professionals. Sixteen surveys were completed; 12 by the adult on the autism spectrum, of which one had intellectual disability, and four by a substitute decision maker for an adult with intellectual disability. Descriptive data analysis was performed on closed ended questions and open ended questions were analysed to identify common themes.

Results: Almost all participants (14/16) reported disliking one or more of the following during a visit with a dental professional: drilling, bright lights, having someone put instruments in their mouth, smells, loud sounds and leaning back in the dentist's chair and 4/16 required a general anaesthetic during treatment. Most (14/16) adults experienced problems accessing dental care due to lack of dentists with adequate skills and willingness to treat people with disabilities and the cost of treatment. Recommendations for dentals professionals to improve services included: undertake specific training for working with individuals on the spectrum; provide support for sensory sensitivities and fears; and provide longer appointment times with frequent breaks.

Conclusion: This research highlights key barriers to oral health and dental care for adults on the spectrum that need to be addressed by dental professionals.

WILSON, C

Can a co-designed suite of apps enhance communication and wellbeing in children on the autism spectrum?

Poster

In line with person-centred approaches, individuals on the autism spectrum should have access to a wide range of strategies and techniques to enhance communication of their competencies and interests. Recent literature suggests these qualities may be enhanced through use of technological tools, such as digital portfolios and calendars. Increasing research has found mobile apps to be highly effective in improving wellbeing and self-determination for those with complex communication needs. MyPortfolio is a suite of apps which aims to increase communication and interaction in children on the autism spectrum through audio and video recordings and photographs depicting their interests and goals. Within this suite, MeCalendar is an audiovisual calendar designed to facilitate communication, interactions and scheduling between home and school for children with on the autism spectrum. This work in progress aims to be an inclusive, intuitive, interest-oriented approach to increasing communication and interaction through collaborative design (co-design) with children on the autism spectrum and their proxies.

Research Plan: 1) Evaluate the use of MeCalendar as a communication and interaction tool between home and school, as well as between special education school and mainstream school. 2) Introduce other apps from the MyPortfolio suite to the children on the spectrum and continue co-design process to produce optimal design technologies. 3) Through a process of co-design, refine and evolve the technologies in conjunction with child participants, parents/caregivers and teachers.

WONG, M & SIM, K

Outcomes of children presenting with developmental delays at under 2.5 years old

Three minute rapid presentation + Poster

Objectives: Subjectively, more children are presenting younger with developmental delays to KKH Department of Child Development. This study aimed to investigate what their presenting primary diagnoses were and to track outcomes.

Methods: Retrospective case notes review was conducted for 1775 children under 2.5 years old from 2012-2014.

Results: The commonest developmental diagnoses at presentation were language disorder (n=793, 44.7%), autism spectrum disorder (ASD, n=458, 25.8%) and global developmental delay (GDD, n=275, 15.5%). The percentage of children under 2.5 years old presenting with developmental delays increased from 17.8% to 21.6% from 2012 to 2014. Over these three years, diagnostic rates for various developmental disorders remained stable, except for ASD, which gradually increased. On follow-up, 83% of children given an initial diagnosis of ASD retained their diagnosis. However, 138 of 517 (26.7%) children with a follow-up diagnosis of ASD actually had non-ASD diagnoses at initial presentation. Most of these had initial diagnoses of language disorder (n=72) and GDD (n=51). Due to the young age of this cohort, only 255 of 517 (49.3%) children with a follow-up diagnosis of ASD had undergone an ADOS to date.

Conclusions: There has been an increase in very young children presenting with developmental delays. However, the diagnosis of developmental disorders can be challenging, especially in very young children. Presenting features can also vary across time, and some disorders such as ASD have a wide presenting spectrum. Hence it is vital for developmental paediatricians to constantly review every child for possible ASD, regardless of initial presenting diagnosis.

ZHENG, L; GROVE, R & EAPEN, V

Predictors of Maternal Stress in Pre-School and School Aged Children on the Autism Spectrum

Three minute rapid presentation + Poster

Background: Mothers of children on the autism spectrum experience higher levels of stress than mothers of typically developing children and children with other developmental disabilities. However little is known about whether maternal stressors differ across childhood. **Methods:** This study investigated maternal stressors in 29 pre-school aged and 27 school aged children on the autism spectrum. Correlation and regression analysis were used to determine the impact of maternal age, family income and various child related factors on maternal stress levels. Specific child related factors used in the investigation were cognitive ability, autism severity, problematic behaviours, adaptive behaviours, repetitive behaviours and sensory processing challenges. **Results:** Findings revealed no difference in overall maternal stress levels across the two age groups. However, different factors were associated with maternal stress within each age group. Stressors in the school aged group included repetitive behaviours, sensory sensitivities and problematic behaviours. Within the pre-school aged group, maternal stress was mainly associated with adaptive behaviours. **Conclusion:** These findings highlight the need to identify factors that have a unique impact on maternal stress across age. This will help inform clinical practice by providing insight into targeted and effective supports that will enhance the wellbeing in mothers of children on the autism spectrum.