

Simon Fraser University Autism Lab

At the Autism and Developmental Disorders Lab at Simon Fraser University we are interested in the social development of individuals with an Autism Spectrum Disorder (ASD). The goal of our research is to understand more about social development in autism and to inform treatment and intervention.

A few words from the Director, Dr. Grace Iarocci



I am an associate professor of Developmental and Clinical Psychology in the department of psychology at SFU and I work closely with the government and community agencies in BC to provide research information on Autism Spectrum Disorders (ASD).

At the ADDL, we investigate the basic processes of attention and perception that are involved in the social-cognitive development of individuals with and without ASD. More recently, we have also started to investigate issues in adolescents and adults with ASD. Specifically, we are interested in how adults with ASD view themselves and their future. The majority of research has focused on childhood; however, ASD is a life long condition that also greatly affects adolescents and adults.

We are committed to learning more about individuals with ASD across the life-span. We thank the Social Sciences and Humanities Research Council (SSHRC), the Michael Smith Foundation for Health Research (MSFHR), the Canadian Institutes for Health Research (CIHR), and the Laurel Foundation for supporting our work.



Did you know?!?

The ADDL is now on Facebook! Be sure to “like” us on Facebook and share with your friends.

Just search for “ADDL” and you will be able to view our page. Upcoming events and news will also be posted here and on our ADDL website!

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Thank You!

We would like to thank all the parents, children, adolescents and adults who have participated in research at the ADDL lab! On the following pages we outline some of the research studies and findings that were made possible by your participation. We appreciate your contribution to autism research and invite you to participate in our new studies!

Learn more about us at:
<http://autismlab.psyc.sfu.ca>

Students with Autism Spectrum Disorder in the University Context: Peer Acceptance Predicts Intention to Volunteer

by Emily Gardiner & Grace Iarocci



With growing numbers of individuals with ASD enrolling in post-secondary education, it is important to consider how typically developing students' attitudes affect the post-secondary engagement of students with ASD. This research identified important contributors to typically developing peers' acceptance of a student with ASD, and explored whether acceptance translates into action.

Students with previous positive experience interacting with individuals with ASD were more accepting. Females, students enrolled in Arts and Social Sciences programs, and those demonstrating higher acceptance were more willing to volunteer with organizations serving this population. This work is important as it sheds light on areas that can be targeted to improve peers' attitudes toward classmates with a social disability, thus facilitating their social integration and educational success.

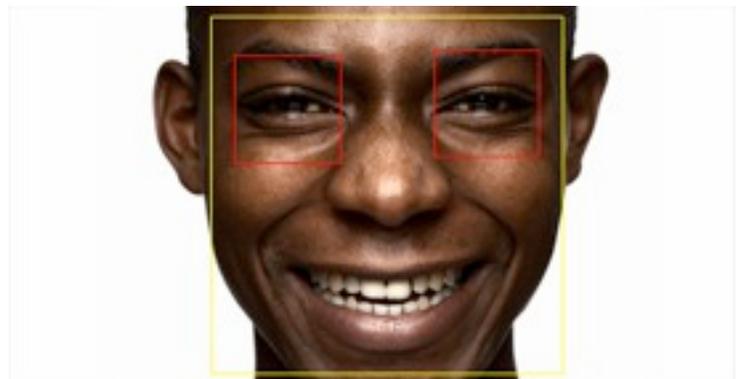
This research was presented at The Canadian Society for the Study of Education (CSSE) and the Canadian Society for the Study of Higher Education (CSSHE) conferences (2013) and has been published in the Journal of Autism and Developmental Disorders.

The Moving Window Technique: A Window into Developmental Changes in Attention During Facial Emotion Recognition

by Elina Birmingham, Tamara Meixner, Grace Iarocci, Christopher Kanan, Daniel Smilek, & James Tanaka

Facial emotional recognition (FER) is a crucial skill in every day social interactions. This study particularly looked at allocation of attention to recognize different facial expressions. Birmingham et al. used the Moving Window Technique (MWT) to investigate the development of attention strategies involved in FER. The participants, aged 5 to 22 years old, were presented with a blurred image of a face, in which they were able to move the window to remove the blur. In this way, they could explore the face, and verbally respond which of the four basic emotions (happy, angry, disgusted and scared) the face illustrated.

This study found that with age, there was an increase in attention to the left eye during FER, while a reduction in attention to the mouth. This reduction tendency emerged at age 11- 12 years, marking the beginning of the developmental shift in FER from the mouth toward eyes. This age group also supported the left-eye bias, as they were more likely to end their exploration on the left eye at the time of response. Yet, in terms of overall exploration time, the bias was not significant compared to adults. Thus, it is noted that 11 - 12 years is the important stage in developing a more complex and sensitive strategies of FER thereby more accurately comprehending other's emotional expressions.



This research has been published in the Journal of Child Development.

Orienting in Response to Gaze and the Social Use of Gaze Among Children with Autism Spectrum Disorders

by Adrienne Rumbough & Grace Iarocci



Researchers often aim to understand symptoms of ASD that emerge early in life, are important for social development, and are amenable to treatment. These symptoms are sometimes referred to as “pivotal skills”. Gaze-following (i.e. the tendency to follow another person’s eye-gaze towards an object in the environment) is a “pivotal skill” that is poorly understood. Parents and clinicians often report that gaze-following is impaired in ASD, but computerized laboratory tasks have not been able to detect these impairments. It’s possible that computerized tasks lack sensitivity to gaze-following differences in ASD.

In this study, we tested whether children with ASD would show impairments on a standard computerized gaze-following task as compared with other types of tasks where they had to use eye-gaze (i.e. a social use of gaze task and a line-of-sight following task). As expected, on the standard computer task, children with ASD demonstrated typical gaze-following. However, on the social task, participants with ASD were less likely than typically developing comparison children to following a cartoon character’s eye-gaze to learn new words, and make guesses on the characters state of mind. Also on the line-of-sight following task, children with ASD were less accurate at following eye-gaze when there were multiple distracter objects. These findings confirm that children with ASD do have gaze-following deficits that are not showing up on the standard computerized task.

We are following up on this work by designing a computerized task that is sensitive to ASD differences, with the hope of understanding exactly how gaze-following is abnormal and how we can help. This research was published in the *Journal of Autism and Developmental Disorders* (2013).

The Autism Quotient has Convergent Validity with the Social Responsiveness Scale in High Functioning Individuals with ASD

by Kimberly Armstrong & Grace Iarocci

The Autism Quotient (AQ; Baron-Cohen et al., 2001) is a continuous, quantitative measure of traits associated with ASD. It is free of charge, and often used as a tool to measure autism symptoms and screening for the disorder in research. The Social Responsiveness Scale (SRS; Constantine & Gruber, 2005) is another brief measure which can be used to measure ASD symptoms, and has well-established reliability and validity (Brooker & Starling, 2011), but can be quite costly. The objective of this study was to examine the convergent validity of the AQ using another common screening measure of autism: the SRS.

Participants with ASD were administered the AQ and the SRS, and it was found that the AQ and SRS were highly correlated. This study provides evidence for convergent validity of the AQ with the SRS, an already well-validated screening tool for ASD. Implications are that research can be conducted in a more cost-efficient way, employing the use of the AQ for screening ASD symptoms.

This research was previously presented at the International Meeting for Autism Research (2012) and has been published in the *Journal of Autism and Developmental Disorders*.

Social Competence During Adolescence Across Cultures

by Grace Iarocci & Emily Gardiner

This paper, which is currently In Press for the *International Encyclopedia of Social & Behavioral Sciences* (2nd ed.), examines what social competence looks like during the adolescent years. This chapter reviews key social developmental milestones of adolescence, and explores how views of social competency vary across cultures.



Age-Related changes in conjunctive visual search in children with and without ASD

by Grace Iarocci & Kimberly Armstrong

Visual-spatial strengths observed among people with ASD may be associated with enhanced selective attention mechanisms such as finding a particular item in an array of items, which is a task people with ASD have previously been found to perform better on and we were interested in how this develops with age. We examined visual search ability in groups of children with (n=34) and without ASD (n=35) at 7-9 years of age when visual search performance is beginning to improve, and later, at 10-12 years, when performance has improved.

The results were consistent with previous developmental findings; 10-12 year old children were significantly faster visual searchers than their 7-9 year old counterparts. However, contrary to previous studies we found no evidence of enhanced search performance among the children with ASD at either the younger or older ages. More research is needed to understand the development of visual search in both children with and without ASD. This research was presented at the International Meeting for Autism Research (2013) and will be published in Autism Research.

***Some of this data is from the 2012 and 2013 SFU Camps**

Low- and high-level vision in individuals with autism spectrum disorder

by Fakhri Shafai, Kimberly Armstrong, Grace Iarocci, & Ipeck Oruc

Individuals with ASD often have difficulties in face processing. However, it has been previously shown that individuals with autism may be better than controls with detail-oriented tasks. In order to explore whether these findings are related to differences in basic (e.g. detecting an angle) or complex (e.g. face expressions) visual processing, adult participants with ASD did a variety of computer tasks. We found that there were differences amongst individuals with autism for the basic visual tasks. Surprisingly, these response patterns clustered into two groups, meaning that some individuals with ASD do see the world differently at the most basic levels. All ASD participants, however, were impaired in the complex tasks. These results suggest that processing complex stimuli, such as faces, is not likely to be due to basic visual perception issues alone.

These findings are important as they can help us understand how adults with ASD see the world around them, while also giving us potential avenues to explore for improving interventions. This research is ongoing. This study was presented at Vision Science Society (2013) and is in preparation to be published.

An empirical analysis of the BASC executive function content scale with individuals with ASD

by Emily Gardiner, Sarah Hutchison, Kimberly Kerns, & Grace Iarocci

Executive functions (EF) are capacities that allow one to accurately evaluate a situation and develop an appropriate response. The Behavior Assessment System for Children is a Parent Rating scale that contains an index called the Executive Function content scale (EFCS). This is a measure of EF within everyday settings. We examined these abilities in over 150 children with and without ASD, matched on age (range=3-18 years). A subset of 37 children (ASD=17; TD=20), 3-6 years old, were also administered a series of computer tasks measuring EF.

Overall, results suggest that parents of the children and adolescents with ASD rated them as demonstrating poorer EF skills. Moreover, in our subset (n=37) of children aged 3-6 years, EFCS score differences were also significant, indicating that younger children with ASD also had poorer EF skills. We also found that the EFCS is measuring an aspect of EF that differs from the computer tasks, suggesting that using the EFCS provides information from the unique perspective of the parent. This study was presented at the International Meeting for Autism Research (IMFAR) in May 2013 and is in preparation to be published.

***Some of this data is from the 2012 SFU Camps**

Does General Anxiety Predict Peer-Related Social Outcomes in Youth with High Functioning Autism Spectrum Disorder?

by Krista Johnston & Grace Iarocci

Research has found that up to 84% of youth with ASD experience anxiety and approximately 42% have an anxiety disorder diagnosis. Generalized anxiety is a type of anxiety that is characterized by a wide range of worries (e.g. performance in school or in social situations, making mistakes, or natural disasters) and is one of the most common types of anxiety in people with autism. The goal of this study was to determine if parent ratings of generalized anxiety in their child can predict peer relations (i.e. how well they get along with other children). We also examined how well depressive symptoms predict peer relations. Fifty five high functioning youth with ASD (i.e., IQ >85) between the ages of 7 and 18 were included in this study.

Findings show that the more generalized anxiety and depressive symptoms the youth had, the worse their peer relations were. However, generalized anxiety did not predict peer relations after controlling for gender, IQ, level of autistic social impairment, or depressive symptoms. On the other hand, IQ and depressive symptoms were strong predictors of peer relations in these youth. Overall, 38% of the youth scored in the clinically elevated range for generalized anxiety symptoms and many of these participants (42%) had an anxiety disorder diagnosis. We also found that 55% of the youth fell in the clinically elevated range for depression, yet only two participants had a mood disorder diagnosis. This information is important because it suggests that depression symptoms appear to be going undetected and better screening for depression and other mental health issues is needed for individuals with ASD. These findings highlight that depression symptoms, were better predictors than generalized anxiety symptoms, of poorer peer relations in youth with high functioning ASD and underscores the importance of screening for depression and other mental health issues in this population. This study was undertaken as partial fulfillment for Krista's master's thesis and is in preparation to be published.

***Some of this data is from the 2012 SFU Camps**

Planning, Inhibition, and working memory in preschool children with and without ASD

by Emily Gardiner, Sarah Hutchison, Ulrich Müller, Kimberly Kerns, & Grace Iarocci

Executive functions (EF) are capacities that allow one to accurately evaluate a situation and develop an appropriate response. This may involve self-awareness, monitoring and planning, organization, flexibility, inhibition, and working memory. Previous research tells us that some people with ASD demonstrate difficulty on tasks measuring EF skills when compared to typically developing (TD) individuals, but that such difficulties may not be present in young children.

Thirty-seven preschoolers (TD=20; ASD=17) participated in a series of computer tasks measuring planning, inhibition, and working memory. For the planning task, we found that children with ASD were more efficient as they solved trials used significantly fewer moves, but TD participants were able to proceed to higher levels. No significant group differences were found in the games measuring working memory or inhibition. This study suggests that EF difficulties (at least with regard to the domains assessed) may not be a primary feature of ASD, as these do not appear to be deficient in the preschool years, even when compared to TD children. Differences in EF may emerge later in development as tasks become more cognitively and socially complex.



This study was presented at the Society for Research in Child Development in April 2013 and is in preparation to be published.

Thanks to all our participants and lab volunteers for making these studies possible!

SFU & UBC Study on Special Interests and Visual Perception

What do we want to know? The overall goal of this study is to gain a better understanding of how visual perception and interests in people with ASD differ from people without ASD, and if so in what way. This research will help us identify areas of strengths and those in need of support for adults with ASD, which is a topic very much in need of study.

Who are we looking for? Adults (16+) with a diagnosis of ASD. **About the study:** Adult participants will spend the day (about 6-7 hours) doing interactive tasks (such as defining words and solving some puzzles), and completing some questionnaires. They will also complete a brief eye exam and some computer tasks. The day will take place at Vancouver General Hospital. Participants will be paid \$10/hour cash for their participation in the study.

Quality of Life in Families of Children with ASD (Online Study)

Thank you to all of the families around British Columbia who have already participated in this project! We really appreciate your contribution and input. **We are still looking for participants for this study.** **What do we want to know?** The overall goal of the study is to gain better understanding of the factors that contribute to family well-being.

Who are we looking for? We are looking for any **main caregiver** of a child with autism. The main caregiver may be a parent, a sibling, a spouse, a life partner, or other family member.



What is involved? Participants may complete both a phone interview and an online survey, or just an online survey. The total time commitment is between 45-120 minutes, depending on the aspects you participate in. For this study, an amazon.ca gift card will be provided. If you want to learn more about Family Quality of Life, Dr. Iarocci and Emily Gardiner spoke at Autism Community Training's (ACT) 9th Annual Focus on Research Conference in April. You can view a video of their presentation, Quality of life among families living with ASD, on the ACT Online Videos page (<http://www.actcommunity.ca/education/videos/>).

Special Interests in Trains Among Children and Youth

What do we want to know: Many children with autism are fascinated by trains. The goal of this study is to understand how special interests develop in youth with and without autism. We are examining how a special interest in trains from a young age influences learning about trains vs. learning about social stimuli. For example, do children recognize trains as easily as we recognize faces?

Who are we looking for? Children and youth WITH and WITHOUT autism between 6-19 years of age, and their parents. We are looking both for children who have an intense interest in trains, and children who do not. ****If your child has an intense interest in something other than trains (e.g., dinosaurs, trucks, etc.), we would love to hear from you!** **About the study:** This research will take place at our lab at SFU, Burnaby campus. You will be asked to fill out questionnaires and your child will be involved in computer tasks.

To sign up for any study, email addl@sfu.ca



Dr. Iarocci awarded grant from Laurel Foundation

In October 2013, the Laurel Foundation awarded Dr. Iarocci a grant to sponsor more family events for families. In 2014, the ADDL will be hosting 3 FREE community events with the Laurel Foundation titled, "ASD & Family Quality of Life Discussion Series." See pg. 9 for more details.

Dr. Iarocci and colleagues awarded 5 year NSERC grant

In April 2013, Dr. Iarocci and colleagues were awarded a 5 year grant from the Natural Sciences and Engineering Research Council of Canada (NSERC). The grant will be used to study how children with and without autism develop expertise in face processing. Our success is largely due to the productivity of the lab and everyone (families who participate in our research, volunteers, graduate students and staff) deserves a huge thanks for all the hard work that they do to contribute to the productivity of the lab. This grant will also provide more training opportunities for everyone in the lab.



Dr. Yager receives Dean's Convocation Medal

Congratulations to Dr. Jodi Yager, Dr. Iarocci's former doctoral student, who was recognized with the award of the Dean of Graduate Studies Convocation Medal as one of SFU's most outstanding graduate students from the Faculty of Arts and Social Sciences. As part of Dr. Yager's dissertation, she developed and evaluated a new measure, the Multidimensional Social Competence Scale (MSCS). It is hoped that this new tool will help both researchers and clinicians identify areas of relative social strength and challenge in youth with ASD. Dr. Yager is currently working at Compass Clinic in Vancouver where she conducts contracted psychological assessments for the Provincial Autism Resource Centre. She also plans to continue research collaborations with Dr. Iarocci and the MSCS is now being administered in several research projects.



Another successful thesis defense & Award

We are pleased to announce that Ms. Krista Johnston successfully defended her master's thesis on April 25, 2013. The title of her thesis was: "Does General Anxiety Predict Peer-Related Social Outcomes in Youth with High Functioning Autism Spectrum Disorder?" Ms. Johnston is now a doctoral student in the Clinical Psychology program at SFU and is supervised by Dr. Iarocci. She has recently received the Provost Prize of Distinction awarded by the Dean of Graduate Studies.



Clinical Residency in Disabilities

Ms. Adrienne Rombough recently completed her year long clinical residency with the Kingston Internship Consortium. While in Kingston, Adrienne received specialized training in working with and supporting individuals with both developmental and acquired disabilities across the lifespan. Adrienne has now returned to B.C. where she is working for Compass Clinic. She hopes to apply her knowledge to help families in the Lower Mainland by providing accurate diagnoses and supports to improve the quality of life and community participation of individuals with disabilities.



New Clinical Internship

Congratulations to Mr. Theo Elfers, a doctoral student in our lab, who was successfully matched with Vancouver Coastal Health. This year long predoctoral internship focuses on adolescents and adults with mental health difficulties. This is a great opportunity for Theo because it provides excellent supervised training and it allows him to gain more depth and breadth in his clinical experience. Theo will resume his studies in fall 2014.



New Doctoral Student

Ms. Mandeep Gurm successfully defended her master's thesis on December 12, 2013 under the supervision of Dr. Arlene Young. The title of her thesis was "The Association between Maternal Emotion Socialization, Child Temperament, and Emotional Understanding. Mandeep is now the newest doctoral student under the supervision of Dr. Iarocci. Welcome to the lab Mandeep!





Families and ASD: Looking to the Future

On April 5th, the ADDL co-hosted an event with the support of the Laurel Foundation. We had over 100 people attend! We had many great comments from families on their quality of life and suggestions for the various organizations on how to improve the quality of services. For a written summary of the event and the video link, please visit our website or the Laurel Foundation website.



ACT's 9th Annual Focus on Research- Building Community Capacity Across the Rockies

Sponsored by Autism Speaks Canada, the conference featured some 20 researchers from across B.C. and Alberta on April 19th and 20th. Dr. Iarocci, and our Graduate Student Emily Gardiner gave a presentation on "Quality of Life Among Families Living with ASD." This conference examined the practical implications of ASD research taking place in the two provinces.



Dr. Iarocci's Presentation for UBC's "Brain Talks"

Dr. Iarocci gave a presentation "How autism can uncover the relations between object and face perception" on June 20th at Vancouver General Hospital. There is a longstanding debate about how children develop expertise in face processing – is a specialized mechanism involved or are faces processed much like other objects of interest? To answer this question Dr. Iarocci looked at how perceptual expertise for face and object processing develops over time as children fine-tune their experience with objects and faces between the ages of 7 and 13 years.



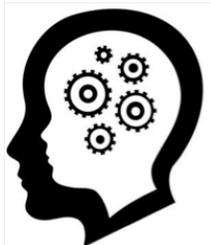
Initiative to Support Employment of People with ASD

On June 21st, there was a public meeting "Real Work for Real Pay", aimed at launching an initiative to support employment of people with ASD in BC. Ms. Krista Johnston, one of the ADDL doctoral students, was able to represent the lab at this event. Information about services from this event was posted on our website under "Resources".



2nd Annual SFU Social Science Camp

Thanks to all our families who participated in our day camps! The camp for children without autism was held on July 13th and the camp for children with autism was held on July 20th. Data collected from the 2013 camps is still being analyzed; however, data from the 2012 camps has been used in two studies so far (see pg. 4 & 5). See pg. 9 for information about our 3rd Annual SFU Social Science Camp!



6th Annual Vancouver Autism Speaks 2013 Walk

It was a rainy Autism Speaks Walk this year, but it was still a great event! Our ADDL team raised \$120 for the walk this year and several lab members and volunteers were able to attend.

This event raised over \$200,000 and it was announced that the Pacific Autism Family Centre will be breaking ground in Richmond in early 2014 and will open in 2015. A portion of the money raised will be put toward this new centre. This is the third year our lab was able to participate, and we look forward to doing the walk again in 2014!



Autism Awareness Day for Systems, Applications, and Products in Data Processing (SAP)

Dr. Iarocci and Dr. Birmingham were panelists at an Autism Awareness event on November 6th to provide an academic and research perspective on autism to over 80 SAP employees. This event included an introduction to the SAP's Autism @ Work program, a partnership between SAP and Specialisterne, to source and train candidate with autism for positions within SAP. SAP's philosophy is to focus on the strengths of people on the spectrum.

Richmond 2nd Annual Autism Resource Fair

The ADDL was able to attend this great event on Nov. 23, 2013 which included presentations from professionals and parents. We were able to share information with families on resources and research opportunities! We look forward to participating in this event next year! For more information about the Richmond Autism Interagency Committee, please visit their website:

www.autismrichmond.ca



Upcoming Events for 2014

ASD & Family Quality of Life Discussion Series

The Autism and Developmental Disorders Lab at SFU, together with the Laurel Foundation, is co-hosting 3 community events, the themes are: *Families and School*, *Families and Mental Health*, *Families and Transitions*. The aim of these events is to facilitate discussion among a range of stakeholders, including individuals and their families, researchers, and professionals about important Quality of Life issues. These events are **FREE** and open to the public, so please join us and bring your questions, ideas, and comments to what is sure to be a lively discussion! During the events, we will also be giving families an opportunity to participate in our research.

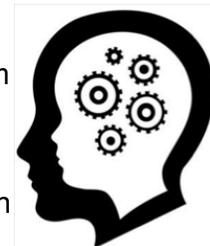
1. Families & Schools- Sat., January 18, 2014
2. Families & Mental Health- Sat., March 8, 2014
3. Families & Transitions- Sat., March 29, 2014



For more information and to RSVP: <http://autismlab.psyc.sfu.ca/events>

3rd Annual SFU Social Science Camp- August 9 & 16, 2014

This is a FREE, fun, and educational camp for children and youth with or without Autism Spectrum Disorders (ASD). The camp for individuals without ASD will take place on Saturday, August 9th and the camp for individuals with ASD will take place on Saturday, August 16th. All campers will receive a cool SFU Social Science Camp T-shirt! Part of the camp involves research participation; the majority of the day is devoted to fun crafts and interactive game activities. For more information and to sign up, please see our website.



**** Additional events will be posted on our website and Facebook as they develop!**

We hope you have enjoyed reading our annual newsletter! We would love to hear from you so feel free to contact us with questions, comments or suggestions via phone (778-782-6746) or email: addl@sfu.ca