



**RESILIENCY IN YOUTH WITH  
ASPERGER'S DISORDER**

**REPORT PREPARED FOR THE  
ALBERTA CENTRE FOR CHILD, FAMILY  
& COMMUNITY RESEARCH**

**University of Calgary**

**Division of Applied Psychology**

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**A Collaborative Effort:**  
*Contributors to the Tri-University Research Project*

**Our tri-university research initiative combines research evidence and clinical expertise with practical knowledge and skills from many individuals with diverse academic and professional backgrounds. Please take a moment to meet the project contributors.**

**The Tri-University Autism Spectrum Research Team:**

*Principal Investigators*

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Dr. Schwean is a Professor and Associate Dean in the Division of Applied Psychology at the University of Calgary. For over 20 years, Dr. Schwean has been active in research, teaching, and psychological service in Saskatchewan, and more recently, Alberta. Her area of primary focus is developmental psychopathology, with specific interests in Attention Deficit/Hyperactivity Disorder and Pervasive Developmental Disorders.

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Dr. Saklofske is a Professor in the Division of Applied Psychology, who is an internationally known investigator in the field of intellectual research. Dr. Saklofske is also active in teaching and psychological service, with primary research interests in intelligence and cognition, personality, emotional intelligence, individual differences, psychological assessment, and school and applied psychology.

## *Co-Investigators*

### **Jo-Anne G. Burt, M.Sc.**

Jo-Anne completed her Master of Science degree in School Psychology at the University of Calgary and her Bachelor of Science in Psychology at Acadia University. Her research interests include autism spectrum disorder, resilience, attachment, information processing, and emotional intelligence.

### **Danielle I. Dyke, M.A.**

Danielle is a registered provisional psychologist and doctoral student in the School and Applied Child Psychology program at the University of Calgary. She completed her undergraduate degree in psychology at the University of Lethbridge and obtained a Master of Arts degree in Behavioural Neuroscience at Brock University. Danielle's primary research interests involve using neuropsychological perspectives to understand and support children and adolescents with psychopathology.

### **Yvonne L. Hindes, M.Sc.**

Yvonne is a doctoral student in the Division of Applied Psychology at the University of Calgary. She completed her Bachelor of Arts Degree in psychology at the University of Lethbridge and her Master of Science Degree in School Psychology at the University of Calgary. She has written and presented on young adults with Asperger's Disorder, theory of mind and resiliency, and plans to continue research within these areas.

### **Candace S. Kohut, M.Sc.**

Candace completed her undergraduate degree in psychology at the University of Manitoba and her Master of Science degree in School Psychology at the University of

Calgary. Her current research focuses on Asperger's Disorder, as well as ability-based emotional intelligence and resilience.

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Adam is a doctoral student in the Division of Applied Psychology at the University of Calgary. He completed his Masters degree in Child-Clinical Psychology at York University and his Bachelor's degree in Psychology at the University of Calgary. He has provided assessment and intervention services to children, young adults, and adults with autism spectrum disorders in both home-based and center-based settings for the past ten years.

**Janine M. Montgomery, Ph.D.**

Janine is an Assistant Professor in the Psychology Department at the University of Manitoba. She received her B.Ed. from the University of Saskatchewan in 1996 and taught in Red Deer Separate Schools until 2001. Janine completed her Ph.D. in School Psychology at the University of Saskatchewan in 2007. She teaches in the School Psychology program at the University of Manitoba and is a collaborator and co-investigator on several research projects in the area of autism spectrum disorders. Additionally, Janine specializes in assessment, intervention, and advocacy for individuals with learning and behavioural challenges. Her areas of expertise include: autism spectrum disorders, attention deficit hyperactivity disorder, and learning disabilities in children, youth, and adults.

**Keoma J. Thorne, B.A.**

Keoma is completing her Master of Science in the School and Applied Child Psychology program, in the Division of Applied Psychology, at the University of Calgary. She completed an honours undergraduate degree, receiving a B.A. in psychology, at the University of Victoria. As an undergraduate she became interested in working with individuals with autism spectrum disorder and subsequently

became involved in the evaluation of a computer-based intervention to develop face-processing skills in children with high-functioning autism. After the completion of her master's degree, Keoma plans to further her education and training with the pursuit of a doctoral degree in School Psychology.



## Section I: Overview of the Research Project

### *Purpose*

Significant and pervasive social and emotional difficulties are primary characteristics of individuals with Asperger's disorder (or Asperger's syndrome; AS) and high functioning autism (HFA). As such, it is particularly important that research focus on understanding psychological and cognitive factors that may underlie these social-emotional difficulties, as well as the relationship between these difficulties and various resilient and adaptive outcomes, as this knowledge will ultimately inform support services for these populations. Consequently, the present research examined the psychological and cognitive factors that promote resiliency (i.e., personal, interpersonal, and social adjustment) in youth with AS and HFA.

Resiliency (the ability to succeed in spite of significant exposure to risk) and resiliency paradigms have demonstrated that variability in successful transitions is often associated with individual differences in social and emotional abilities (Masten, 1999 & 2001; Masten & Coatsworth, 1998; Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003). The link between resiliency and social-emotional functioning, moreover, has been demonstrated in typically developing populations and, in recent years, has been established in various populations of individuals presenting with exceptionalities (e.g. McCrae, 1990). Given that significant and sustained social-emotional difficulties are primary characteristics of AS and HFA, it seems particularly important that research focus on understanding causes of these difficulties, and their relationship to developmental and adult outcomes.

### *Objectives*

The primary objectives of this research were to obtain information regarding: 1) the psychological and cognitive basis of social and emotional abilities and challenges in youth with AS and HFA, and 2) cognitive and

psychological protective and vulnerability factors predictive of resiliency, adaptive, and social behaviours in youth diagnosed with AS or HFA.

### *Background Information*

#### **Asperger's syndrome**

Asperger's syndrome/Asperger Disorder (AS), as identified in both the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychological Association, 1994) and the *International Classification for Diseases* (ICD; World Health Organization, 1992), is a pervasive developmental disorder characterized by impairments in social interaction, communication, behaviour, and language. Differing from other pervasive developmental disorders, those with AS do not exhibit language development delays and tend to possess average, and sometimes above average, levels of intelligence (Klin, & Volkmar, 2003; Wing, 1981). These individuals do, however, experience great difficulty with pragmatic language, and flexibility in social and affective behaviour.

#### **Theoretical Perspectives of Social and Emotional Difficulties**

A number of conceptual models have been proposed to explain the aforementioned cognitive, affective, and behavioural characteristics of individuals with AS. Deficits in theory of mind and executive functions have been put forward to explain the social difficulties of those with AS and other autism spectrum disorders. The construct of emotional intelligence offers further opportunity to understand the characteristics of those with AS, as well as the social outcomes they experience.

#### *Theory of Mind*

ToM, or 'mentalizing', refers to the recognition that others have thoughts, feelings, beliefs, and perceptions different from our own, and that these mental states



influence the behaviour of oneself and others (Baron-Cohen, 1995; Happe & Frith, 1996). Research suggests that social difficulties, like those experienced by persons with AS, may be attributed to challenges ascribing mental states to oneself and others because these individuals are believed to experience difficulty conceiving of and using mental state concepts in the interpretation and prediction of their own as well as others' behaviour. Therefore, struggles with ToM are hypothesized to underlie the core defining symptoms of autism and related disorders such as AS (Baron-Cohen, Tager-Flusberg, & Cohen, 2000; Joseph & Tager-Flusberg, 2004). The development of ToM skills is important; much research suggests these skills are fundamental for understanding and adapting to the social environment as well as engaging in socially competent interactions and behaviours (Capps, Kehres, & Sigman, 1998; Frith, Happe, & Siddons, 1994; National Research Council, 2000; Peterson, Wellman, & Liu, 2005). Further, problems with ToM have been shown to be strongly related to poor outcomes in the educational, vocational, social, emotional and psychological realms of life, particularly during the transition into adulthood (Butzer & Konstantareas, 2003; Ehlers, & Gillberg, 1993; Ghaziuddin, Weidmer-Mikhail & Ghaziuddin, 1998; Myles, Barnhill, Hagiwara, Griswold, & Simpson, 2001; Portway, & Johnson, 2005; Tantam, 2000).

There is controversy in the literature regarding ToM abilities in AS. While some researchers report that individuals with AS encounter significant difficulties with ToM, others suggest that these individuals are successful on ToM tasks that require limited insight into another person's thoughts (Baron-Cohen, 1989; Baron-Cohen, Jolliffe, Mortimore, & Robertson, 1997; Bowler, 1992; Happe & Frith, 1996; Ozonoff, Pennington, & Rogers, 1991; Ozonoff, Rogers, & Pennington, 1991). Still others have found that those with AS have intact lower level ToM, yet experience subtle difficulties with ToM when the tasks are socially and emotionally complex, as is often the case in every-day social interactions (Baron-Cohen, Jolliffe, et al., 1997; Baron-Cohen, Wheelwright, Jolliffe, 1997; Rutherford, Baron-Cohen, & Wheelwright, 2002).

It appears that individuals with AS can complete most ToM tasks in a laboratory setting, yet have more difficulty in natural social interactions (see Dissanayake & Macintosh, 2003).

### *Executive Functions*

Executive functioning refers to the ability to adapt one's behaviour based on changing environmental contingencies. These adaptive capacities rely heavily on self-regulatory abilities and goal-directed persistence. More specifically, executive functions (EFs) are characterized by cognitive functions involved in planning and guiding behavior to achieve a goal in an efficient manner (Kodituwakku, Kalberg & May, 2001). Difficulties with flexibility, self-monitoring, and tendencies to perseverate have been documented in AS and HFA (e.g. Kenworthy, Black, Wallace, Ahluvalia, Wagner, & Sirian, 2005; Ozonoff, Pennington et al., 1991). Although there is evidence to suggest difficulties with EF are present in individuals with AS and HFA, further research is needed to determine specificity in the types of EF difficulties unique to these individuals (Griffith et al., 1999).

### *Emotional Intelligence*

Although the aforementioned theories have examined social and emotional impairments in AS none of these approaches, to date, have fully explained the social-emotional difficulties observed in these individuals (Klin, 2000; Tager-Flusberg, Joseph, & Folstein, 2001). As such, the construct of emotional intelligence (EI) may provide further insight into the unique social-emotional profile of individuals with AS. EI influences one's ability to successfully cope with environmental demands and pressures (Bar-On, 1997). Varying levels of EI, consequently, may impact domains of social and emotional functioning.

As a result of increased interest within the field of EI, two distinct theoretical approaches have been developed as a means of defining and understanding the

construct. These approaches examine EI from a trait-based perspective as well as from an ability-based perspective. Although these two approaches differ in their understanding of EI (with the trait-based approach perspectives focusing on behavioural dispositions and self-perceived emotional abilities, and the ability-based perspective underscoring the role of performance-based abilities), both view EI as a separate construct from other traditional views of intelligence. Moreover, both trait-based and ability-based EI approaches highlight the importance of EI as a predictive factor in determining mental and physical wellness. In contrast, these approaches to EI yield different psychometric properties, and research suggests that although related, these constructs measure different facets of EI (Bar-On, 2005; Brackett, & Mayer, 2003; Mayer, Salovey, & Caruso, 2000).

#### *Trait-Based Emotional Intelligence*

One of the first available scientific assessments of EI was the BarOn Emotional Quotient Inventory (EQ-i; Bar-On, 1997; Newsome, Day, & Catano, 1999). In development since the 1980's, the EQ-i examines a range of behavioural dispositions and self-perceived abilities (Bar-On, 1997; Parker, Taylor, & Bagby, 1999). According to Bar-On's model (1997), assessing EI is akin to measuring common sense and ability to get along with the world. He defined his concept of trait-based EI as "an array of non-cognitive capabilities, competencies and skills that influence one's ability to succeed in coping with environmental demands and pressures" (Bar-On, 1997; p.14).

Research suggests incremental validity, above and beyond measures of personality and intelligence, for trait-based EI in a variety of domains. According to Bar-On (2005), for instance, trait-based EI impacts not only life success but also emotional and mental health. Livingstone and Day (2005) similarly report that performance on the EQ-i is related to higher levels of job and life satisfaction, as well as successful affective regulation. Palmer, Donaldson and Stough (2002), and others (e.g. Bar-On, 1997), have found similar results.

### *Ability-Based Emotional Intelligence*

Mayer and Salovey's ability-based approach involves the capacity to reason with and about emotions, including the abilities to: "1) perceive and accurately appraise and express emotions; 2) access and/or generate feelings that facilitate thought; 3) understand emotion and emotion knowledge; and, 4) regulate emotions to promote emotional and intellectual growth" (Mayer & Salovey, 1997, p.10). Thus, as a composite construct, ability based- EI may be defined as the ability to perceive emotions, access and generate emotions so as to assist thought, understand emotions and emotional knowledge, and regulate emotions so as to promote emotional and intellectual growth. One of the most prominent measures of ability-based EI, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso 2002), reflects this conceptualization.

Research exploring the social and emotional difficulties of those with AS indicates that the nature of these difficulties map onto the four EI abilities described by Salovey & Mayer (1990). For example, Golan, Baron-Cohen, and Hill (2006) found that individuals with AS encounter difficulty recognizing complex emotions and mental states. Other studies report that difficulties using emotions to facilitate thought, such as empathy, are characteristic of the AS population (Klin & Volkmar, 2003). While individuals with AS have success on mentalizing tasks that can be reasoned, they have significantly more difficulty in intuitive mentalizing tasks (Castelli, Frith, Happe, & Frith, 2002; Frith, 2004; Klin, Volkmar, & Sparrow, 2000). Understanding their own emotions and those of others has also been shown to be quite challenging for individuals with AS (Gillberg, 1998; Lindner & Rosen, 2006). Further, others have indicated that individuals with AS display difficulties in emotional regulation, interpretation of nonverbal social cues, and mood regulation (Klin & Volkmar, 2003). Preliminary findings have shown that these difficulties in emotional regulation are

linked to social communication impairments in the AS population (Laurent & Rubin, 2004).

### **Resiliency**

Many young adults face ongoing adversity and challenges as they mature and transition into adulthood; however, a large number of these individuals also experience successful academic, vocational, and social-emotional outcomes despite these risks. Resiliency, a construct defined as an obtainment of positive adaptations in spite of the presence of risk factors or significant adversities, is considered a dynamic process. Consequently, individuals may be more or less resilient at different developmental stages and in varying contexts and situations (Masten, 1999 & 2001; Masten & Coatsworth, 1998; Rutter, 1990). Resiliency, thus, should not be equated with the absence of symptoms or skills, but rather with the presence of competencies that allow an individual to experience positive outcomes in specified situations.

Research suggests that resiliency is linked with successful transitions and outcomes in both typically developing populations and among individuals with exceptionalities (e.g. Masten, Burt, Roisman, Obradovic, Long, & Tellegen, 2004). For example, Reivich and colleagues (2005) state symptoms of internalizing disorders may be reduced through the promotion of positive coping and problem solving skills and the development of peer relationships. Similarly, well-developed cognitive abilities and positive parenting styles appear to promote resiliency in individuals with externalizing disorders (Goldstein, 2005).

### **Summary**

A better understanding of factors which promote resilience (like ToM, EFs, trait-based and ability-based EI) will enable the development of interventions that support psychological wellness and resilient outcomes among individuals with AD. Previous research with typically-developing individuals suggests that high trait- and ability-

based EI is associated with positive psychosocial outcomes and resilience, thereby decreasing levels of psychological distress and depression (Dawda, & Hart, 2000; Lopes et al., 2005). The life outcomes of those with AD affect not only those with the disorder but also the families of these individuals, the communities that surround them, and the systems that support them. Therefore, a comprehensive understanding of the social and emotional abilities exhibited by youth with AD, as well as an investigation into the factors that promote resilience, holds promise for identifying ways to increase opportunities for positive and resilient outcomes.



## Section II: Individual Research Summaries

*Janine M. Montgomery, Ph.D.*

### **Asperger Syndrome and Emotional Intelligence**

Individuals with Asperger Syndrome (AS) suffer from sustained and pervasive difficulties in social interaction. These difficulties are thought to contribute to poor psychosocial outcomes including anxiety issues, depression, and conduct disorders (Ghaziuddin et al., 1998; Szatmari et al., 1989; Tantam, 1988, 2000). While various theories have attempted to account for the social difficulties of those with AS, no single explanation adequately describes the unique experiences of those with AS. Emotional intelligence (EI) is a construct that may provide insight into the difficulties of those with AS. This doctoral research was divided into two studies designed to investigate EI in young adults with Asperger syndrome.

### **Study 1: Emotional Intelligence in Young Adults with Asperger Syndrome**

Study 1 demonstrated that ability and trait Emotional Intelligence (EI) together provide useful information to assist in understanding social outcomes for individuals with AS. While the AS group in this investigation demonstrated difficulties with trait EI, they performed as well as or significantly better than normative controls on an ability EI measure. The results indicated that cognitive aspects of processing emotional information were intact, while actual performance in real life settings was more problematic. The implications are that interventions should focus not on teaching knowledge (i.e., what facial expressions mean, how emotions relate, etc.) to individuals with AS. Rather, the findings reveal that automatizing responses in emotional situations, teaching coping tools that can extend processing time, and supported, repeated practice in various situations may be more appropriate interventions. Further, these findings may lead to intervention research that examines whether strengths with ability EI can be used to compensate for trait EI difficulties.

Finally, from a policy perspective, the findings of this study highlight the importance of individualized assessments for those with AS, as effective interventions require information about individual strengths and challenges in order to efficiently plan approaches to remediating difficulties and promoting self-awareness. The subtle difficulties of those with AS, while debilitating, are often overlooked. From a public policy perspective, awareness of these difficulties may be instrumental in preventing poor outcomes (social, employment, and mental health) for those with AS.

In addition to providing useful information on which to build interventions, Study 1 explored EI measures and their predictive ability for various psychosocial outcomes in individuals with AS. The results indicated that trait and ability EI combined, predicted 57% of the variance for interpersonal skills, while trait EI alone predicted 19% of the variance for social stress. Finally, using subscales from the EI measures, the BarOn-EQ-i:S Adaptability scale (Bar-On, 2002) combined with the MSCEIT Understanding Emotions scale (Mayer et al., 2002) predicted 31 % of the variance for parent reports of poor social skills. These results suggest that the construct of EI may hold great promise for better understanding social-emotional difficulties experienced by individuals with AS, as well as for informing intervention supports that may be most beneficial for these individuals.

### **Study 2: Emotional Intelligence in Young Adults with Asperger Syndrome: An Exploration of Performance on the MSCEIT and Bar-On EQ-i:S**

Study 2 was designed to explore executive functions (EF) and theory of mind (ToM) as additional predictors of the social outcomes explored in Study 1. While interesting descriptive information was generated about the AS group on EF measures, low correlations with the outcome variables specific to this study precluded their inclusion in regression models. However, using ToM in combination with trait EI



improved the prediction of the variance for social stress from 19% (when using trait EI alone) to 33%.

The findings from the two studies are important for several reasons. These studies are some of the first explorations of EI in the AS group. Results indicate that EI is a useful construct to enhance understanding of the emotional and social characteristics of young adults with AS. Moreover, EI predicts important social outcomes for youth with AS, and thus interventions focusing on EI are likely to significantly improve psychosocial outcomes. Further, using ToM and EI together provided important information about social stress in individuals with AS. As such, intervention research designed to determine if teaching EI and ToM in concert, decreases social stress, is very important for individuals with AS. Moreover, these findings again have policy implications, as they highlight the need for individualized assessment to ensure the provision of effective and efficient interventions. Finally, while an exploration of EF in individuals with AS revealed that only cognitive flexibility (set-switching) was impaired, directions for future research were revealed. Specifically, the limited and conflicting research on EF in AS warrants further explorations. These future studies should carefully consider whether or not to include individuals with co-morbidities, as some suggest that EFs are the core deficit in ADHD (Barkley, 1997), while others suggest the EFs are more impaired in autism spectrum disorders (Geurts et al., 2004). While it may be difficult to recruit a sufficient sample size if those with co-morbidities are excluded from studies, research attempting to ascertain the primacy of EF difficulties in AS versus AS/HD must differentiate between the groups. An alternative option would be to screen for both AS and ADHD in future studies. Finally, the inclusion of a broader battery of EF tests would assist in comparison across studies and would be helpful in understanding specific areas of strength and impairment for individuals with AS. Research of this nature is vitally important to improving outcomes and overall quality of life for those with AS.

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*Jo-Anne G. Burt, M.Sc.*

## **An Examination of the Relationship Between Trait-Based Emotional Intelligence and Psychological Resilience in Youth with Asperger's Disorder**

This research sought to examine the relationship of trait-based emotional intelligence (EI) – which may be defined as a variety of capabilities, competencies and skills that influence an individual's ability to successfully cope with environmental demands and pressures (Bar-On, 1997) – to resilience in 23 youth, between the ages of 16 and 21, diagnosed with Asperger's Disorder (AS).

The social and emotional challenges experienced by individuals with AS, such as difficulties understanding social cues, sensing the feelings of others, and feeling detached from others, often negatively impact these individuals. For instance, individuals with AS face challenges finding and maintaining employment, living independently, and developing and maintaining friendships (Gustein & Whitney, 2002). Likewise, research suggests, individuals that experience difficulty socially connecting to others risk increased levels of anxiety, stress and depression, as well as illicit drug and alcohol use, and may become victims to teasing and physical bullying (Laurent & Rubin, 2004; Tantam, 2003; Tantam, 2000).

Subsequently, the study of factors, like trait-based EI and resilience – both of which have been linked to positive life outcomes like job and life satisfaction – may, in turn, aide to promote successful outcomes in youth with AS.

Results from this study revealed that male youth with AS (17 participants) scored lower on several trait-based EI emotional quotients in comparison to the typically-developed male population. These findings suggest these males exhibit many consistent with a diagnosis of AS. For example, these male youth with AS may be better able to manage stress and problem solve but may also act less desirable in

social situations and may, generally, possess underdeveloped social and emotional skills.

The comparatively smaller sample of female youth with AS (six participants), conversely, did not score lower on the emotional quotients when compared to the typically-developed female population. However, further studies, that examine the role of gender in AS, are recommended; results from this study may not be an accurate characterization of the majority of females with AS due to the small group size.

Other results from this study indicate that youth with AS report themselves as feeling dissatisfied with the quality of social relationships (i.e., feel less socially connected to others than average). This finding is similar to other AS research that suggests individuals with the disorder are often socially isolated and, consequently, lack social support (Gustein, & Whitney, 2002; Southwick, Vythilingam, & Charney, 2005).

However, youth with AS scored within the average range on several other resilient outcomes; individuals in this study appeared to perceive themselves as functioning well within the average range in many areas despite the social and emotional challenges they faced. Connections were also found between several trait-based EI emotional quotients and self-perceptions of resilient outcomes including life satisfaction, personal adjustment, and social stress. These results suggest that trait-based EI may help promote resilience in youth with AS. Average levels of Stress Management EI, in particular, were related to numerous resilient outcomes (like lower levels of social stress, lower feelings of inadequacy, and lower levels of emotional outbursts).

This study highlights many of the potential strengths of individuals with AS – particularly in several areas of resiliency and trait-based EI emotional quotients.

Although relative weaknesses related to social and emotional functioning were evident, emotionally intelligent behaviour (and its related skills) may be developed through training and intervention (Bar-On, 2005; Parker et al., 2000). Likewise, resilient behaviours can be learned – through support and education – and built into life experiences. In planning interventions, this research suggests that programs be tailored to personal strengths. By focusing on these areas of strength, individuals with AS may become more able to compensate for the emotional and social challenges they face and similarly, obtain more positive life outcomes.

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*Candace S. Kohut, M.Sc.*

## **Emotional Intelligence and Resiliency in Young Adults with**

### **Asperger's Disorder: Preliminary Findings**

This research explored ability-based EI in a sub-sample of young adults with Asperger Disorder (AS). Specifically, this study aimed to explore the social-emotional difficulties and identify factors related to positive psychological outcomes within young adults with AS.

The purpose of this study was to examine the relationship between ability-based emotional intelligence, resiliency, life satisfaction, and psychological and adaptive behaviours (i.e., self-esteem, personal adjustment, social stress, and social skills). The researchers hypothesized that in examining the relationship between ability-based emotional intelligence, life satisfaction, and resiliency in young adults with AS, lower scores on the EI measure will be associated with lower resiliency, and life satisfaction.

The participants for this study were 26 young adults between the ages of 16 to 21 with AS. All 26 participants were clinically diagnosed with AS by a psychologist, psychiatrist, or pediatrician and were recruited as part of a broader multi-site project with various collaborators. As was found in other investigations by members of the research group, the AS sample performed in the *average* range of functioning on an ability-based EI measure (MSCEIT) and demonstrated a relative strength in understanding emotional information, as well as a relative weakness in managing emotions. Examinations of the relationships between ability-based EI and resilient outcomes revealed that those young adults who demonstrated both average ability-based EI and verbal cognitive abilities, also tended to report higher levels of

behaviours that promote healthy personal adjustment, high levels of self-esteem, low levels of social stress, and were more likely to report higher levels of resiliency.

The results of this study are congruent with an ecological perspective that emphasizes strengths, health, competence, and empowerment promote resilient outcomes. More specifically, relative strength in understanding emotional information was correlated with several important (resilient) outcomes. A focus on identifying the strengths of young adults with AS within the context of their lives is not often the focus in current AS research (Kasari & Rotheram-Fuller, 2005). This research identified several possible factors that may contribute to resilient outcomes in young adults with AS and points to directions for further research. This is important because adolescence is marked by biological, social role, and psychosocial changes, and how adolescents adapt to these changes may set the stage for the transition into adulthood. Highlighting opportunities to promote positive outcomes in this transition time by indentifying islands of competence and focusing on strengths may be an important research direction in ASD research. Lastly, the findings reinforce the need for a multi-modal, multi-source individualized assessment model that incorporates direct measures of both EI and resiliency. Because AS involves impairments and/or strengths in multiple areas of functioning, a multidisciplinary, comprehensive, evaluation of each individual with AS is needed. This may include assessment in the following areas; social abilities and interactions, emotional and psychological functioning, neuropsychological assessment, and adaptive functioning (Khouzam, El-Gabalawi, Pirwani, & Priest, 2004).

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*Yvonne L. Hindes, M.Sc.*

### **Theory of Mind & Resiliency in Young Adults with Asperger's Disorder**

Asperger's Disorder (AS) is characterized by atypical patterns of interests or behaviours and social-emotional difficulties, despite an absence of clinically significant delays in language acquisition and cognitive functioning (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001). This study explored theory of mind (ToM)- the recognition that others have thoughts, feelings, beliefs, and perceptions different from our own, and that these mental states govern the behaviour of oneself and others (Happe & Frith, 1996)- in young adults with AS. It is important to note that there is conflicting evidence regarding whether or not individuals with AS have difficulties in ToM (Baron-Cohen, Jolliffe, Mortimore, & Robertson, 1997; Happe & Frith, 1996) and thus, there is a need to clarify current understanding of the relationship of ToM to the unique social-emotional struggles of AS. In addition, this study was interested in understanding whether ToM may account for positive resiliency in young adults with AS as they transition into adulthood.

Across theoretical models, resiliency is included within a framework exemplified by positive adaptation. It is described as protective mechanisms that give rise to positive outcomes in spite of the presence of threats to development (Masten, 2001). Resiliency is not a discrete quality that individuals either possess or do not possess; rather, individuals may be more or less resilient at different stages of their lives and in different contexts (Rutter, 1990). Resiliency models have been used to predict successful transitions, particularly into adulthood (Masten, Burt, Roisman, Obradovic, Long, & Tellegen, 2004), and factors such as self-esteem (Benetti & Kambouropoulos, 2006) and familial relationships and support (Holmes, 2007) have been linked to promoting resiliency within the typically developing population. In contrast, it is still unclear which factors might mitigate resiliency in individuals with AS. The study of resiliency in persons with AS is of importance due to the increased



prevalence of this condition (Fombonne & Tidmarsh, 2003) and the associated social-emotional difficulties impacting multiple domains of life (Sabbagh, 2004). As such, it is of importance to integrate studies of resiliency and clinical populations, in an effort to identify which factors significantly and positively impact the lives of individuals at risk for or diagnosed with AS.

Participants were 26 young adults between the ages of 16 to 21 with AS. Participants meeting the eligibility criteria completed the Eyes Test, Satisfaction With Life Scale, Resiliency Scales, and the BASC-2 self-report. The order of administration was randomized to avoid order effects. The BASC-2 parent form was completed by one of the participants' parents and when a consenting teacher was available, he/she was asked to complete the BASC teacher rating scale.

There were two major conclusions drawn from this study. First, young adults with AS displayed difficulties on an "advanced" ToM task, suggesting that despite having intelligence scores within the average range, these individuals likely experience difficulties in relation to mental state attribution. Moreover, participants' performance on the ToM task was lower than that of a typically developing population, but better than that of other individuals with AS or High-Functioning Autism (HFA) from a previous study by Baron-Cohen et al (2001). The study by Baron-Cohen and colleagues (2001) did not differentiate between these two groups' performance and, therefore, it may be that individuals with HFA and AS perform differently from one another on ToM tasks. The dissimilarity observed in performance may also be attributable to diversity in ages and gender of the participants. Lastly, the data suggest that young adults with AS's difficulties with ToM skills are not significantly related to resiliency. The current study suggests that contrary to previous research, difficulties in ToM may not be central to the core social-emotional characteristics defining AS. In sum, ToM is probably not the sole social cognitive ability related to social-emotional challenges and resiliency in young adults with AS, but may play a

role in combination with other factors such as executive functions or emotional intelligence.

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## Ongoing Investigations

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### **Specificity in Executive Functions in Young adults with Autism Spectrum Disorder**

The purpose of this study is to examine factors that promote resiliency in young adults with Asperger's Disorder (AS). Current research has demonstrated that young adults with difficulties in social interaction and emotional regulation, as commonly displayed in individuals with AS, are at an elevated risk to develop affective, anxiety, and conduct disorders (Butzer & Konstantareas, 2003). Consequently, these young adults are less likely to experience successful life transitions in educational, vocational, and community settings (Tantam, 2000) than typically developing peers. Therefore, an examination of this clinical group may reveal important insights both for individuals with AS and for non-clinical populations with social-emotional difficulties. Although research suggests poor transitional outcomes for young adults with social-emotional difficulties, it is unclear which particular factors mitigate positive psychological outcomes and well-being in individuals with AS. In sum, there is a need to systematically examine the relationship between social-emotional abilities and successful adulthood transitions by examining various areas that may contribute to success. More specifically, examination of neuropsychological models of executive functions (higher order cognitive processes) may provide insight into positive social outcomes, and indeed, aspects that enhance resiliency for individuals with social-emotional difficulties.

Neuropsychological models of frontal lobe functioning have led to a greater appreciation of the dissociations among various aspects of prefrontal cortex and related executive functions. This research involves an examination of the performance of young adults with AS on various psychometric and experimental indices of executive functions for coherence with highly developed neurophysiological models of prefrontal function. Specifically, a typology of executive functions characterized

by predominantly cognitive abilities versus processes related to affect regulation will be explored.

Late adolescence is a stage in which the prefrontal cortices undergo intensive structural and functional maturational changes. Consequently, late adolescence appears to represent an ideal developmental period in which to examine executive functions due to the maximum variability of behavioural characteristics of interest. Individuals aged 17 to 21 years, will complete a battery of measures that include self-report, experimental and behavioural measures designed to assess particular aspects of prefrontal and executive functioning. It is hypothesized that there will be a grouping of executive process by type (either primarily cognitive or affective), conforming to neuropsychological models of specificity in prefrontal cortex function. Specifically, executive function difficulties in young adults with AS are hypothesized to correlate more strongly with primarily affective executive functions such as the ability to adapt to changing environmental stimulus-reward contingencies (associated with orbitofrontal cortex function) than primarily cognitive executive functions such as attention and memory abilities (associated with dorsolateral cortex function). Implications for future understanding of complex decision making in young adults with AS will be explored.

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### **Verbal versus Non-Verbal Abilities in Young Adults with Asperger's Disorder & High Functioning Autism**

The purpose of this project is to better understand similarities and differences among individuals diagnosed with an Autism Spectrum Disorder. Autism Spectrum Disorder is a broad term used to classify a number of similar psychological disorders. Two such disorders are Autistic Disorder and Asperger's Disorder. These two disorders share many similarities yet are classified as distinct disorders. A body of research has investigated the differentiation of these two disorders in an effort to determine if they are distinct from each other or rather if they are separable only on the basis of severity of presenting symptomatology, with individuals with Autistic Disorder typically displaying more pronounced symptoms. This may especially be the case when distinguishing Asperger's Disorder from High-Functioning Autism, a frequently employed clinical term used to denote individuals with Autism who demonstrate cognitive abilities in the average to above-average range.

One construct used in this effort is executive functions, a term for higher order cognitive functions such as selective attention, impulse control, planning, problem solving, inhibition of pre-potent responses, flexibility of thinking, concept formation, working memory, and abstract thinking. While research has shown that individuals with either High-Functioning Autism or Asperger's Disorder frequently perform significantly below typically-developing individuals, investigations of performance between these two groups on executive functioning tasks are mixed (Calhoun, 2006; Hill, 2004). One potential reason for this confusion in the current research literature is the frequent use of inconsistent diagnostic criteria leading to incomparable studies (Klin, Pauls, Schultz & Volkmar, 2005). Specifically, the current research literature on differences in Executive Functioning ability between individuals with High-Functioning Autism and Asperger's Disorder frequently utilizes a quasi-experimental research design whereby individuals are separated based upon their clinical

diagnosis and then executive functioning performance is compared. This approach is problematic as research shows that many clinicians utilize subjective criteria when making a diagnosis of Asperger's Disorder rather than standardized criteria. Thus, many individuals with Asperger's Disorder may be more correctly diagnosed with Autistic disorder, and classified as having High-Functioning Autism. As a result, research investigating differences in performance between these two groups is likely to be mixed as many Asperger's Disorder participants may be incorrectly classified.

This research project will investigate differences in executive functioning abilities among individuals with High-Functioning Autism and Asperger's Disorder. In addition, the present study will attempt to circumvent the problematic quasi-experimental methodology by utilizing a bottom-up method whereby several executive functioning measures will be administered to a mixed group of adolescents with either High-Functioning Autism or Asperger's Disorder. Rather than separate these groups and compare performance, performance of all participants will be analyzed using cluster analysis in order to determine if subgroups of participants demonstrating similar performance can be empirically derived. There is some research evidence to suggest that individuals with Asperger's Disorder possess better-developed verbal intelligence while individuals with Autism (and High-Functioning Autism) possess better-developed performance/non-verbal intelligence (Klin et al., 1995). As a result, it is believed that performance on executive functioning tasks that are verbally versus non-verbally mediated will differ. Specifically, it is expected that subgroup(s) demonstrating high verbal and low non-verbal executive functioning performance will be comprised primarily of individuals with Asperger's Disorder. Similarly, it is expected that subgroup(s) demonstrating high non-verbal and low verbal executive functioning performance will be comprised primarily of individuals with High-Functioning Autism.

If the cluster analysis does indeed reveal such subgroups based upon Executive Functioning Performance, diagnostic composition of these subgroups will then be identified in order to determine if individuals with Asperger's Disorder and High-Functioning Autism do indeed demonstrate differing executive functioning skills based upon a verbal versus non-verbal modality split. Further, if subgroups based upon performance are found, the diagnosis of each individual will be confirmed utilizing standardized criteria in order to determine if appropriate diagnosis changes the diagnostic composition of the groups. Finally, the current study will investigate the relationships between executive functioning ability in these populations and cognitive intelligence (IQ), emotional intelligence (EI) and severity of symptoms (SS). It is expected that IQ and EI will be positively correlated with EF performance while SS will be negatively correlated.

The results of this study will provide a stepping stone towards determination of differentiation of these two related disorders. This is an important distinction from a clinical, as well as a practical standpoint as individuals with High-Functioning Autism and Asperger's Disorder typically require different supports and assistance and individuals with Asperger's Disorder often do not receive appropriate supports.

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### **An Investigation of Resiliency in Young adults with Autism Spectrum Disorder**

In recent years, research has examined the process of resilience, defined as the capacity for individuals to overcome extreme adversity and to show positive adaptation in the face of adversity (e.g. Luthar & Cicchetti, 2000; Masten, Best, & Garmezy, 1990; Werner, 1989). Resilient characteristics such as cognitive abilities (Luthar, 2003), self-esteem (Masten et al., 1990), personality (Riolfi, Savicki, & Cepani, 2002), self-regulation skills (Davey, Eaker, & Walters, 2003), and a positive outlook on life (life satisfaction) (Schoon & Bynner, 2003) have been found to mitigate the effects of adverse life events and stressors through internal and external protective factors. Social and interpersonal skills, for example, have been reported as one of the most important protective or resiliency factors that guard against maladaptive outcomes (Werner, 2001). In fact, current research suggests that adolescents who have difficulties with social interactions are at considerable risk for poor outcomes compared to their peers (Dumont & Provost, 1999). Goldstein (2002) suggests that high levels of intellectual functioning, good coping skills, and positive parenting styles can predict resilient life outcomes in youth with externalizing and internalizing disorders. In addition, as the quantity and severity of difficulties increase, an individual is more likely to experience negative psychosocial outcomes (Luthar & Cicchetti, 2000).

Youth with autism spectrum disorders (ASDs) have unique social and communicative skills and, as a result, may experience maladaptive social, vocational and academic outcomes. Further, the presence of organic difficulties, such as mental health concerns, can also decrease levels of resilience. As an example, youth with psychiatric diagnoses have been reported to be at high-risk for maladaptive outcomes (Werner, 1989). It is important to examine the abilities of these individuals and to study the factors that contribute to positive inter- and intra-personal outcomes to



inform not only research, but clinical practice and government policies. As such, this study is interested in 1) exploring resiliency in youth with ASDs and 2) investigating factors, such as severity of autistic symptoms, which may impact upon resiliency in this population.

Resiliency research has revealed that as the number and severity of difficulties increase, so does the risk for poor psychosocial outcomes (e.g. Luthar & Cicchetti, 2000). Thus, one would expect the severity of autism symptomatology to have explanatory power for understanding the various psychosocial outcomes experienced by adolescents with autism. Based on previous research with individuals with ASD, it is expected that participants with more severe autistic symptomatology will experience less resilient outcomes than those with more mild symptoms. In order to investigate this hypothesis, we will explore the relationships between cognitive abilities, adaptability, communication, social skills, stereotyped behaviours and affect regulation (autistic symptomatology), and resilient attributes such as sense of mastery, sense of relatedness, emotional reactivity, and satisfaction with life.

Although data collection is ongoing, 34 eligible participants have participated in this study. All participants have been diagnosed with an ASD and all have average to above average intelligence. Preliminary results reveal significant relationships between resilience and factors such as level of social stress, adaptability, personal adjustment, quality of social interactions, and quality of interpersonal relationships. These initial findings suggest that levels of resilience in young adults with ASD are related to a number of inter- and intra-personal psychosocial factors and these findings hold promise for informing interventions that promote resiliency for individuals with ASD, their families and their communities.

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## Section IV: Implications

### *Intervention Supports*

The primary goal of this research project was to examine cognitive and psychological factors that promote resiliency in youth with Asperger's syndrome (AS) and High Functioning Autism (HFA). Evidence from the current research initiative suggests that efforts to foster resiliency would benefit from interventions that focus on contextually appropriate social and emotional behaviours. In contrast to intervention approaches traditionally implemented that emphasize the development of emotion-related knowledge and skills, it appears that individuals with AS do not have difficulties with emotional and social knowledge but rather require supports with the application of that knowledge in naturalistic contexts.

Understandably, the needs and associated support services for adolescents with autism spectrum disorders are frequently associated with a profile of severe social and emotional difficulties typically accompanied by equally severe cognitive and language limitations and behavioural challenges (Klin & Volkmar, 2003). Those with AS are often thought to have more subtle difficulties than others with ASDs such as Autistic disorder, and consequently, individuals with AS and their families often have difficulty benefiting from resources associated with "autism". Further, many posit that interventions for those with autistic disorder, versus those with AS differ substantially (e.g., Tsatsanis, 2004; Szatmari, Bryson, Boyle, Streiner, & Duku, 2003), further impeding access to appropriate services.

Traditional intensive behavioural intervention and applied behavioural analysis programs (e.g., Lovaas, 1987) place great emphasis on learning in a very structured and intense environment that may be viewed as un-naturalistic. Further, components of these programs, such as discrete trial learning, focus on behavioural modification through positively rewarding desired behaviours and not attending to undesirable

behaviours. Additionally, these programs rely heavily on verbal and non-verbal imitation skills, highlighting the focus on requisite social and emotion knowledge development. Similarly, social skills training (SST) programs often occur in a clinical or educational setting and typically involve direct forms of instruction to further develop knowledge regarding accurate identification of emotion in one's self and others. As an example, SST groups for children and adolescents with AS have frequently been used to break down complex social behaviours into steps and rules that can be memorized and practiced. Although these types of interventions may be of benefit to individuals who lack the requisite knowledge regarding their own and other's emotions, they appear to have limited utility with individuals with AS and HFA (Rao, Beidel & Murray, 2008). Consistent with these findings, data from the present research suggests that because ability-based EI in youth with AS is intact, it is clear that interventions focusing on the training of knowledge about emotional interactions (e.g., teaching youth how to identify emotions, communicate feelings, understand emotional information, express affection) will have limited utility. Rather, interventions directed toward ensuring the contextually appropriate behavioural enactment of social and emotional knowledge and skills is fundamental. Such interventions should not be implemented in highly structured settings but in the contexts in which they are required. Increased focus on providing opportunities for supported practice in these settings, with gradual removal of supports as competence increases, will enhance the independent performance of these competencies in real life settings and should serve to strengthen resiliency.

In light of these and other findings (reported in the *individual research summaries* section) from the present research project, the following set of intervention guidelines are consistent with the need to develop supports that are uniquely suited to address the need of individuals with AS and HFA and their families.

1. *Foster generalization of social and emotional abilities across naturalistic contexts.*  
Supports designed to enhance social and emotional flexibility across settings

and people through knowledge regarding when and how to act upon the affective and social knowledge individuals with AS and HFA often have, will promote resiliency and successful transitions into adulthood. Strategies regarding how to use this affective and social knowledge as a framework from which to guide behaviour is of critical importance.

*2. Individualization of Intervention Supports.* The heterogeneity (or wide range of individual differences) amongst individuals who participated in this research project suggests that assessment and intervention supports should be as unique as the individuals they are designed for will be paramount in furthering developing and fostering resiliency.

*3. Focus on Protective Factors.* A focus on protective factors, such as well-developed emotional intelligence, that foster resiliency will be of great importance in efforts to enhance social and emotional outcomes

*4. Focus on Transfer and Generalizability.* Supports will need to be provided in the least restrictive settings to ensure transfer and generalizability. While youth with Asperger's disorder have the requisite inter- and intra-personal understandings necessary for success, they experience difficulties spontaneously enacting contextually appropriate skills. Programs designed to enhance social skills through direct training of emotional and social knowledge will have limited impact.

### ***Policy Implications***

Our research, together with our extensive interactions with youth diagnosed with Asperger's syndrome, have lead to several policy recommendations:

- Early intervention is the key to successful outcomes for individuals with Asperger's syndrome. Unfortunately, Asperger's syndrome is often not diagnosed in the early childhood years due to a lack of awareness of the condition and its diagnosis. Future research designed to explore the

impediments to early diagnosis and treatment in the Province of Alberta is needed. Professional training and development is also required.

- Youth with Asperger's syndrome face social exclusion and for many, poor life outcomes. Yet, existing services either exclude them or are not appropriate for their condition. It is imperative that we address this gap not only through the development of services but also through enhancing professional and community awareness of the challenges faced from individuals with Asperger's syndrome.
- Asperger's syndrome should be recognized as one of the autism spectrum disorders requiring ongoing support. Within the diagnostic literature, there has been an effort at viewing autism as a spectrum of disorders of which Asperger's syndrome is considered core. Our findings suggest that youth with Asperger's syndrome will require transitional support to optimize resiliency and ensure successful life outcomes. As we have noted in our report, youth with this condition manifest impairments in socialization and communication within the context of average or above average skills and good spoken language. Their level of ability suggests that they are capable of living independently, and in some cases, achieving a high level of academic success, but, their underlying condition presents challenges as they navigate their social landscape. An outcome is that ability to achieve occupational and relationship success may be negatively impacted. Co-existing mental health problems, including depression and anxiety, may further compromise outcomes.
- The findings from this research highlight the importance of the development of interventions that focus on contextually appropriate behavioural enactment of social and emotional abilities with not only young adults with Asperger's syndrome and High Functioning Autism, but all young adults experiencing social-emotional difficulties. Thus, it will be important in policy development to note the ongoing nature of difficulties and the potential for subtle difficulties

to cause more marked difficulties over the lifespan. From a policy perspective, this means that proactive and ongoing supports are required to improve outcomes.

- Policies that provide services on the basis of diagnostic categories are a problematical match for conditions such as autism spectrum disorders because the service needs of individuals within the spectrum vary dramatically. For example, intervention supports for youth with Rett's Syndrome or Autistic Disorder are qualitatively different than those for youth with Asperger's syndrome. A needs-based approach to service delivery rather than a categorical approach is warranted if we are to enhance outcomes for youth with Asperger's syndrome.
- Youth with Asperger's syndrome are currently excluded from most Provincial services and/or service delivery is not approached in a comprehensive fashion. A lack of funds, insufficient alternatives, and a fragmented system have contributed to inconsistent service quality and poor outcomes for many of these youth. A wrap-around service model that incorporates a range of support services located within community settings (e.g., schools) is strongly indicated. Through the implementation of interprofessional teams that draw strength from formal and informal community networks, seamless intervention supports that foster independent living, provide treatment and interventions for co-existing conditions (e.g., learning disabilities, mental health problems), and support healthy family relationships, advocacy, vocational and occupational mentorship, housing options, assessment and care management, and career services, amongst others, should be developed. Evaluation of outcomes of a wrap-around service must include behavioral changes in youth that enable them to function productively and appropriately within their expected communities.
- Assessment, preventative, and short-term intervention must be provided within work and post-secondary education settings. Many youth with

Asperger's syndrome do not meet existing eligibility criteria for services, yet they are potentially highly vulnerable. The need for individually tailored support packages which allow for the provision of services suited to the needs of youth with Asperger's syndrome has great merit, economically and socially.



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