

UNIVERSITY OF CALGARY

Vocational and Personal Independence Training for Adolescents and Adults with Autism
Spectrum Disorder: Effectiveness of the Practical Assessment Exploration System
(PAES)

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF SCIENCE

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

CALGARY, ALBERTA

SEPTEMBER, 2013

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Abstract

Currently, there are no specific, validated vocational training programs for individuals with autism spectrum disorder (ASD). The Practical Assessment Exploration System (PAES; Swisher, Green, & Tollefson, 1999) is a functional vocational skills training tool that teaches and measures vocational potential in individuals with disabilities. This thesis investigated the efficacy of the PAES program in the ASD population, with specific attention paid to vocational and independence training. This project utilized a mixed methods approach to better understand vocational abilities and the relationship between these abilities and cognitive, adaptive, and social skills in ten adolescents and young adults with ASD. Results displayed a statistically significant improvement in vocational skill and behaviour after completing the PAES program. Interviews with parents, facilitators, and attendees highlighted four primary themes: strengths, benefits derived, limitations, and program suggestions. Implications are discussed.

Acknowledgments

I am extraordinarily grateful to my supervisor, Dr. Adam McCrimmon, for his everlasting dedication, availability, enthusiasm, and incredible support. Without his motivation, astonishing work ethic, and persistence, this project may never have been possible. Thank you for always having your door open and responding to my emails at all hours of the day and night.

I am grateful to my supervisor, Dr. Sharon Cairns for her contributions, contagious smile, and continual support.

A big thank you to my committee members Dr. Gabrielle Wilcox and Dr. David Nicholas for their insightful questions, recommendations, and contributions.

I would like to thank the Lynn Laforge-Tieman Fund for Autism for providing the funding which allowed me to undertake this research, and provided me the opportunity to complete this project.

I could not have completed this work alone, and I express my thanks to a few individuals for their assistance in my data collection and analysis: Katrina Shaw, Melissa Soares, Hania Kubas, Andrea Stelnicki, and Sarah Cadogan. Not only did these individuals help with data collection and analysis, but they made my process markedly more enjoyable.

I am beyond grateful to all of the individuals, parents, support workers, and program facilitators who generously volunteered their time to be a part of this project.

I extend my thanks to the Sinneave Family Foundation and Society for Treatment of Autism for facilitating the Pursuits program and for aiding my progression through this project.

To Analog Coffee Shop, I extend my thanks, as you became my second home while writing this thesis. It was through countless nights (and mochas), and through many smiles and laughs shared with staff at Analog that I was able to persist.

To my family, I offer my unconditional love and many thanks. You have always supported me through life's ups and downs, and I will always be there to support you in return.

And lastly to my friends and colleagues: I consider myself one of the luckiest people on this earth as you have offered me your friendship, and shared in happiness, sadness, excitement, anxiety, and so much more with me. Thank you to those of you who responded to late night phone calls, participated in steeped tea runs and random dance parties, and to those who understood when I couldn't always be as present as I would like in your lives. Thank you for reminding me that seriousness must be coupled with fun, and good music. Friends are truly the family that we choose for ourselves.

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Dedication

To my dad, thank you for being you. You continue to amaze me with your passion and drive for success. Your support has not gone unrecognized and I only hope that I can offer you the same support that you provide to me. You continually remind me to take care of myself and to “put my own air mask on, before anyone else’s” as I cannot help anyone without first helping myself. From runs in the park, cooking exquisite meals, and driving around to coffee dates and talks, you have allowed me the space that I have needed to succeed and grow.

To my momma bear, you are an amazing woman. You have gone through so much and continue to always be selfless when it comes to your children. You have taught me so much, but undoubtedly first and foremost you have taught me that it is okay to be “me”, no ifs, ands or buts. I truly respect and admire you, and it has been with your support, “laugh attacks”, cooking, singing, and dancing that I have been able to get through this master’s degree.

To the kids that I work with: you have all impacted my life more than you will ever know or possibly understand. Your effervescent happiness, affection, and innocence have fueled my passion to always be the best at what I do. You teach me every day that no day will ever be the same and that continual learning provides power. To my boy, you know who you are: you have shown me we all make mistakes, but that we must not wait to start fresh, and instead begin again every minute of every day. Your smile lights up my life, and you prove to me that I belong in this ASD community.

I dedicate this thesis to all of you.

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List of Abbreviations

Abbreviation	Definition
ABAS-II	Adaptive Behaviour Assessment System, 2 nd Edition
ABCL	Adult Behaviour Checklist
ACS	Advanced Clinical Solutions
AD	Autistic Disorder
ADHD	Attention Deficit/Hyperactivity Disorder
AS	Asperger's Disorder (Syndrome)
ASD	Autism Spectrum Disorder
CBCL	Child Behaviour Checklist
CDD	Childhood Disintegrative Disorder
CTONI-2	Comprehensive Test of Nonverbal Intelligence, 2 nd Edition
DSM	Diagnostic and Statistical Manual of Mental Disorders
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5 th edition
DSM-II	Diagnostic and Statistical Manual of Mental Disorders, 2 nd edition
DSM-III-R	Diagnostic and Statistical Manual of Mental Disorders, 3 rd edition, Revised
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders, 4 th edition, Text Revised
EF	Executive Function
ID	Intellectual Disability
IQ	Intelligence Quotient
PAES	Practical Assessment Exploration System
PDD	Pervasive Developmental Disorder
PDD-NOS	Pervasive Developmental Disorder – Not Otherwise Specified
RD	Rett's Disorder
SARRC	Southwest Autism Research and Resource Centre
SCQ	Social Communication Questionnaire
SFF	Sinneave Family Foundation
SRS	Social Responsiveness Scale
STA	Society for the Treatment of Autism
T1	Pre-test data collection
T2	Post-test data collection
TTAP	TEACCH Transition Assessment Profile
WASI-II	Wechsler Abbreviated Scale of Intelligence, 2 nd Edition

CHAPTER ONE: INTRODUCTION

Developmental disabilities over the course of the last decade have been widely conceptualized, and have been seen to be continuously evolving and encompassing of a variety of conditions occurring in childhood (Odom, Horner, Snell, & Blacher, 2009). Developmental disabilities are characterized as a group of conditions with impairments in learning, language, physical, and/or behaviour (Centers for Disease Control and Prevention [CDC], 2013), usually occurring within the developmental period before the age of 22 (Odom et al., 2009). This umbrella concept has been seen to include cerebral palsy, traumatic brain injury, intellectual disabilities, epilepsy, attention deficit/hyperactivity disorder (ADHD), other developmental delays, and Autism Spectrum Disorder (ASD; CDC, 2013; Odom et al., 2009).

ASD will be the population of primary focus for this thesis. ASD is characterized by varying levels of impairment in socio-communicative functioning and restricted, repetitive patterns of behaviours, activities or interests. Additionally, individuals with ASD generally demonstrate impairments in eye gaze, imitation skills, perception of emotion, shared focus, motor skills, planning, mental flexibility, and regulation of behaviour. As individuals with ASD demonstrate various challenges, each individual with ASD is unique and programming has consequently been found to be a great challenge (Cimera & Cowan, 2009). Regardless of challenges faced to service providers, early and intensive behavioural interventions have been linked with the most favorable outcomes for children with ASD (Cimera & Cowan, 2009; Jacobson & Mulick, 2000). As children with ASD transition into young adulthood, developmentally appropriate

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interventions must occur to facilitate increased independent functioning (Seltzer, Shattuck, Abbeduto, & Greenberg, 2004).

Many adults with ASD are dependent upon others to care for their needs, and most require a large level of intervention for daily living, communication, and social and vocational skills to promote their independence throughout adolescence and adulthood. However, the focus of research and intervention efforts for ASD has been largely dedicated to early identification and intervention, with little emphasis on adolescents and young adults (Taylor, et al., 2012). This restricted focus has limited our understanding of the specific and unique outcomes for adolescents and adults with ASD (Bailey, 2012; Taylor et al., 2012).

Regardless of mixed outcomes for this population, individuals often struggle with independence, social relationship building, and obtaining employment (Green, Gilchrist, Burton, & Cox, 2000; Howlin, Goode, Hutton, & Rutter, 2004). In fact, as these individuals experience a host of social challenges, such as a limited understanding of social cues or reciprocal conversation, these challenges often result in social isolation and vocational failure (Hillier, Fish, Cloppert, & Beversdorf, 2007). Therefore, it is important that professionals and researchers address interventions that could be implemented during adolescence to increase positive employment outcomes in adulthood, and promote independence for individuals with ASD.

Individuals with ASD struggle to obtain and maintain employment, likely due to under-developed vocational and social skills (Howlin, 2000; Hurlburt & Chalmers, 2004; Müller, Schuler, Burton, & Yates, 2003; Nesbitt, 2000). Vocational skills include a multitude of daily living abilities as well as competences for enhancing independence in

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the home, community, and work environments. It has been estimated that 50 to 75 percent of adults with ASD are unemployed, and for individuals with ASD who achieve employment, long-term outcomes are poor (Wehman et al., 2012). Another study found that among higher functioning individuals with ASD, the proportion who were employed rarely surpassed 30 percent, and employees were often underpaid, and under-skilled (Howlin, Alcock, & Burkin, 2005). As many individuals with ASD have under-developed vocational skills, they would likely benefit from unique vocational supports such as: on-site coaching and job development in combination with additional strategies focusing on the core impairments of ASD (Müller et al., 2003).

Research indicates that adolescents and young adults with ASD would benefit from support for obtaining and maintaining employment (Gentry, Wallace, Kvarfordt, & Lynch, 2010; Schaller & Yang, 2005). However, this population often does not benefit from typical vocational intervention as generalized supportive services fail to meet the unique vocational needs of this population (Müller et al., 2003). Hence, a distinct and specialized intervention approach effort to support vocational skill development for individuals with ASD is sorely needed.

The Practical Assessment Exploration System (PAES; Swisher et al., 1999) is a program designed to teach participants with various disabilities a variety of vocational tasks. Vocational skills such as basic food preparation and appropriate workplace behaviours are taught to participants, building on their unique interests and aiding in the development of their independence.

Although PAES is designed to assist in the development of vocational skills in individuals with developmental disabilities, its specific efficacy with the ASD population

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has not yet been investigated. Hence, a gap in the literature pertaining to the use of PAES exists.

Present Study

Although the development and implementation of targeted vocational programs for individuals with ASD is important, empirical support for such intervention is limited. The PAES program, with its emphasis on the development of vocational skills and behaviours in individuals with developmental disabilities, may be an efficacious intervention program for the ASD population. This project will evaluate the PAES program in the context of adolescents and adults with ASD, and will provide a comprehensive understanding of improvements in vocational skills, social skills, and employment interests, and will indicate suggestions for program improvement for the ASD population.

Following this introduction, Chapter Two begins with a description of ASD and how it relates to adolescence as a specific developmental time period. Chapter Two also outlines the importance of cultivating vocational skill development, explicitly in relation to individuals with ASD, and introduces the concept of a targeted vocational intervention to support these evolving concepts. Chapter Three focuses on a description of the participants, measures, research design, and outlines both quantitative and qualitative procedures and analytical methods. Chapter Four encompasses the results of both quantitative and qualitative data analyses pre and post PAES intervention. The experiences of all participants (attendees, parents/guardians, facilitators) are also outlined in Chapter Four, and expressed as four primary themes and subsequent subthemes are elaborated. Conclusively, Chapter Five reviews and integrates the findings pertaining to

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the effectiveness of the vocational intervention for those participants involved in this study. Lastly, the limitations, implications, and future directions of this research will be discussed.

CHAPTER 2: LITERATURE REVIEW

This chapter provides a review of Autism Spectrum Disorder (ASD) symptomatology and outcomes as it relates to adolescence as a time for developmental change, and provides empirical evidence to support the combined importance in fostering vocational skill development. Next, vocational skills specifically related to ASD are discussed, displaying an emerging concept not widely spoken about within the literature. Exploring the success of a targeted vocational intervention will then support this emerging concept.

Autism Spectrum Disorder

ASD is a neurodevelopmental disorder characterized by deficits in socio-communicative functioning and restricted, repetitive patterns of behaviours, activities or interests as described in the current *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5; APA, 2013). The diagnostic criteria are stated in Table 1. Specifically, persistent deficits in social interaction and social communication in conjunction with the presence of restricted, repetitive patterns of behaviour, activities and interests are manifested across multiple contexts. Both of these symptoms must be present in early childhood and limit or impair an individual's everyday functioning (APA, 2013). Functional impairment may become obvious at different stages of an individuals' life, and will vary according to their environment and their individual characteristics (APA, 2013). An individual's deficits must not be better explained by an intellectual disability or global developmental delay (APA, 2013). Clinicians are also expected to provide a severity rating of 1, 2, or 3 ("Requiring Support," "Requiring Substantial Support," and "Requiring Very Substantial Support" respectively (APA,

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Table 1.

DSM – 5 (American Psychiatric Association, 2013, p. 50) diagnostic criteria for Autism Spectrum Disorder.

Autism Spectrum Disorder
Currently, or by history, must meet criteria A, B, C, and D:
A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following: <ol style="list-style-type: none">1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interaction.2. Deficits in nonverbal communicative behaviours used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expression and nonverbal communication.3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behaviour to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.
B. Restricted, repetitive patterns of behaviour, interests, or activities, as manifested by at least two of the following: <ol style="list-style-type: none">1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behaviour (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day).3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).4. Hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).
C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life).
D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

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2013, p.52), for individuals with an ASD indicating symptom severity and level of support necessary.

Research has indicated a male to female gender ratio ranging from 4 to 4.6:1 (APA, 2013; CDC, 2012; Newschaffer et al., 2007). There is a degree of uncertainty surrounding prevalence rates within the current literature. The United States Department of Education (2005) suggested that ASD is increasing at a rate of 10 to 17 percent per year and the CDC (2012) reported an estimated 78% increase in prevalence of ASD from 2002 to 2008 within their monitoring network sites in the United States. The most recent estimates in the United States indicate a prevalence rate of one child with ASD for every 50 typically developing children (200 per 10,000; Blumberg et al., 2013), a rate that is significantly higher than previous studies (Baird et al., 2006; Baron-Cohen et al., 2009; Boyle et al., 2011; Brugha et al., 2009; CDC, 2012; Chakrabarti & Fombonne, 2001; Fombonne, 2003a; Fombonne, 2010; Kim et al., 2011; Kogan et al., 2009; Newschaffer et al., 2007). With the new conceptualization of ASD as represented in the DSM-5, the American Psychiatric Association has suggested that reported frequencies of ASD across both the United States and other countries have approached 1% of the population (2013). It is not known if the increasing prevalence rate of ASD is directly related to an increase in the occurrence of the disorder; however, an actual rise in incidence cannot be discounted (APA, 2013; CDC, 2012; Rutter, 2005). Regardless, the drastic and significant increase in prevalence rates emphasizes the need for continuing improvement in research, identification and intervention for this population.

Background and History

The clinical origin of ASD can be traced to Swiss psychiatrist Eugen Bleuler who initially coined the term “autism” in 1911 to describe self-withdrawal, or disconnection to reality as experienced in schizophrenia (Bleuler, 1911/1950). Leo Kanner first introduced the term as a clinical syndrome in 1943 by describing the core social impairments and stereotyped behaviours displayed by eleven children with “early infantile autism” (Kanner, 1943). Additionally, these children were observed to display severe social and communication abnormalities, characterized as relating better to objects than people and possessing limited and restricted interests. In 1944, Hans Asperger independently described a group of boys with similar characteristics, further described as “autistic psychopathology” (Asperger, 1944/1991). These children were described as being socially isolated, and as engaging in repetitive behaviours; however, they seemed to be verbally fluent with abnormal prosody and peculiar language use.

Since 1943, clinical descriptions of ASD have noticeably changed and research on this group of disorders has grown considerably. Autism was first conceptualized as Schizophrenic reaction, childhood type in the original DSM (APA, 1952) and was later changed to Schizophrenia, childhood type in the DSM-II (APA, 1968). With the third revision of the DSM came Autism’s reclassification as a neurologically-based disorder with behavioural criteria (APA, 1980). Asperger’s Disorder was introduced in the DSM-III-R (APA, 1987) and with this addition came established diagnostic criteria that required behavioural evidence in clinical diagnoses. In the DSM-IV-TR (APA, 1994/2000), ASD was an encompassing term that referred to five disorders contained in the category of Pervasive Developmental Disorders (PDDs): Autistic Disorder (AD),

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Asperger's Disorder (syndrome; AS), Rett's Disorder (RD), Childhood Disintegrative Disorder (CDD), and Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS). These disorders were characterized by varying qualitative impairment in reciprocal social interaction; communication; and restricted and repetitive activities, interests, and behaviours, which are commonly referred to as the “autistic triad of impairments” (APA, 2000; Cashin, Sci, & Barker, 2009). The current DSM-5 introduces a singular ASD diagnosis that encapsulates AD, AS, and PDD-NOS as they were previously outlined in the preceding edition of the DSM (APA, 2013; APA, 2000). For the purposes of this thesis, ASD will be conceptualized using the current DSM-5 diagnostic criteria and classification system.

Continuum of Symptom Severity

It is very important to understand that there is heterogeneity in phenotypic expression that exists beyond the classical ASD presentation (Szatmari et al., 2002). The severity and number of symptoms varies across individuals, and in some cases and domains, across time (Richler, Huerta, Bishop, & Lord, 2010; Szatmari et al., 2002). Historically, AS and PDD-NOS have been viewed on the milder end of the spectrum (Volkmar, Lord, Bailey, Schultz, & Kin, 2004); whereas AD has been found throughout the entire spectrum in regards to severity (Rutter, 2005).

Additional Impairments

Cognitive Ability. Much like the continuum of symptom severity, cognitive functioning can vary both between and within individuals with ASD. Although there are many individuals with ASD who have a high cognitive potential, as evidenced by intelligence assessment scores, their ability to translate this cognitive ability into real-life

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activities (adaptive skills) are often impaired (Klin et al., 2007). It has been reported that some individuals with ASD display average, and in many cases very well-developed cognitive abilities; whereas, others display varying degrees of cognitive impairment, including intellectual disability (APA, 2000). Intellectual Disability (ID) is defined in the DSM-5 as deficits in general mental abilities and impairment in overall adaptive functioning (APA, 2013). Individuals with ID have IQ scores of approximately two or more standard deviations below the population mean (APA, 2013). Clinicians using the current DSM-5 must specify if the individual has accompanying intellectual impairment when giving an ASD diagnosis (APA, 2013).

Executive Functions. Executive functions (EFs) refer to higher-order cognitive processes that can include self-monitoring, inhibition, mental set-shifting, organization, planning, and working memory (Calhoun, 2006). For individuals with ASD, executive dysfunction has been reported in areas of mental flexibility, planning, self-monitoring, and inhibition (Hill, 2004; Hughes, Russell, & Robbins, 1994; Ozonoff, Pennington, & Rogers, 1991). While inhibition may remain intact for individuals with ASD (Ozonoff & Jensen, 1999), individuals with lower cognitive ability may have more difficulty in this area; they may also have problems following complex directions and rules to determine an appropriate response (Biro & Russell, 2001).

Sensory Difficulties. In many cases, individuals with ASD are hyper- or hypo-sensitive to sensory stimuli (Liss, Saulnier, Fein, & Kinsbourne, 2006). Individuals with ASD frequently display behaviours characteristic of sensory sensitivity, such as covering their ears to loud noises, or restricting food preferences (Lane, Young, Baker, & Angley, 2010). Individuals may also display under-responsivity, such as a failure to orient to their

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name being called, or sensory seeking behaviours such as rocking or hand-flapping (Lane et al., 2010).

Educational Difficulties. There are many challenges that arise within the educational system when working with students with ASD. Students who present with mild symptomatology often don't receive appropriate educational services, and identification of ASD within the educational system has fallen behind the increase in prevalence (Safran, 2008; Wilkinson, 2010). Also, there is a discrepancy between the diagnosis of ASD and educational identification, as the latter requires evidence of negative impact on academic performance (Dahl, 2003; Safran, 2008).

Students with ASD often present with a very unique psycho-educational profile, and many accommodations in a classroom need to be planned (White, Scahill, Klin, Koenig, & Volkmar, 2007). Psycho-educational profiles for students with ASD can be characterized by uneven patterns of development and deficits in certain areas of cognitive functioning (Alberta Learning, 2003). Students with ASD may have difficulty with comprehension of both oral and written information, such as understanding what they read if they are literate (Alberta Learning, 2003). However, some higher-functioning students with ASD can be relatively capable in these domains and demonstrate strengths in certain areas of language, yet may have difficulty carrying a conversation or using language in a social context (Alberta Learning, 2003). Regardless, it is essential that educational programs are based on the unique needs of an individual, and modified on an ongoing basis to ensure appropriateness (Alberta Learning, 2003).

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Comorbidity

Comorbidity denotes the co-occurrence of two or more disorders simultaneously in an individual. As ASD is comprised of a heterogeneous group of individuals, identifying comorbid disorders can be quite difficult (Szatmari, Volkmar, & Walter, 1995). Estimates of the prevalence of comorbid disorders in individuals with ASD vary from 4% to 81% (Davis et al., 2011; Lainhart, 1999; Leyfer et al., 2006; Sterling, Dawson, Estes, & Greenson, 2008). Several common comorbidities have been identified, with ID as the most commonly reported comorbid disorder, with an estimated rate ranging from 38% (CDC, 2012) to 69% (Chakrabarti & Fombonne, 2001).

Medical Conditions. Seizure disorders have been estimated to appear in between 7-14% of children with ASD (Rapin, 1996; Tuchman, Rapin, & Shinnar, 1991) and in between 20-35% of adults with ASD (Minshew, Sweeney & Bauman, 1997). Research has also indicated a high genetic predisposition to tic disorders within the ASD population (Baron-Cohen, Scahill, Izaguirre, Hornsey, & Robertson, 1999; Klinger, Dawson, & Renner, 2003). Gastrointestinal disorders have been estimated to appear between 9-70% of individuals with ASD (Bauman, 2010). The very discrepant ranges suggests that diagnosis of this type of disorder with ASD can be very difficult due to challenges surrounding sensory processing and communication impairments (Bauman, 2010). Sleep disorders have been estimated to appear in between 40-80% of children with ASD (Johnson, Giannotti, & Cortesi, 2009; Richdale, 1999).

Mental Health. Overall comorbid mental health disorders, including other childhood disorders, depression, and phobias have been described in ASD dating back almost 30 years (Matson & Nebel-Schwalm, 2007). Anxiety disorders are highly

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comorbid with ASD and have been reported to occur at a rate of 40% to 84.1% (Bellini, 2004; Gillot & Standen, 2007; Kim, Szatmari, Bryons, Streiner, & Wilson, 2000; Simonoff et al., 2008), indicating that anxiety disorders occur more often in individuals with ASD than the general population (Bellini, 2004). Depression or mood disorders have been estimated to appear in 2-30% of individuals with ASD (Ghaziuddin, Tsai, & Ghaziuddin, 1992; Ghaziuddin, Weidmer-Mikhail, & Ghaziuddin, 1998). ADHD has been estimated to appear in 14-78% of individuals with ASD (Holtmann, Bolte, & Poustka, 2007; Keen & Ward, 2004; Lee & Ousley, 2006; Leyfer et al., 2006; Reiersen, Constantino, Volk, & Todd, 2007; Ruggieri, 2006; Simonoff et al., 2008; Sinzig, Walter, Doepfner, 2009; Yoshida & Uchiyama, 2004).

Outcomes

Overall outcomes for individuals with ASD vary greatly, and many individuals will exhibit significant impairment over their lifetime (Howlin et al., 2004). Whereas, some individuals may live with caregivers for their lifetime due to significant impairment; other individuals with ASD find employment and live more independently with limited impairment in social relationship development and maintenance (Green et al., 2000). Average to above average cognitive ability and the development of at least some spoken language prior to age five are best predictors of positive outcome for individuals with ASD (Gillberg & Steffenburg, 1987; Howlin, Mayhood, & Rutter, 2000; Venter, Lord, & Schopler, 1992). However, regardless of cognitive ability, outcomes for this population tend to be mixed, and individuals may continue to have difficulty in regards to academic achievement, employment, independent living, and social relationship building (Green et al., 2000; Howlin et al., 2004). Howlin and colleagues

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(2004) reported that only 16% of individuals with ASD and a childhood IQ of 70 or higher were considered to have a “Very Good” outcome (consisting of independent living, having friends, and keeping a job). Therefore, a higher IQ and increase in educational opportunities over the last 30 years has not necessarily resulted in significant improvement in adulthood outcomes for this population (Howlin et al., 2004). Moreover, the availability of continual services/supports (e.g., living and employment) for adolescents and adults with ASD may be essential in promoting further positive outcomes (Howlin et al., 2004; Mawhood & Howlin, 1999).

As outlined in the above conceptualization of ASD, affected individuals can demonstrate challenges in cognitive ability, executive functioning, sensory processing, and in their psychoeducational profiles. Indeed, such challenges often present in early childhood, and can become exacerbated across development.

Some challenging transitions during adolescence can include finishing school, finding a job, further developing social skills in building relationships, contributing to one’s family, and being part of a different community than in childhood (Vander Stoep, Davis, & Collins, 2000). It may be the case that adequately preparing individuals early in life for the workforce could improve some of these challenging areas and aid in the development of increased independence. Members of vulnerable populations experience additional challenges in postsecondary education, finding employment, and starting a family (Osgood, Foster, & Courtney, 2010). Overall, it is necessary to understand the uncertainties and challenges that these individuals and their families may face (Blacher, 2001). It is also important to consider that individuals will experience changes in support services, such as the termination of school-based funding and an increased possibility of

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out-of-home living placements during late adolescence and young adulthood (Blacher, 2001; Osgood et al., 2010). There isn't a single definition of what a successful transition outcome involves; however, it may include outcomes such as employment, education, social interaction or support, acquiring a residence, and personal satisfaction (Osgood et al., 2010). With the transition into adulthood comes a large need for intervention programming to cultivate previously unacquired skills necessary for acquiring and maintaining employment. Vocational skills are one area of development in need of support during the developmental periods of adolescence and adulthood.

Vocational Skills

Vocational skills involve a variety of daily living abilities as well as capacities to enhance independence in the home, work, and community environments. Core workplace skills include literacy, numeracy, use of documents, computer use, problem solving, decision making, critical thinking, task planning and organization, memory, oral communication, interpersonal skills, and continuous learning, among others (Human Resources and Skills Development Canada, 2011). In addition, there is a wide range of task-specific skills that may require visual-motor coordination, processing speed, and fine and/or gross motor coordination.

Two broad categories of skills essential to positive employment outcomes are social skills and work or vocational skills (Chadsey, 2007). It is also the case that both general vocational skills and job or site specific skills are necessary in each workplace. Previous research suggested there are vocational skills that can be generalized across job sites, such as following instructions, but that these skills must be socially validated in what is expected of individuals for each job placement. For example, social validation of

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following instructions would involve detailing a specific set of instructions for their workplace and why that set would be appropriate for the environment/context of the employment. Regardless of the workplace-specific skills, the skills taught to each employee will be contingent on the needs of the employer and the employee's vocational interests and capabilities (Chadsey, 2007). For example, the skills taught to an individual may be altered based on what they are capable of completing, while still remaining contingent to what is necessary of the job placement. Acquisition of skills may also depend on the interests, abilities, and cognitive capacities of the trainees; however, there is the potential that as more direct and intensive supports are required, additional resources will also be necessary to adapt or accommodate these individuals into an employment setting.

In general, the occurrence of gainful employment for people with developmental disabilities has been represented as quite limited within the literature (Mank, 2009). Since the early 2000's, the expectations for individuals with developmental disabilities within employment settings has been changing and evolving as means for support and intervention are being discovered (Mank, 2009). Despite the growth in the number of people with developmental disabilities that are employed, fewer than 30% of these individuals are employed in a community setting (Mank, 2009).

Vocational Skills in ASD

Competitive, independent employment for adolescents and adults with ASD was once considered unlikely (Mawhood & Howlin, 1999; Nesbitt, 2000). Indeed, vocational programs for this population are virtually non-existent (Müller et al., 2003). However, although obtaining and maintaining employment continues to be a challenge for this

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population (Howlin, 2000; Hurlburt & Chalmers, 2004; Müller, Schuler, Burton, & Yates, 2003; Nesbitt, 2000), community-based supported employment is becoming more common for these individuals (Howlin & Mawhood, 1996; Müller et al., 2003), and research has shown that individuals with ASD are capable of working in a variety of occupations and organizations with this additional support (O'Brien & Daggett, 2006). Current perspectives emphasize the implementation of technology, and distinctive and specialized vocational support to assist adolescents and adults with ASD in developing vocational skills and obtaining competitive employment (Gentry et al., 2010; Schaller & Yang, 2005) as they do not often benefit from general vocational training (Müller et al., 2003).

Failure to provide adequate services and supports once individuals have completed their schooling has been reported in the United Kingdom, Canada, USA, and Japan, resulting in low levels of independence and employment in adulthood (Howlin et al., 2005). Moreover, there is increasing recognition that the population of individuals with ASD is aging, necessitating a broadening of intervention focus to include adult needs and supports. In addition, other challenges such as cognitive ability, planning, problem solving, behavioural difficulties, and high levels of anxiety are obstacles to successful employment for individuals with ASD (Hendricks, 2010; Howlin et al., 2004).

Recent research indicates that 56% of young adults with ASD sampled were employed in sheltered workshops or day activity centers, rather than independent competitive community employment (Taylor & Seltzer, 2011). Subsequent research indicated that only 7.4% of adults with ASD sampled were employed in a community-based setting without supports and only 10.2% were employed in the community with

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supports (Taylor & Seltzer, 2012). In comparison, these researchers indicated that 34.7% of individuals were engaged in a sheltered vocational setting for 10 hours per week or less. Furthermore, young adults with ASD and intellectual disability were reported to be three times more likely to engage in sheltered or supported daytime vocational activities than individuals without intellectual disability, who typically do not participate in sheltered or supported settings (Taylor & Seltzer, 2011). This prior research indicates that current vocational support is not meeting the needs of the broader ASD population and emphasizes the importance of vocational support specifically directed at individuals with ASD. It is apparent that the vocational needs of this population are not being adequately met.

Individuals with ASD should have the same entitlement to work as is afforded to the rest of society (Hendricks, 2010). Employment can provide an opportunity to enhance personal dignity and has been shown to improve cognitive performance for individuals with ASD (Garcia-Villamizar & Hughes, 2007; García-Villamizar, Wehman, & Navarro, 2002; Persson, 2000). Additionally, this overarching sense of personal dignity for individuals with an ASD is also influenced by the amount of social support received and ability to obtain employment (Billstedt, Gillberg, & Gillberg, 2011).

In an environment where the strengths, interests, and capabilities of individuals with ASD play a role in job acquisition, intervention to improve employment capacity will not only enhance personal dignity but will also potentially improve specific vocational skills. Also, individuals with ASD often demonstrate unique strengths, such as in tasks that require focus and attention to detail, that can result in increased work output and fulfillment for both the individual and the employer. While these tasks may

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be less appealing to others due to repetition and social isolation, those with an ASD may find enjoyment and self-fulfillment in completing them (Smith, Belcher & Juhrs, 1995). Thus, it is important to consider an individual's interests and strengths as significant contributors to overall positive outcomes later in life.

Of the literature that focuses on ASD past early childhood, research has neglected to combine adolescence and adulthood, and has taken a parental or service provider perspective (Allen, Wallace, Greene, Bowen, & Burke, 2010; Allen, Wallace, Renes, & Bowen, 2010; Chappel & Somers, 2010; Cihak & Schrader, 2008; Dotto-Fujut, Reeve, Townsend, & Progar, 2011; Hillier et al., 2007; Hillier, Fish, Siegel, & Beversdorf, 2011; Retherford & Sterling-Orth, 2009; Tse, Strulovitch, Tagalakis, Meng, & Fombonne, 2007). It is essential to study both adolescents and adults to gain the perspectives of not only parents and service providers but to include individuals on the spectrum as much as possible given that willingness and interest are substantial factors in the implementation of interventions (Chappel & Somers, 2010; Cihak & Schrader, 2008; Hillier et al., 2007; Tse et al., 2007).

Currently, there are no specific, validated vocational training programs for individuals with an ASD. However, the Practical Assessment Exploration System (PAES; Swisher et al., 1999) is a functional vocational skills training tool that teaches and measures vocational potential in individuals with disabilities. As such, its intended purpose may address the unique vocational needs of the population of adolescents and young adults with ASD.

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The Practical Assessment Exploration System (PAES) and the Pursuits Program

The Pursuits program, operated jointly by the Society for Treatment of Autism and Sinneave Family Foundation, is a suite of programs intended to support adolescents and young adults with ASD to develop appropriate work behaviours and foster increased vocational, life, and social skills. This program hopes to provide an intensive, structured community-based program with increased personal skills, vocational skills and independence, and social inclusion as specific objectives for individuals with ASD with diverse cognitive abilities.

PAES is one program housed within Pursuits that offers functional skills guidance that combines curriculum and assessment related to potential entry-level jobs. Specifically, it is designed to instruct attendees in mastery of vocational tasks associated with business (e.g., filing, collating papers, using a cash register, using a calculator, creating and editing a word processing document, and creating a data base), home economics (e.g., food preparation, working with basic food service tasks, using a food scale, sewing by hand, and using a sewing machine), and industrial arts (e.g., using linear measurement tools, using hand tools, electrical wiring projects, wood projects, and sheet metal projects). PAES is run in 12-week increments, and attendees are divided into adult and adolescent groups based upon age: adolescents are aged thirteen to seventeen, and adults are aged eighteen or older. Each group contains 8 to 12 participants, and both adolescent and adult groups are run simultaneously at different preset weekly times. Within these groups, individuals are able to sign up and repeat the PAES program as individuals acquire skills at different rates. It may be suggested that individuals complete

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this programming multiple times in order to gain further independence in their vocational training.

Attendees in the PAES program typically demonstrate below average IQ and adaptive skills, and the programming in PAES is typically geared towards this population. Vocational skills are systematically taught to attendees including appropriate workplace behaviours such as having to arrive on time, clocking in for a shift, storing belongings upon arrival, and break time. The PAES program also introduces the concept of supervision and provides instruction regarding behaviours that are appropriate for the workplace. Although PAES is designed to assist the educational and vocational decision-making processes for students with various disabilities (Swisher et al., 1999), its effectiveness in the ASD population has yet to be investigated. Thus, a gap in the research literature pertaining to the use of PAES with this population exists.

Research Purpose

This project aims to provide a comprehensive understanding of improvements in vocational skills, social skills, and emotional/behaviour regulation associated with participation in the PAES program. The specific purpose of this research project was to evaluate the effectiveness of the PAES program as a vocational training tool for individuals with ASD.

Research Questions

1. Will PAES effectively enhance the vocational skills of adolescents and adults with ASD?
2. What are the strengths and limitations of PAES for adolescents and adults with ASD?
3. What suggestions can be made in regards to programming to increase the effectiveness

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of PAES for this population?

Hypotheses

It is hypothesized that the PAES program will effectively enhance the vocational and related skills of adolescents and adults with an ASD. This hypothesis will be tested through the use of pre- and post-administration of the TEACCH Transition Assessment Profile (TTAP; Mesibov, Thomas, Chapman, & Schopler, 2007), Advanced Clinical Solutions (ACS; Wechsler, 2009), Social Responsiveness Scale (SRS; Constantino & Gruber, 2005), and the Child Behaviour Checklist (CBCL; Achenbach, 1991; Achenbach & Rescorla, 2001)/Adult Behaviour Checklist (ABCL; Achenbach & Rescorla, 2003), which measure vocational skills, social cognition, social skills and emotion/behaviour respectively. Additionally, it is expected that qualitative data from attendees, family members, and program facilitators will highlight program strengths, limitations, and potential areas for improvement.

CHAPTER 3: METHODOLOGY

This chapter provides a description of the participants, instruments, and research design, as well as the specific procedures taken to complete this study. Consideration is also given within this chapter to the analytical methods used, from both quantitative and qualitative standpoints.

Participants

Eleven attendees with ASD initially participated in this study. One of these attendees was removed by Pursuits and placed in a different vocational program as a result of his/her evaluated abilities. Therefore, the final sample included 10 adolescents or young adults diagnosed with ASD. The mean age of the sample was 18.3 years, with a standard deviation of 2.98 and a range of 14 to 22 years. Seven attendees were male, equating to an expected gender ratio given the distribution of the population diagnosed with ASD (APA, 2013; CDC, 2012; Newschaffer et al., 2007). This research sample represents two adolescent cycles and two adult cycles of the PAES program with data collected over a six-month time period. Attendee demographics and performance on inclusionary measures are presented in Table 2.

Measures

As there are no standardized assessment tools designed to evaluate improvement in vocational ability, a mixed-methods approach was utilized to gather information on vocational skills, cognitive and adaptive abilities, and social skills in adolescents and young adults with ASD. Interview data was also gathered on perceptions of program strengths, weaknesses, and suggestions for program improvements.

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Table 2.
Demographic and Clinical Information.

	Mean	SD	Range
Age (years)	18.3	2.98	14.1-22.7
Gender (% male)	70%	n/a	n/a
SCQ	23.7	5.01	15-33
FSIQ			
WASI-II (n=3)	83.0	18.52	65-102
CTONI-2 (n=7)	74.0	20.86	47-105
ABAS-II	54.7	14.99	42-91

Note. Age is reported in decimalized format (e.g., 19 years, 6 months is 19.5 years). The Social Communication Questionnaire (SCQ) is from Rutter et al., 2003; the Wechsler Abbreviated Scale of Intelligence, 2nd Edition (WASI-II) is from Wechsler, 2012; and the Comprehensive Test of Nonverbal Intelligence, 2nd Edition (CTONI-2) is from Hammill, Pearson, & Weiderholt, 2009. FSIQ refers to Full Scale Intelligence Quotient. The Adaptive Behaviour Assessment Scale – Second Edition (ABAS-II) is from Harrison & Oakland, 2006. Mean and standard deviation performance for each of these measures is reported in standard score units.

Quantitative.

Social Communication Questionnaire (SCQ). Attendees were required to have a previous diagnosis of ASD made by an appropriately licensed professional prior to participating. This previous diagnosis was confirmed through the use of the SCQ, which is a standardized parent-completed questionnaire developed to evaluate symptoms of ASD efficiently and accurately (Rutter, Bailey, Lord, 2003). The SCQ contains 40 questions consisting of diagnostic algorithm items from the Autism Diagnostic Interview – Revised (ADI-R; Rutter, LeCouteur, & Lord, 2003) that evaluate the social functioning and communication skills of individuals who may have ASD. A parent/caregiver who is familiar with the individual’s developmental history and current functioning provides ratings for individuals with a developmental level of at least two years and a chronological age of at least four years. The Lifetime form provides a total score that is interpreted while referencing validated cut-off scores. A cut-off score of greater to, or

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equal to 15 indicates a high likelihood of ASD. For the purposes of this thesis, a minimum cut-off score of 15 was used to confirm diagnosis of attendees, and all attendees exceeded this minimum cut-off. The SCQ was standardized on sample of 200 individuals who had participated in prior ASD studies, including 160 individuals with ASD and 40 with non-ASD diagnoses. Correlations between the SCQ and the ADI-R were calculated, and were statistically significant for all comparisons both within and across domains. The total score, when comparing the SCQ and ADI, displayed a correlation coefficient of 0.71 ($p < .0005$). Overall, findings validate the SCQ as a useful questionnaire for screening for ASD that also provides a sensitive index of symptom severity (Rutter, Bailey, & Lord, 2003). It is considered effective in differentiating between individuals with and without ASD.

Wechsler Abbreviated Scales of Intelligence, 2nd Edition (WASI-II). The Wechsler Abbreviated Scales of Intelligence – Second Edition (WASI-II; Wechsler, 2012) is a standardized measure of cognitive (intellectual) functioning of children or adults aged 6-90. It was used to evaluate the cognitive abilities of the research participants who were verbal and able to answer questions functionally and in sentences ($n=3$). Verbal (VCI), nonverbal (PRI), and full scale (FSIQ) were obtained through the use of this measure. The VCI is comprised of the Similarities and Vocabulary subtests, and the PRI is comprised of the Block Design and Matrix Reasoning subtests. This measure was administered following the standardized instructions outlined in the examiner's manual. Raw scores were converted to norm-referenced standard scores ($M=100, SD=15$).

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The WASI-II was standardized on a sample of 2,300 American individuals, with stratification based on the 2008 US Census (Wechsler, 2012). This normative sample consisted of both children (n=1,100) and adults (n=1,200). Internal consistency estimates range from .93 to .97 for the IQ scores in both child and adult samples. Interscorer agreement for the WASI-II was high and reliability coefficients ranged from .94 to .99 across the four subtests. Scores on the WASI-II were highly correlated with scores on the WISC-IV (ranged from .73 to .83 for subtests; .85 to .91 for IQ scores) and the WAIS-IV (.70 to .86 for subtest scores; .86 to .92 for IQ scores), providing support for the validity of the WASI-II in measuring cognitive abilities.

Comprehensive Test of Nonverbal Intelligence, 2nd Edition (CTONI-2). The Comprehensive Test of Nonverbal Intelligence (CTONI-2; Hammill, Pearson, & Weiderholt, 2009) is a standardized measure of nonverbal cognitive (intellectual) functioning. It is important to note that, as a nonverbal intelligence measure, the CTONI-2 only examines a portion of what is currently understood to be cognitive functioning. The CTONI-2 measures nonverbal intelligence, which has been defined as particular abilities existing independently of verbal language and that improve a person's ability to function intelligently (Rossen, Shearer, Renfield, & Kranzler, 2005). Therefore, performance on this measure may not fully represent the broad construct known as intelligence, and the scores on this measure and the WASI-II should be considered comparable, not equivalent. For the purposes of this thesis, the CTONI-2 was used to evaluate the cognitive abilities of the research attendees who were non-verbal or were unable to use functional communication skills (n=7). A full scale (FSIQ) was obtained through the use of this measure, and overall it is appropriate for assessing the general

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intellectual ability of children or adults aged 6-89 whose performance on traditional tests (such as the WASI-II) may be adversely affected by language or motor impairments. The FSIQ is comprised of six subtests measuring analogical reasoning, categorical classification, and sequential reasoning in two different contexts: pictures of familiar objects and geometric designs. This measure was administered following the standardized instructions outlined in the examiner's manual. Raw scores were converted to norm-referenced standard scores ($M=100$, $SD=15$).

The CTONI-2 was standardized on a sample of 2,827 American individuals, with demographic characteristics compared to those reported within the US Census Bureau (Hammill et al., 2009). This normative sample included both a school-aged sample and an adult sample. Average internal consistency coefficients for the composites were all .90 or higher, and .95 for IQ. Interscorer agreement for the CTONI-2 was high and reliability coefficients ranged from .80 to .86 across the six subtests. Scores on the CTONI-2 were highly correlated with scores on the WISC-IV (.83 for a sample of individuals with mental retardation) and the Kaufman Adolescent and Adult Intelligence Test (0.77 for IQ scores; Kaufman & Kaufman, 1993), providing support that the CTONI-2 is a valid measure of cognitive abilities.

Adaptive Behaviour Assessment System – Second Edition (ABAS-II). The Adaptive Behaviour Assessment System – Second Edition (ABAS-II; Harrison & Oakland, 2006) is a standardized parent-completed questionnaire of adaptive functioning across the lifespan (ages 0-89). It was used to evaluate the adaptive functioning of the research attendees prior to intervention. The parent/caregiver should be familiar with the individual's developmental history and current functioning as this measure has questions

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pertaining to 13 areas: conceptual, practical, community use, home living, self-care, social, functional academics, social, community, leisure, health and safety, self-direction, and lastly an optional section on work. Raw scores were converted to norm-referenced standard scores ($M=100$, $SD=15$), and a general adaptive score was obtained.

The ABAS-II was standardized on a sample of 1,045 parents, 980 teachers, and 1,406 adults, with normative information based on the English speaking US population (Harrison & Oakland, 2006). Internal consistency estimates are high with averaged coefficients for the composites all .90 or higher, and .97 to .99 for the General Adaptive Composite across standardization samples. When examining test-retest reliability, coefficients for the General Adaptive Composite were in the .90s and consistent across all samples. Interrater reliability ranged from .53 to .90 across skill areas and all forms, and from .82 to .93 for the General Adaptive Composite. Scores on the ABAS-II were highly correlated with scores on the Vineland Adaptive Behaviour Scales (ranging from .75 to .84 across forms when comparing the overall behaviour composites; Sparrow, Balla, & Cicchetti, 1985) providing support that the ABAS-II is a valid measure of adaptive functioning.

Social Responsiveness Scale (SRS). The Social Responsiveness Scale (SRS; Constantino & Gruber, 2005) is a standardized parent/guardian-report questionnaire designed to measure the severity of autism spectrum symptoms in naturalistic settings. It contains 65 items and is appropriate for developmental ages ranging from 4 to 18 years. It was used, both pre- and post-intervention, to evaluate social impairment, social awareness, social information processing, capacity for reciprocal social communication, social anxiety, and autistic preoccupations. The rater should be familiar with the

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individual's developmental history and current functioning as this measure generates scores pertaining to five areas: receptive, cognitive, expressive, and motivational social behaviour, as well as autistic preoccupations. Raw scores were converted to norm-referenced standard scores ($M=100$, $SD=15$), and a total, overall score was obtained.

The SRS was standardized on a sample of more than 1,600 children from the general United States population, that had participated in five different studies (Constantino & Gruber, 2005). Internal consistency estimates range from .93 to .97 for parent, teacher, and clinical ratings. Interrater reliability demonstrated correlation coefficients ranging from .75 (for the correlation between teachers and fathers) to .91 (for the correlation between mothers and fathers). Scores on the SRS were correlated with scores on the ADI-R (ranging from .52 to .74), providing support of validity.

Wechsler Advanced Clinical Solutions (ACS). The Advanced Clinical Solutions (ACS; Wechsler, 2009) is a standardized array of tests expanding on the clinical utility of the Wechsler cognitive measures. The Social Cognition subtests were used to evaluate attendee social perception and affect recognition abilities both pre- and post-intervention. An overall social cognition score was obtained through the use of this measure. This measure was administered following the standardized instructions outlined in the examiner's manual. Raw scores were converted to norm-referenced standard scores ($M=100$, $SD=15$).

The ACS is an extension of other Wechsler measures, with the majority of the subtests using the standardization information from cognitive batteries. However for social cognition subtests, samples were selected by stratified sampling based on: sex, age, race/ethnicity, and education, matching the 2005 US Census Bureau (Chu, Lai, Xu &

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Zhou, 2012). Internal consistencies for social cognition subtests displayed moderate to high coefficients ranging from .69 to .94, and higher for special groups (Chu et al., 2012).

Child Behaviour Checklist (CBCL). The Child Behaviour checklist (CBCL; Achenbach & Rescorla, 2001) is a standardized parent/guardian-completed rating scale of internalizing, externalizing, and adaptive behaviours of children/adolescents ranging in age from 6 to 18 years (n=4). It contains 113 items that are scored on a three-point likert scale and was used both pre- and post-intervention. The parent/caregiver should be familiar with the individual's developmental history and current functioning as this measure is made up of eight syndrome scales: anxious/depressed, depressed, somatic complaints, social problems, thought problems, attention problems, rule-breaking behaviour, and aggressive behaviour. Raw scores were converted to t-scores, and a total overall score was obtained.

Internal consistency estimates are moderately high with coefficients ranging from .63 to .79 (Achenbach & Rescorla, 2001). When examining test-retest reliability, coefficients for Total Competence, Total Adaptive Functioning, and Total Problems ranged from .91 to .95. Scores on the CBCL were variably correlated with scores on the Behavior Assessment System for Children (BASC; ranging from .38 to .89 across scales; Reynolds & Kamphaus, 1992a; 1992b) and highly correlated with the Conners Scales (ranging from .71 to .85; Conners, 1997a; 1997b), providing support for the validity of the CBCL.

Adult Behaviour Checklist (ABCL). The Adult Behaviour checklist (ABCL; Achenbach & Rescorla, 2003) is a standardized parent/guardian-completed rating scale of internalizing, externalizing, and adaptive behaviours of adults ranging in age from 18 to

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59 years (n=6). It contains 126 items that are scored on a three-point likert scale, and was used both pre and post intervention. The parent/caregiver should be familiar with the individual's developmental history and current functioning as this measure is made up of eight syndrome scales: anxious/depressed, attention problems, somatic complaints, withdrawn, thought problems, intrusive, rule-breaking behaviour, and aggressive behaviour. Raw scores were converted to t-scores, and a total overall score was obtained.

Internal consistency estimates are moderately high with coefficients ranging from .60 to .78 (Achenbach & Rescorla, 2003). When examining test-retest reliability, coefficients for DSM oriented scales, Total Adaptive Functioning, and Total problems ranged from .85 to .92. Scores on the ABCL were variably correlated with scores on the Minnesota Multiphasic Personality Inventory (MMPI; ranging up to .73; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989), providing support for the validity of the ABCL.

TEACCH Transition Assessment Profile (TTAP). The TEACCH Transition Assessment Profile (TTAP; Mesibov et al., 2007) is a standardized measure of vocational and related skills in adolescents and adults with ASD. The TTAP was created using evidence from successful transition programs such as the Adolescent and Adult Psycho Educational Profile (AAPEP), as well as education laws and current research (Mesibov et al., 2007). Direct observation, parent, and school/work scales provide inform six domains across different settings. Specifically, this measure evaluates vocational skills, vocational behaviour, independent functioning, leisure skills, functional communication, and interpersonal behaviour. For the purposes of this project, the vocational skills and vocational behaviour subscales were used from a direct observation standpoint to

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measure change in the amount of vocational skill and behaviour items that were passed, both pre- and post-intervention. These two subscales were administered following the standardized procedure outlined in the examiner's manual.

The TTAP was created using a scoring system useful in the creation of an Individualized Education Program (IEP). Within this scoring system, each item is scored as a pass (when the task is completed successfully), emerging (when the task is partially completed, and an initial understanding is displayed), or a fail (when an individual is unwilling or unable to complete the task). According to the Individuals with Disabilities Education Act (IDEA) assessments should aid in identifying life-skill domains requiring accommodation; therefore, the TTAP utilizes structured teaching to identify how much support an individual requires before they are able to complete a task independently (Mesibov et al., 2007).

The examiner's manual of the TTAP does not include information on its psychometric properties. In an effort to gain this information publishers were contacted, and peer reviewed journals articles reviewed; however, neither contained information on the psychometric properties of the TTAP. Therefore, such information cannot be provided.

Qualitative. Semi-structured interviews were conducted with program attendees who were verbally and cognitively able, all participant parents/guardians, and the facilitators working in the program. The goal of these interviews was to tap into domains that may not be assessed adequately by quantitative measures. Specifically, interviewees were asked about perceived strengths and limitations of the program, perceived changes in routines, self-esteem, social behaviour, motivation, any positive or negative side

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effects they associate with program participation, and any suggestions they may have for program improvement. Interviews were semi-structured so as to allow participants to expand on topics that were not otherwise covered within the interview protocol.

Interview guides were developed through consultation with an experienced qualitative researcher who phrased the protocol questions in response to the research questions they were intended to address. The primary researcher then reviewed the protocol questions to ensure that the scope of the question met the needs of the research project. The interview questions are presented in Appendix A, B and C.

Research Design

For the purposes of this study, a convergent mixed methods approach was used as both quantitative and qualitative data were collected, analyzed separately, and then compared (Creswell, 2014). This approach holds the key assumption that both types of data provide different types of information, and together should provide similar results (Creswell, 2014).

A pre-experimental design was also used as it involved a pre-post no control group design. It may also be considered quasi-experimental as participant selection and group assignment were not randomized; rather the sample was based on convenience and age of participants.

Procedure

Ethics approval was obtained through the Conjoint Faculties Research Ethics Board at the University of Calgary. The intake process for the PAES program involved four phases: 1) parents/guardians of attendees contacting the program expressing interest, 2) telephone screening, 3) written application for programming, and 4) an intake meeting

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with each potential attendee and his/her family/guardian. At the time of the intake, each parent/guardian was asked for their consent to participate in this study as well as their consent for each attendee, and provided consent forms. Furthermore, assent was gained from each attendee during this initial intake meeting. Upon consent/assent, the SCQ was administered to confirm the ASD diagnosis of each attendee. Subsequently, the ABAS-II and WASI-II/CTONI-2 were administered prior to the start of PAES programming. The SRS, CBCL/ABCL, ACS, and TTAP were administered both before and directly after the 12 week intervention programming. After the programming was complete, semi-structured interviews were conducted with attendees, parents/guardians, and facilitators working in the program. Participants were informed of their right to withdraw consent and were assured of confidentiality.

Pre-test data collection (T1) occurred prior to commencement of the PAES program, and involved data collection of pre-test measures. The PAES intervention occurred subsequent to T1 data collection. Post-test data collection (T2) occurred directly after completion of the 12 week PAES program and involved data collection of post-test measures.

Analysis

Quantitative. The Wilcoxon Signed-Rank Test was used to compare participant performance on quantitative measures before (T1) and after (T2) intervention. An alpha level of .05 (two-tailed) was used to indicate significance for all statistical analyses. The Wilcoxon Signed-Rank Test is a non-parametric alternative to the t-test used when comparing two related samples or repeated measurements from a single sample (Corder & Foreman, 2009). Non-parametric tests refer to statistical approaches that do not

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assume the presence of an underlying normal distribution. This statistical method was selected as the most appropriate due to the small sample size (n=10) and because the multiple nominal variables (T1 and T2) and each measurement variable (TTAP, ACS, SRS, & CBCL/ABCL individually) met the specifications for this type of analysis. A Wilcoxon Signed-Rank Test was conducted for each of the measures used both pre and post intervention to explore if there was a significant change in vocational skills after intervention.

Following data collection, data was entered into a database and analyzed via the SPSS statistical software program. Data cleaning revealed that there were no missing items on any of the measures. Further examination of box-plots revealed no extreme outliers, and, therefore, no data points were adjusted or removed.

Qualitative. Thematic analysis is a commonly used method for analyzing and reporting themes within qualitative data (Braun & Clarke, 2006). The goal of thematic analysis is to find and describe patterns within data. This approach was selected as a primary research question entailed acquisition of a deeper understanding of parental/guardian, attendees, and facilitator perspectives on the effectiveness, strengths, and limitations of the PAES program, including possible suggestions for improvement to the program. Thematic analysis was considered an appropriate choice because this approach allows data to be collected and analyzed at separate times. This feature was an essential component of the present study as, along with the primary researcher, there were two other interviewers who participated in the collection of data. However, the primary researcher was responsible for coding and theming data, and only one of the

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additional interviewers was responsible for re-coding data for consistency purposes.

Thus, analysis of this data did not occur simultaneously with data collection.

In general, thematic analysis is not tied to any particular theoretical framework but instead can be used in tandem with many theories. This characteristic makes thematic analysis particularly well suited to a mixed methods approach, as it avoids philosophical paradigm clashes. For the purposes of this thesis, an essentialist or realist perspective was adopted, which entailed reporting experiences/meaning and reality of participants (Braun & Clarke, 2006). This perspective allowed for the theorizing of experiences, motivations and meaning in a direct way, while assuming a unidirectional relationship between experiences/meaning and the language used in expression (Braun & Clarke, 2006). The creation of data codes was guided by interview content, rather than by theory alone.

Analytic Steps. A series of five steps are involved in the process of conducting thematic analysis, each of which occur prior to writing the thesis (Braun & Clarke, 2006).

The first step is familiarization and immersion within the data. This step is essential as the researcher becomes familiar with the depth and breadth of the data during repeated readings of the interviews. It is important that these readings are conducted actively (i.e., searching for patterns and meaning) and completed prior to coding the data. Transcribing verbal interviews would also typically be a part of this initial step; however, a research assistant transcribed all interviews, and transcripts were provided to the primary researcher for review and analysis.

The second step is to produce initial codes from the data that identify basic segments of the data that can be analyzed meaningfully. The researcher initially used

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open coding, a process whereby the researcher looked at the data line by line and created codes by “giving full and equal attention to each data item” (Braun & Clarke, 2006, p.89). Once this open coding occurred, a more focused coding approach was adopted where the initial codes were re-examined to determine if new codes applied to any of the previous data. This coding process was completed for each of the interview types (parent/guardian, attendee, and facilitator).

The third step is to develop themes once all of the data had been coded. This step refocuses analysis at a broader level than the initial coding process and considers how codes may combine to form an overarching theme. During this process, codes and a brief description of each were written down and grouped into theme pilings, which were revised as themes developed.

The fourth step is to review and adjust the initial themes. During this review, themes were split into sub-themes or grouped together as themes had to be distinguishable and come together meaningfully. Re-coding of the data occurred as necessary in this step to add or remove themes. It was also during this step that an objective individual re-coded the data to ensure reliability of coding and consistency of theming. Any discrepancies were discussed between the two coders and resolved to ensure agreement between both coders before moving forward. At the end of this step, all data had been grouped into themes.

The final step is naming and defining the themes. During this step, creating definitions of each theme ensures that each theme was adequately explained. By naming and defining themes, the researcher ensured that a clear set of themes had been developed

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that both described the data and answered the research questions pertaining to qualitative data.

Analytic Procedure. Following the completion of interviews, transcribing occurred and hard copies were provided to the primary researcher. Interviews were then read, and notes were made as this process occurred. At this point, open coding occurred line by line, and notes were made when possible codes or ideas occurred to the primary researcher. Once open coding was completed, grouping into preliminary codes and themes began. After all of the interviews had been coded, segments of interviews were retrieved and written with codes to further develop code groupings. Further grouping and code re-establishment aided in the development of themes, and the resulting themes were then named and defined to answer each research question.

CHAPTER 4: RESULTS

This chapter describes the significance of the quantitative measures for the sample. Experiences of all participants (attendees, parents/guardians, facilitators) are then described as four primary themes with subsequent subthemes.

Research Question 1: Quantitative

The first research question asked if PAES effectively enhanced the vocational skills of adolescents and adults with ASD. Means and standard deviations for the experimental measures are summarized and presented in Table 3.

Table 3.

Descriptive Statistics for Quantitative Measures

Measure	Pre (T1)		Post (T2)	
	M	SD	M	SD
Social Responsiveness Scale (SRS)	83.2	8.6	82.1	9.02
Advanced Clinical Solutions (ACS)	2.5	3.17	2.1	2.6
Combined Overall Behaviour Score (CBCL and ABCL)	62.5	4.48	59.3	6.83
- Child Behaviour Checklist (CBCL; n=4)	65	5.1	61.25	8.85
- Adult Behaviour Checklist (ABCL; n=6)	60.83	3.49	58	5.66
TEACCH Transition Assessment Profile (TTAP) – Vocational Skills	8.4	3.3	9.9	2.8
TEACCH Transition Assessment Profile (TTAP) – Vocational Behaviour	9.4	2.12	10.8	1.69

Note. The Social Responsiveness Scale (SRS) is from Constantino & Grudber, 2005; the Advanced Clinical Solutions (ACS) is from Wechsler, 2009; the Child Behaviour Checklist (CBCL) is from Achenbach & Rescorla, 2001; the Adult Behaviour Checklist (ABCL) is from Achenbach & Rescorla, 2003; and the TEACCH Transition Assessment Profile (TTAP) is from Mesibov et al., 2007. Mean and standard deviation performance for the ACS is reported in scaled score units. Mean and standard deviation performance for the CBCL, ABCL and SRS are reported in t-score units. Mean and standard deviation performance for the TTAP is reported in amount of passing items.

Wilcoxon Signed-Rank tests were conducted to determine if performance on the SRS, ACS, CBCL/ABCL, and TTAP was significantly different pre- versus post-intervention. Results indicated no significant differences in performance on the SRS, ACS, or CBCL/ABCL. Social responsiveness as measured by the SRS did not differ between T1

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(*Mdn* = 88.0) and T2 (*Mdn* = 89.5), $z = 0.178$, $p = .858$, $r = .056$. Similarly, the results indicated no significant difference in social perception and affect recognition as measured by the ACS, T1 (*Mdn* = 1.0) and T2 (*Mdn* = 1.0), $z = 1.118$, $p = .655$, $r = .354$, or in internalizing/externalizing symptoms as measured by the total CBCL/ABCL score, T1 (*Mdn* = 62.5) and T2 (*Mdn* = 59.5), $z = 1.541$, $p = .107$, $r = .123$. However, the results did indicate a statistically significant change in performance in vocational skills as measured by the TTAP, T1 (*Mdn* = 9.0) and T2 (*Mdn* = 11.0), $z = 5.863$, $p = .017$, $r = 1.854$. Moreover, results indicated a statistically significant difference in performance on the vocational behaviour domain of the TTAP, T1 (*Mdn* = 8.5) and T2 (*Mdn* = 11.5), $z = 4.743$, $p = .027$, $r = 1.5$.

Research Questions 2 and 3: Qualitative

Research questions two and three explore the strengths, limitations and suggestions for improvement as discussed by capable program attendees, parents/guardians, and facilitators. Of the 10 program attendees, only five were cognitively and verbally able to complete an interview with the primary researcher. A total of nine parents/guardians completed a final interview; the remaining guardian was unable to complete an interview due to time constraints and the transition of his/her child attendee into adult services. Seven of the eight program facilitators consented to complete an interview upon completion of the PAES program.

Using thematic analysis, four primary themes were identified: program strengths, benefits derived, program limitations, and lastly suggestions for program improvement. Within each of the primary themes, there were subthemes for each participant group. All primary themes and subthemes can be found in Figure 1.

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Strengths	Benefits Derived	Limitations	Suggestions
<p>Attendees</p> <ul style="list-style-type: none"> - Learning (1) - Everything (2) 	<p>Attendees</p> <ul style="list-style-type: none"> - New Friends (3) - Specific Tasks (4) 	<p>Attendees</p> <ul style="list-style-type: none"> - Difficulty Level (2) - Nothing (4) 	<p>Attendees</p> <ul style="list-style-type: none"> - Difficulty Level (3) - Length (1) - None (2)
<p>Parents/Guardians</p> <ul style="list-style-type: none"> - Specificity to Skills (4) - Support (2) - Accommodations (2) - Diversity (3) - Communication (2) - Structure (2) - Program Enjoyment (8) 	<p>Parents/Guardians</p> <ul style="list-style-type: none"> - Personal Growth (3) - Social Communication (4) - Belonging/ Engagement (2) - Independence (3) 	<p>Parents/Guardians</p> <ul style="list-style-type: none"> - Waiting List (2) - Length (2) - Transfer of Skills (2) - Fine Motor Requirement (1) - None (2) 	<p>Parents/Guardians</p> <ul style="list-style-type: none"> - Length (4) - Communication with Parents (2) - End Goal (1) - None (2)
<p>Facilitators</p> <ul style="list-style-type: none"> - Diversity (2) - Specificity to ASD (2) - Structure (5) - Assessment of Skills (2) 	<p>Facilitators</p> <ul style="list-style-type: none"> - Anxiety Reduction (2) - Social Skills (2) - Personal Growth (3) 	<p>Facilitators</p> <ul style="list-style-type: none"> - Program Materials (7) - Varying Ability Levels (2) - Fine Motor Requirement (2) 	<p>Facilitators</p> <ul style="list-style-type: none"> - Altering Program Materials - <i>Instructions (5)</i> - <i>Visuals (3)</i> - <i>Variety of Activities (1)</i> - <i>More Realistic Materials (1)</i> - Use of Sensory (1) - Adaptations for Cognitive Func. (2) - Transitioning (2) - Fine Motor Modifications (2)

Figure 1. Thematic map for all primary themes and subthemes

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Theme One – Program Strength. Through the analytic process, several subthemes were developed (see Figure 2). This theme is described as qualities of the program that are currently working well, qualities of the program that benefit program attendees, and specific assets of the program for individuals with ASD.

Attendees.

Learning. Learning in its most basic sense was used to describe something that occurs during the PAES program and was highlighted as a strength by one attendee. Attendee Three stated that a strength of the program was “to help you learn.”

Everything. Two attendees indicated that a strength of the PAES program was “everything” (Attendee Ten), and “actually I like everything” (Attendee Eleven).

Parents/Guardians.

Specificity of skills. Specificity of skills was used to describe an overarching subtheme that described the PAES program as targeting specific skills that would be useful for employment or independence. This specificity of skill described an overall program strength, as it was explained that there are not many programs focusing on vocational skills for individuals with ASD. Parent/Guardian One stated that PAES “focuses on vocational skills that are well thought and well planned.” Whereas Parents/Guardians Ten and Eleven stated respectively, “it’s really hands on and tangible, where they came and did actual learning skills that will benefit them” and “the tasks they do actually have a purpose.” Lastly, it was stated that the “step-by-step progression of tasks, getting more difficult, and doing tasks in a timely manner because it’s a reality for work and independence” (Parent/Guardian Nine).

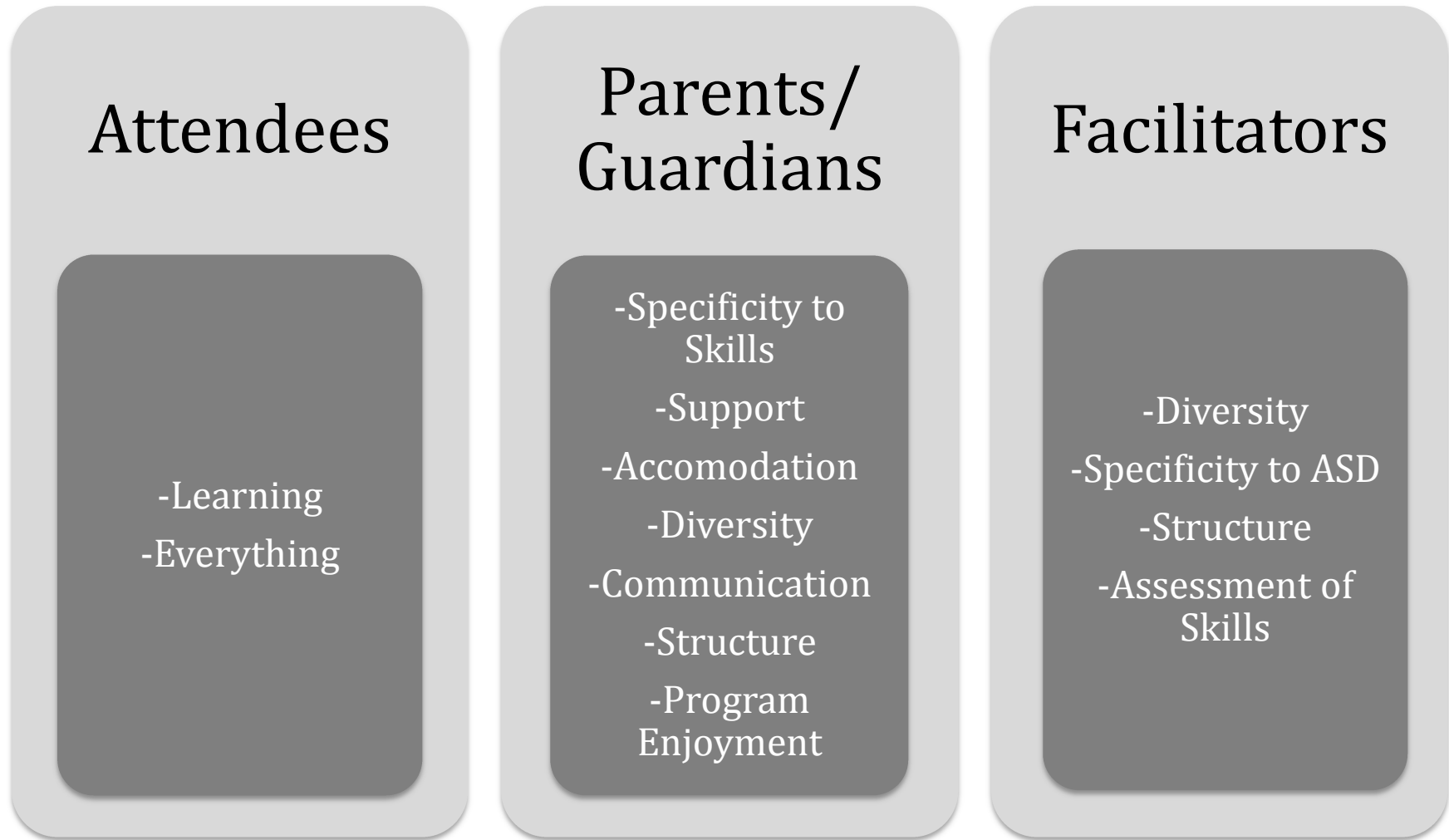


Figure 2. Thematic map for program strengths

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Support. Support was used to describe a feeling of help or provision of resources to both the individuals with ASD and their family members. When asked to describe program strength, Parent/Guardian One stated that PAES provides “resources for support” and Parent/Guardian Three indicated that it provides a “place to go where individuals are understood and helped.” Parent/Guardian Two stated that PAES staff are “always open to showing us what they’re doing.”

Accommodations. Accommodations were described by parents/guardians as adaptations made by program facilitators that aided attendees in more successful completion of tasks. One strength identified by a parent/guardian was that “the structure, creativity, the way tasks are broken down, accommodations for different individuals” really assist the attendees (Parent/Guardian Five). Another strength was “the structure and ability to work with him and adapt the activities to what he is doing” (Parent/Guardian Seven).

Diversity. Diversity was a term that encompassed “different activities” and switching program staff that each individual worked with each time they came for programming. Both Parents/Guardians Two and Five stated “the diversity and the different activities. Like we didn’t know he could do certain things that he can do” and that program staff were “very creative about the different activities that they involved and how complex they were” as program strengths, respectively. Parent/Guardian Three stated that they “liked that they switched the people they worked with each time, as it helped with transitions”.

Communication. Parents/Guardians spoke to the facilitators’ ability to use “different forms of communication” as a strength of the PAES program. One example of

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this was when Parent/Guardian Five stated that facilitators' use of "different forms of communication, led to fewer frustrations and we see less abusive tendencies because of that."

Structure. Parents/Guardians Five and Seven, respectively, stated, "it's really structured, and has well-trained personnel" and "the structure and teaching is awesome".

Program Enjoyment. Program enjoyment was described as an overall positive experience with the program, and that attendees really "enjoyed" coming to the program each week. Eight parents/guardians spoke to an overall feeling of enjoyment as experienced by their son/daughter participating in the program. Two parents/guardians stated "He enjoys coming every week" (Parent/Guardian Five and Ten). Other common phrases used to describe this feeling of enjoyment as expressed by parents/guardians were, "looking forward to coming", and "very positive for him each week."

Facilitators.

Diversity. Diversity, much like parents and guardians discussed it, was a term that encompassed "different activities" and the variety of domains in which attendees were able to complete activities.

One facilitator stated:

"One of the strengths is the amount of activities and tasks that there are. So it gives a lot of the participants the opportunity to see what they may be interested in and that they didn't even know existed" (Facilitator One).

Facilitator Three stated:

"I like that they have numerous domains so that we can practice more skills with the clients. It is a program that I find if it gets the right individual on the spectrum

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they love it. They don't want to stop working on it. I know most of the kids who do try it really do enjoy working on it.”

Specificity to ASD. This theme described specific skill sets that attendees either came in wanting to further develop, or ‘exposure’ of skills that would be practical for an ASD population to learn. Facilitator One spoke to a common interest of many attendees and stated:

“The main one being computers. Like every participant comes in and says that they are really good at computers. But then their definition of being really good at computers is youtube or googling stuff. And then when we get them into the actual word document and excel and powerpoint, they actually learn that. Because they actually have interest in the computer, we kind of have that advantage. They will come in interested about it, and if it is difficult they are willing to learn it.”

This facilitator spoke to how an attendee's interest can help foster learning difficult tasks within the PAES program and also how the variety of tasks helps explore abilities that attendees may already have acquired. Another facilitator stated:

“Some of the modules were really great. They were really good for exposing participants to things that they might not have the opportunity to be exposed to otherwise. We get to see where their skills are and ideas about what jobs might be good for them” (Facilitator Seven).

Structure. Five facilitators spoke to the overall program structure as a major strength in working with an ASD population. Some words that were used to describe this

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subtheme included, “structured setting,” “routine,” and “schedule.” Facilitator Two stated:

“The structured setting is really a strength because it can help us identify the needs that they require or what strengths they have or what areas need an adaptation so they can go out in the community.”

Another facilitator stated, “at the very least it gets clients used to, when you work into a workplace you have to sign in, and check in with your supervisor, giving general structure” (Facilitator Five). Two other facilitators spoke to “routine” and “schedule” as program strengths that allow for understanding of what is expected in a workplace.

Lastly, Facilitator Four stated:

“The fact that it is modules that you work on. So it gives one specific task that you work on at a time. So you work on one thing so it is not this overwhelming big project that you are working on. Having the levels as well was motivating for some individuals to be able to get the first one, and then to move onto the second one.”

Three facilitators spoke about the levels of each task within the PAES program as a program strength, allowing for a variety of ability levels.

Assessment of skills. Assessment of skills as a program strength was described as a ‘grading system’ and as ‘assessing’ attendees when they start programming. Facilitator Three stated:

“The grading system usually is easy for us as well to be able to track somebody’s progress. So it works both ways. The clients keep track of their own work and we keep track of their work as well.”

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This facilitator spoke to the grading system utilized directly within the PAES program as a strength both for attendees and program staff in tracking progress of skills.

Another facilitator stated:

“In the way that we run it, I think our benefits are that we do assess how they are doing when they come in. One of the first things that all of us ask is how’s your day? And based on that answer, we are deciding on are we going for a run, are we coloring or are we going straight to work. I think that is a benefit.

Immediately we go in week one probing to see what sorts of things are you interested in. If the client has the ability to let us know what they are interested in” (Facilitator Four).

This facilitator spoke to assessment of skills as an everyday opportunity to address what each attendee is capable of doing.

Theme Two – Benefits Derived

Several subthemes of benefits derived were developed, and can be found in Figure 3. This theme is described as qualities obtained, or improved, by the program attendees after they attended the PAES program.

Attendees.

New friends. Meeting ‘new friends’ was the term most used by attendees to describe what they enjoyed, liked, or was a benefit derived from the PAES program. This term spoke about the social aspect of the program. Attendees Two, Three and Six stated respectively: “I met a new friend,” “I liked meeting new people,” and when asked about friends said “I had friends just at the ending.”

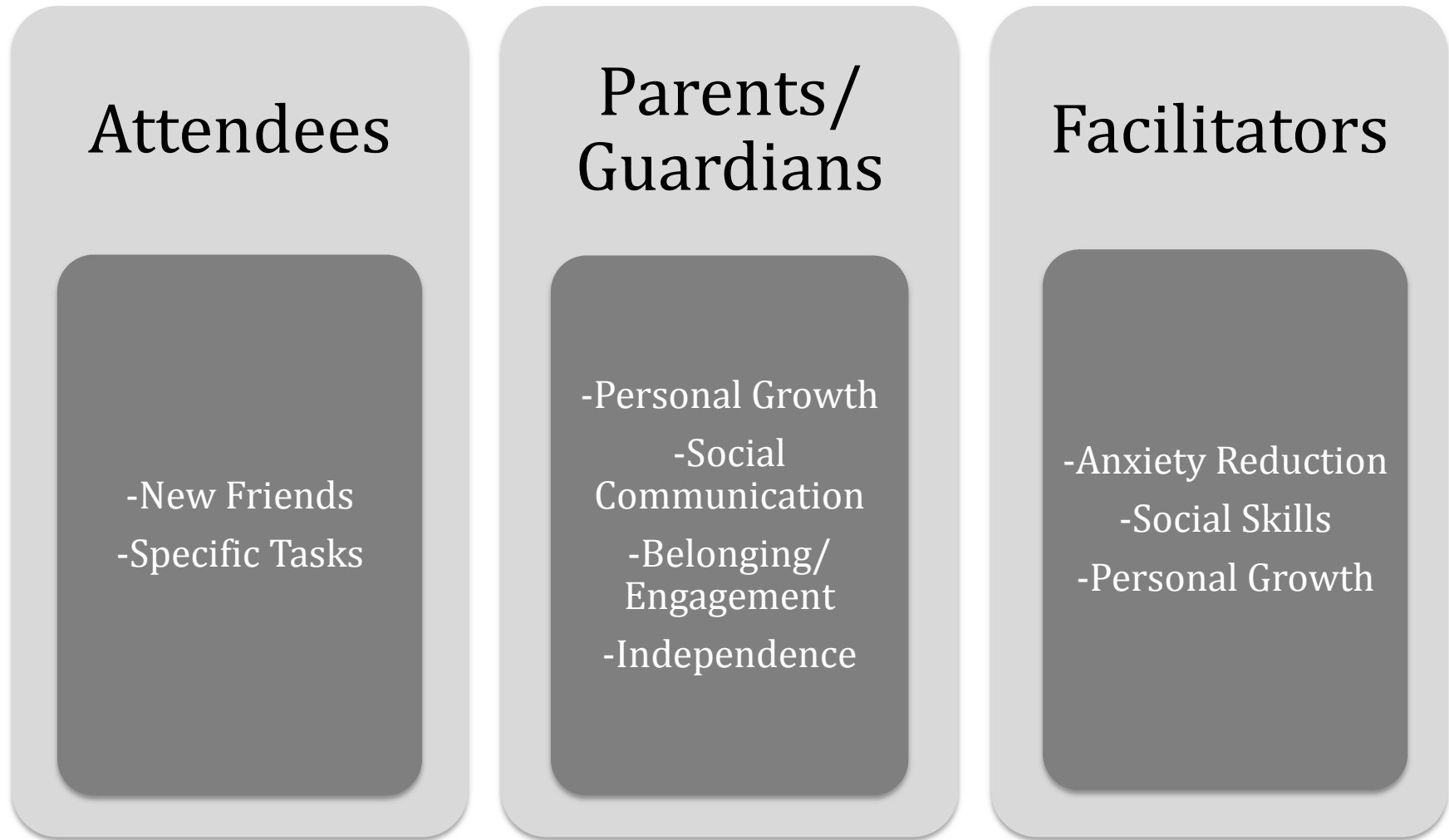


Figure 3. Thematic map for benefits derived

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Specific Tasks. When asked what they learned while in the PAES program, some attendees listed specific activities that were a part of programming; these will be characterized as benefits derived by attendees during programming. Some things listed by attendees included: “a couple of life skills,” “cash machine,” “paper cutter,” and “things on the computer” (Attendees Three, Five, Six and Ten).

Parents/Guardians.

Personal growth. Personal growth was described by different parents/guardians as an inner change that occurred within each attendee because of his or her participation in the PAES program. One parent/guardian stated, “being able to see the growth in themselves, from the start of the program to the end” and as the “self confidence that comes with this” (Parent/Guardian Three). Another stated that PAES “is a nice happy, positive place for them to come and feel confidence within themselves” (Parent/Guardian Five). Lastly, another parent/guardian stated that their son had “really challenged and has really grown” (Parent/Guardian Seven).

Social communication. Parents/Guardians described attendees as benefitting from the social communication aspects of the program. Parent/Guardian Three stated that there was “interaction with other people” and the ability to “meet and work with different staff” aiding in the development of social communication skills. Parent/Guardian Ten described a social example that she attributed to the PAES program and as benefit derived:

“For the first time in his entire life he told a story about a past event, and he was able to pick that exact time in history and tell specific details about what happened. I wanted to cry. I was so happy, and he had never in his life been able

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to tell a story about a past event. And then now that things are starting to click; things are starting to make sense the way he functions and does things and the way he sees the world.”

This parent/guardian stated that since the PAES program “he wants to be more sociable. He will now go up and talk to people. He wants to talk to people now.”

Another parent/guardian stated that there was a “confidence he felt coming and socializing that he felt very comfortable with” (Parent/Guardian Eleven). Lastly, a benefit derived was an attendee’s “ability to answer questions, even make jokes...we’ve noticed real growth, and indirectly it (communication) made him much happier” within the program (Parent/Guardian Seven).

Belonging/Engagement. Parents/Guardians also described a newly acquired sense of belonging or engagement as a benefit derived from the PAES program. One of these parents/guardians stated, “I think she felt more included in the community” (Parent/Guardian Five). Another parent/guardian stated, “I think he is more aware. And that he’s able to say something and people will respond positively, just more engaged in the whole world” (Parent/Guardian Ten). This parent also stated:

“That’s the power of this program. And that’s not about the specific skills. The mere fact that he can socialize in a McDonald’s when I take him out; there’s people in society that say that your kid isn’t being behaved, and you can’t take him out. And there is so much negativity towards us. We have to grow an extra layer of skin. For once he’s feeling that he can be a part of society. And I’ve never seen him act that way before in his life, where he almost felt like he belonged to his world.”

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Independence. Parents/Guardians said that a benefit derived from the PAES program was a noticeable increase in their son's/daughter's independence. One parent/guardian stated, "we learned that she can work on her own independently after being given a task" (Parent/Guardian Five), where they would have otherwise helped her previously. Another two parents/guardians said, "the program teaches him, helping him to learn to be more independent" (Parent/Guardian Eleven) and "independence he worked on is transferrable" (Parent/Guardian Nine).

Facilitators.

Anxiety reduction. Anxiety reduction was a subtheme identified by facilitators as a benefit derived by some attendees. It was stated that "seeing him work through things on his own was really good. I think that may have helped with anxiety, being able to realize that they have to do things independently." Another facilitator highlighted that coming to the building where PAES is held often causes anxiety for attendees. This facilitator stated that, "there was a reduction in anxiety over the eleven weeks" (Facilitator One).

Social Skills. Social skills was a subtheme also identified by facilitators as a benefit derived. Facilitator One stated, "I definitely have seen social skills or being able to communicate with staff change. Being more comfortable in a work place setting you see a lot of their skills increase."

Personal growth. Personal growth, much like parents and guardians discussed it, was a term that encompassed an inner change that occurred within each attendee because of his or her participation in the PAES program. Facilitator Four stated: "As they get more comfortable with a task, their confidence goes up. There is less prompt reliance

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and waiting for confirmation that they are doing it right.” Another facilitator highlighted that, “Once you give them more, they are reporting their own work which really boosts their confidence, and then makes them want to do more” (Facilitator Six). Lastly Facilitator Five stated, “so it does give them the sense of accomplishment, which is something that I don’t know if they get that in a ton of other stuff that they do.”

Theme Three – Program Limitations

Through the analytic process several subthemes were developed and can be found in Figure 4. This theme is described as qualities of the program that aren’t currently working well, qualities of the program that restrict program attendees, and specific parts of the program that are not designed well for individuals with ASD.

Attendees.

Difficulty level. Difficulty level was described by one attendee as a major limitation for the PAES program. Attendee Eight stated that the PAES program was ‘too easy’ several times. This attendee stated “everything was too easy,” “it was just too boring because I’m the smartest,” and when asked directly about program limitations stated, “it was just too easy, that’s it.”

None. The four remaining attendees who were interviewed, when asked about program limitations stated that there were “none,” or “can’t think of any.”

Parents/Guardians.

Waiting list. The waiting list was a subtheme identified by parents/guardians as a limitation to the PAES program as they felt that ‘continuation’ in the program would be beneficial for individuals with ASD. Parent/Guardian One stated that, “the waiting lists

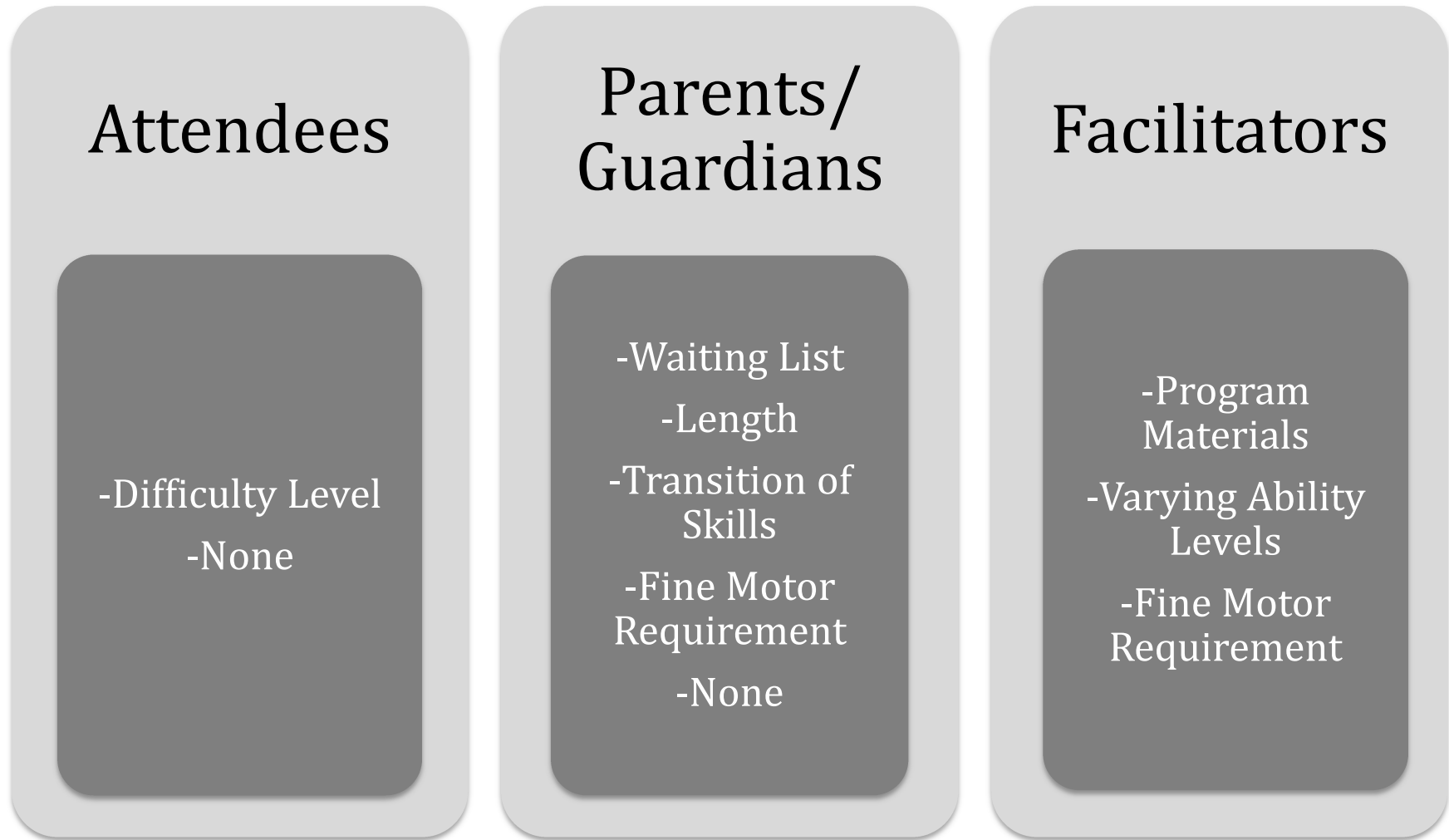


Figure 4. Thematic map for program limitation

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are getting longer and longer,” and parent/guardian Seven, when asked about limitations, just stated “the waiting list.”

Length. Length, or overall duration of the program, was a subtheme identified by parents/guardians as a limitation. Parents thought that the length of the program was too short and wished their children could participate in programming multiple times per week. Parent/Guardian Two stated, “wish it was longer or more times per week,” and Parent/Guardian Five stated that “two or three times a week all the time would definitely benefit longer term”.

Transition of skills. Transition of skills describes a lack of follow up after programming was completed or as a lack of structuring ‘specific outcomes’ while programming was still occurring. Parent/Guardian Three stated that the program was limited because they did not know “where to next?” and “what the follow up was”. While Parent/Guardian Nine stated, “looking more at the vocational skills part, I think the biggest thing is to have a specific outcome in mind in terms of the job you’re aiming for,” which at this point, it does not.

Fine motor requirement. One parent/guardian spoke to the fine motor requirement of many PAES activities as a major limitation for participants for whom that would be difficult. She stated, “he had a bit of trouble with fine motor tasks” which she elaborated to say was concerning for her in his overall skill development within PAES.

None. Parent/Guardian Seven and Parent/Guardian Ten stated “nothing” and “no I didn’t notice any limitations” when asked what limitations of the PAES program were.

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Facilitators.

Program materials. Program materials were given as a program limitation by all seven facilitators who specified that instructions might be limiting and that some materials are not realistic. Stating that the instructions need to be “re-written,” or that wording is “confusing” or “inconsistent” were among the most common words chosen to describe the instruction cards. As one facilitator said, “some of the tasks are definitely more frustrating than others. Especially when you see that they have the ability and there is some sort of barrier, like the way the card is written.” Facilitator Six stated:

“Part of the problem with PAES is the instructions that the individuals are given. I think the instruction cards and how they are worded, and sometimes they seem very rigid. I think if those were to change then it would serve a greater range.”

Another two facilitators stated that the “instruction cards are really complicated” and that there are “too many instruction cards that you have to access for each task.” More specifically when speaking to other program materials a facilitator stated:

“The material for the cash register is currently fake money. It’s plastic. And it’s plastic American money. Which also means that there is a half dollar, which we don’t even have in Canada. And the coins, because they’re not sized the same, they take longer to figure it out. And they’re looking at it, like its pretend and silly, and it doesn’t fit what we have in Canada so” (Facilitator Seven).

Varying ability levels. The difficulty of providing the same program to all participants regardless of their level of functioning described this subtheme. Facilitator Six stated:

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“Sometimes we have participants that aren’t high enough for this program, and I feel like they have not benefitted. Or what is very sad for me is when they were here a few months ago, we teach them, and they come back and have lost the skills.”

This facilitator spoke directly about attendees who are lower functioning and who either cannot understand the skills being taught or do not maintain those skills. Another facilitator stated:

“Autism is such a spectrum. To find one task that meets everyone’s needs directly. Like for some it may be too easy whereas for other clients it may be too hard, and they need a significant amount of practice to get to that stage. So it’s hard because they are all different” (Facilitator Four).

This second facilitator spoke less directly to lower functioning attendees but instead to the range of ability levels expressed by attendees and the difficulty in supporting each attendee.

Fine motor requirement. Facilitators spoke to the fine motor requirement of many PAES activities as a major limitation for some attendees. They stated, “the need for a fine motor skill is also difficult for some of the attendees, and they struggle with some of the specific tasks” and “fine motor tasks” respectively when listing program limitations.

Theme Four – Suggestions

Through the analytic process several subthemes were developed and can be found in Figure 5. This theme is described as ideas or recommendations for program improvement.

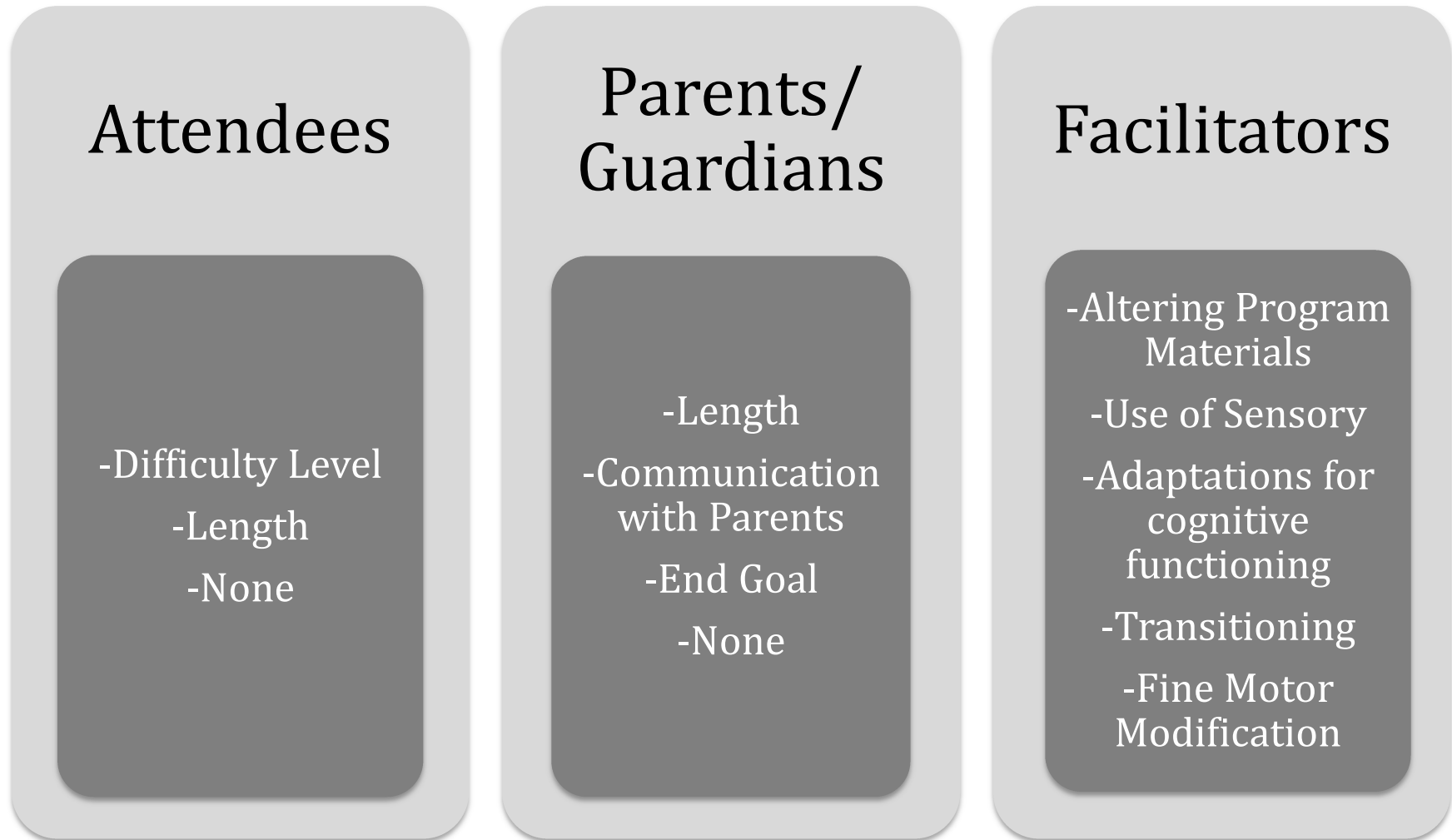


Figure 5. Thematic map for program suggestions

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Attendees.

Difficulty level. Difficulty level was discussed as a way to improve programming. One attendee said that the program needed to be more challenging and stated that the program needs to “make the work a million times harder” (Attendee Eight). Another attendee contrasted this and said that he would require more help to improve the programming. This attendee stated that he wanted “the instructor to tell ‘them’ what to do” (Attendee Eleven).

Length. An increase in time was how one attendee described a possible suggestion for improving the PAES program. This attendee stated that he wished there was “more program” and wanted to “change to do another one” (Attendee Eleven).

None. For two attendees when asked what suggestions could be made they stated nothing. One of these two attendees stated that they had no suggestions (Attendee Six). Another of the attendees they stated that the program was “just awesome the way it is” (Attendee Three).

Parents/Guardians.

Length. Parents/Guardians suggested that the program length be increased in order to improve the PAES program. ‘Continuation’ was a term used by more than one parent/guardian, and one stated, “continuation would be key” (Parent/Guardian Six). Another parent/guardian stated, “it would sure be awesome if a participant could carry on, because they are essentially children, and aging doesn’t mean they stop learning” (Parent/Guardian Seven). Two other parents/guardians listed “lengthening the program span” (Parent/Guardian Two) and “if they could have it all the time” (Parent/Guardian Five) as overall program suggestions.

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Communication with parents. Communication with parents was a subtheme described as an improved communication channel between parents and program facilitators. One parent/guardian suggested that it would be helpful for further skill development if the program provided homework. Another parent/guardian stated “it would be helpful if the facilitators broke down to families (what they have been working on in the program) or whoever is supporting them, so you can see changes are happening outside the program” (Parent/Guardian Eleven).

End goal. The end goal was described by one parent as structuring the program to match a vocational goal, or as focusing the program more. Parent/Guardian Nine stated, “what is the goal that we want, and what is the vocation that we are training him for...we need more focus.”

None. There were two parents/guardians that when asked what suggestions they had for the PAES program, stated “nothing” (Parent/Guardian Two) and “I can’t think of anything. I think it really fulfills what it sets out to achieve” (Parent/Guardian Three).

Facilitators.

Altering program materials. As there were several separate program materials discussed this subtheme will be broken down into the following four areas.

Instructions. Five program facilitators spoke directly to improving written instructions as a program suggestion for improvement. Facilitators stated that a suggestion would be to “simplify instructions, and reduce the amount of steps” or “re-doing all of the instruction cards, trying to make everything consistent.”

Visuals. Visuals as a suggestion were described as an alternate or additional form of communication for attendees who communicate visually. It was suggested that

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“making visuals for the individuals who can’t read” would be helpful, or “having a different set of visual instructions for individuals who are non-verbal” would aid with “different functioning levels.”

Variety of activities. Facilitator Six suggested that “adding more activities” would be beneficial. She stated, “grocery skills or certain areas that were not involved in PAES would help with employment.”

More realistic materials. One facilitator suggested that more realistic program materials would aid attendees in real world application of skills. Specifically she stated, “if for the cash register task we could have real money, and have Canadian money, it would be a much better training opportunity” (Facilitator Seven).

Use of sensory. Facilitator Two suggested that utilizing sensory materials for participants with ASD would be beneficial, as many attendees require a different amount of sensory input than your typical individual. She stated that “allowing a client to sit with a weighted ball on their lap to have that pressure they need, so they will help calm, or stopping time so they can go for a walk during an activity” would be beneficial.

Adaptations for cognitive functioning. Facilitators described this subtheme as “tailoring the program” to an attendees functioning level. Facilitator Two stated:

“If we were able to bring in adaptation based on where their cognitive level is, then if they can’t read we are able to bring visual pictures and that still counts as independence because that’s where their level is.”

Another facilitator stated that it would be useful to start attendees at a level for each activity where they are capable, rather than where you are required to start. For

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instance “some clients that we need to get to do level one, it is too simple for them. There is no point in making them go through that” (Facilitator Four).

Transitioning. Transitioning was described as the transfer of skills learned within PAES programming to an actual workplace, or as using the PAES program as a transitory program that would lead to a more complex integration program. Facilitator Seven stated, “I think that it would be useful for medium level individuals, using PAES as a transition type program rather than its own stand alone program.” Facilitator One stated “we are missing the link from what we teach them to directly where it is going to go,” and thus, it would be beneficial to find “what we can actually recommend in actual job sites or volunteer sites” for attendees. Lastly Facilitator Two stated:

“Overall, also for the lower functioning end of the population it wouldn’t be something that they could do independently. They would definitely need someone there or they wouldn’t be able to relate it. Trying to teach them a specific skill and getting them to take it into the real world makes it really hard.”

This facilitator really emphasized that it might be more difficult for lower functioning individuals to acquire and maintain the skills necessary to independently hold employment; therefore her suggestion was that certain individuals have a support staff transition with them into the workplace.

Fine motor modification. Two program facilitators suggested, “Modifications of some tasks (fine motor) were needed” (Facilitators Six and Seven). They suggested that if some of the fine motor tasks were modified for individuals who had great difficulty with them then you would increase their success level.

CHAPTER 5: DISCUSSION

The current study was undertaken to examine the effectiveness of a vocational skills intervention offered for adolescents and adults with ASD and to provide preliminary insight into the enhancement of vocational and related skills. This study also sought to explore some of the strengths, limitations, and possible suggestions for program improvement. It represents a unique contribution to the ASD and vocational intervention research literature.

In general, both the quantitative and qualitative results of this study provide convergent preliminary support for the PAES program in enhancing the vocational and related skills of adolescents and adults with ASD. Specifically, a statistically significant change in performance was displayed on the TTAP vocational skills and vocational behaviour subtests indicating that attendees improved their vocational skill and behaviour after participating in the PAES program. Overall, all attendees either increased the number of passing items on this measure or maintained their ability. However, no statistically significant change in performance was found on other predicted related skills (social cognition, social skills and emotion/behaviour).

In addition to examining the quantitative improvements in vocational and related skills, four primary themes were identified through the use of thematic analysis: strengths, benefits derived, limitations and suggestions. Within each of these primary themes, subthemes were also established for attendees, parents/guardians and program facilitators. The results highlighted many common and shared themes, and various suggestions that could potentially improve program functioning for individuals with ASD. Integrating a qualitative approach produces a different kind of understanding of

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the experience of vocational training, and perceptions pertaining to programming. This qualitative data makes a significant contribution to the overall experience of vocational training in the ASD community. These results, taken together with quantitative improvements in vocational skills and behaviours, suggest that attending PAES is associated with the improvement of vocational skills for adolescents and adults with ASD.

Research Question One: Quantitative

As there are no specific, validated vocational training programs for individuals with ASD within the literature, it was important to provide a comprehensive understanding of improvements in not only vocational, but also related skills. A significant change was found on the vocational skill and vocational behaviour domains of the TTAP, with the analyses for these domains indicating medium to large effect sizes. This significant change in performance suggests that PAES was positively associated with improved performance on targeted skills. As PAES was designed for individuals with developmental disabilities, and not specifically for individuals with ASD, this result suggests that PAES is also, in fact, beneficial for individuals with ASD. It is also meaningful given there has not been any previously validated vocational training tools for individuals with ASD.

When exploring skills related to vocational ability (social cognition, social skills and emotion/behaviour), no significant changes in performance were found. However, parents/guardians and facilitators described some significant improvements in communication and social skills during interviews. Given that social skills and communication have been identified as essential skills for positive employment outcomes

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(Chadsey, 2007; Human Resources and Skills Development Canada, 2011), the qualitative indicators of improvement in these domains is significant.

It is also the case that emotional and behavioural concerns have been specifically identified as possible challenges or obstacles for successful employment for individuals with ASD (Hendricks, 2010; Howlin et al., 2004). It was hypothesized that there may be pre/post changes in emotional/behavioural concerns, and this was measured using the CBCL/ABCL. Although there were no significant quantitative changes in internalizing, externalizing or adaptive behaviours, there was a significant qualitative change described for attendees in anxiety reduction, independence, and overall personal growth.

Research Questions 2 and 3: Qualitative

Qualitative interviews were conducted with nine parents/guardians, seven program facilitators, and five attendees. Due to the nature of the questions being asked of attendees, it was difficult to interview attendees and receive a substantial response given their cognitive and verbal capabilities. Given the restricted number of participants in this program evaluation, saturation was not achieved, and new subthemes emerged throughout the interviewing process.

In addition to answering the specific interview questions, data from the qualitative analysis converges with the quantitative findings. As was previously mentioned, four primary themes were created through the use of thematic analysis: strengths, benefits derived, limitations and suggestions. Three of these themes directly speak to the second and third research questions, which sought to identify program strengths, limitations, and suggestions for program improvement. The last of the primary themes, benefits derived,

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was an additional theme that was highlighted as all interviews spoke to benefits achieved by program attendees post programming.

Theme One – Program Strength. In general, parents/guardians, facilitators, and attendees were very positive about the PAES program and the Ability Hub in general. The most common program strength identified by eight parents/guardians was an overall program enjoyment experienced by individuals attending the PAES program. This is a significant strength as it speaks to quality of programming that attendees can come to learn new skills and still experience great enjoyment and willingness to participate. As has been identified within previous literature, it is important to consider the overall enjoyment experienced by individuals (Hendricks, 2010) to further improve independence and overall quality of life. Overall, program enjoyment as a subtheme discussed by parents/guardians could be considered to contribute to the attendees' overall fulfillment with programming. Parallel with this notion of overall program enjoyment, attendees emphasized learning as a strength within this theme. Concurrent with learning, parents/guardians also described specificity of skills as a subtheme and within this subtheme spoke about skills that involved “actual learning.” The subthemes of learning and specificity of skills are consistent with quantitative data pertaining to the TTAP, as there was a significant improvement in vocational skill and behaviour displayed by attendees. Parents/Guardians acknowledged that attendees enjoyed the program, and attendees themselves highlighted learning as a strength of the program. Therefore it is important to recognize that attendees were willing to attend vocational training programs to cultivate, or further develop already acquired skills necessary for employment and independence.

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It may be the case that attendees' learning within the program directly influenced their overall program enjoyment; this notion was supported by the specificity to ASD subtheme expressed by facilitators. Within this subtheme, facilitators spoke to the viewpoint that an attendee's interest aids in their subsequent learning of a variety of difficult tasks. One of the core features of ASD is restricted patterns of behaviour or interest (APA, 2013). Although these interests can be unusual in nature or intensity, they can be appropriate in content (Richler et al., 2010). Consequently, it would be important to foster an individual's interest, and to develop the content of those interests appropriately. As facilitators recognized attendee interests, they strategically chose which activities were completed by attendees, as it was believed that if an attendee had interest in a specific task they would persist with that task as its difficulty level increased.

Both parents/guardians and facilitators emphasized diversity as a subtheme, which not only spoke to the variety of different tasks that attendees were learning, but also the different facilitators that attendees had supporting and supervising them each session. Parents/guardians highlighted that the variety and change each week helped to facilitate transitions for their son/daughter. Transitions between tasks or settings can often be challenging for individuals with ASD (Dettmer, Simpson, Miles, & Ganz, 2000). Thus, it was appropriate to highlight this subtheme as a program strength, as variety and transitions can be difficult for the ASD population and the PAES program facilitated overall development in this area.

The most common strength identified by program facilitators was the structure that PAES provides for program attendees. Structure has been typically emphasized within the literature as beneficial for individuals with ASD because much like

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transitioning, structure provides adequate preparation and predictability and reduces confusion (Dettmer et al., 2000). Both facilitators and parents/guardians described structure as an overarching quality of the program that supported the needs of an ASD population. This was a significant strength as PAES was designed for students with various disabilities (Swisher et al., 1999), and thus this strength further signifies some preliminary support for benefits of using PAES with an ASD population.

Themes Three and Four – Program Limitations and Suggestions. While many significant strengths were identified, there were also limitations that are important to recognize. The most common limitation subtheme highlighted by parents/guardians and facilitators was the length or overall duration of the PAES program. Many of the subthemes within this primary theme were interrelated; however, length was discussed by four parents/guardians as a limitation. These parents/guardians stated that they wished the program was recurrent or longer as learning is continual and does not stop once individuals with ASD reach adulthood. Length and participation in programming was emphasized as many parents mentioned that there are not many programs for individuals with ASD once they reach adolescence or adulthood. It was also stressed that for many individuals with ASD learning can be a longer process than for other individuals, and therefore, parents/guardians felt that if the PAES program was longer in duration their children would have acquired more skills. It is not then surprising that parents/guardians recommended, “lengthening the program span” as a major subtheme of program suggestions, highlighting the description of importance for continual learning and need for repeated teaching in the acquisition of new skills for individuals with ASD.

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Facilitators also emphasized program materials as a subtheme of limitations and suggestions for program improvement, primarily due to an “unnecessary degree of complexity” within program instructions. This subtheme was highlighted by all seven facilitators interviewed and thus should be considered significant when considering modifications to this program for individuals with ASD. Specifically, facilitators suggested re-doing instruction cards and including visuals as chief suggestions for improving the PAES program for the ASD population. This suggestion is consistent with much of the literature in the ASD community as individuals have a large range of communicative abilities (APA, 2013; Human Resources and Skills Development Canada, 2011), and this diversity of communication ability must be recognized for more individuals to achieve success within a vocational environment. The additional recommendation made by facilitators to use real Canadian money would also aid in the transfer of skills to a real work environment, which was a parental concern.

Theme Two – Benefits Derived. In addition to the research questions exploring strengths, limitations, and suggestions for improvement of the PAES program, an additional primary theme emerged: benefits derived. Within this theme, parents/guardians and facilitators highlighted the personal growth and belonging/engagement, as well as anxiety reduction achieved by the attendees because of their participation in the PAES program. This finding is important, as a significant change in internalizing, externalizing and adaptive emotion/behaviour was not found on the CBCL/ABCL.

Furthermore, even though significance was not found on the ACS and SRS when exploring social impairment and social cognition, parents/guardians and facilitators

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described positive changes in social communication and overall social skills.

Specifically, one parent/guardian attributed her son's increase in social communication as a direct reflection of participation in the PAES program, as he was not participating in any other programming or learning environments. Facilitators also highlighted this positive change in social behaviour by describing the attendees' improvement in communication with staff during programming. Social communication is one of the core deficits for individuals with ASD (APA, 2013), and research continues to emphasize that individuals with ASD struggle within social communication (Centelles, Assaiante, Etchegoyhen, Bouvard, & Schmitz, 2012). These subthemes further emphasized the benefit of PAES as an intervention for the ASD population, and aided in a better understanding of the experience of vocational training and perceptions pertaining to the PAES program as a whole.

For the one program attendee that was not challenged by programming and, therefore, did not enjoy participating, there may be a number of other factors beyond general participation in the PAES program present. This attendee highlighted that she often chose not to attend the program because she would rather stay home, and she thought that the program was too easy for her. She also stated that there was more than one occasion where she did not attend the program due to delinquent behaviour (e.g. arguing with support staff, not following through on her expectations at home, etc.), and this behaviour or unwillingness to participate may have impacted her overall satisfaction and enjoyment with the program.

Regardless of other factors, it is important to note that facilitators also stated that a limitation of the PAES program is its inability to provide adequate services to all

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individuals with ASD. It was stated that due to a vast range in capabilities it was difficult to provide adequate programming for some program attendees (those that were substantially lower or higher functioning than the rest of the group), and some facilitators thought the program would be better suited for a more specific subset of the ASD population. While the PAES program displayed significant performance gains when targeting the majority of attendees, the perspective of the singular attendee who was disenchanted with the program aids in the future direction of PAES to better suit all individuals with ASD.

Limitations

Several limitations are evident in the current study. The most prominent limitation is the restricted sample size. Due to the specificity of the programming and diagnosis of the assessed population, as well as the intensive nature of the data collection, obtaining a larger sample size was not possible. This limitation affected the power, the robustness, and the variety of statistical analyses that could be performed as well as precluded achieving saturation with the qualitative data. Lastly, this study did not use a control group and did not control for participation in other programming, or additional skill development that might have impacted vocational or related skills as doing so would have further limited the study's sample size; it was the case that some program attendees described that they had previously participated in the PAES program; however, this question was not specifically asked of each participant.

The representativeness of the sample to the general population of individuals with ASD may also have been limited by a variety of elements. Specifically, participation in this research project required a substantial commitment of time, travel, and energy for

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both the individuals who participated and their parents/guardians. Moreover, it was limited to individuals who reside in the Calgary region and did not assess participants who lived in rural areas. There is the possibility that a subset of the ASD population that may be more likely to participate in the PAES program. It is likely that all of these factors influenced characteristics of the participant sample and, therefore, the generalizability of the findings in this study.

Finally, because of the nature of the study and the use of convenience sampling, the qualitative results are context bound. It is important that these results are taken in perspective, and are intended to provide a greater understanding of the experience of these particular families.

Conclusion and Final Thoughts

It is the case that vocational research in relation to an ASD population has been quite limited. The bulk of research and intervention efforts for individuals with ASD have focused on childhood, with little emphasis on adolescence and adulthood (Bailey, 2012; Moxon & Gates, 2001). The exploration of research in the area of adolescent and adult needs will assist families and professionals to better support individuals with ASD, and aid in fostering increased overall independence. The present research has underscored the importance of an adolescent and adult emphasis. The preliminary evidence indicates that attendees' performance on the TTAP was improved subsequent to completion of the PAES program, thus providing an indication of the program's efficacy in improving the vocational abilities and behaviours of adolescents and young adults with ASD. Although the other variables evaluated in the study did not indicate significant differences, this may have been due to the small sample size in this study. Alternatively,

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the PAES program may not address these other variables, meaning that future vocational intervention programs may want to explore other possible approaches to support the development of such factors as social cognition, severity of ASD symptoms, and emotional/behavioural factors.

Future Directions and Implications

Future research exploring vocational and independence training for individuals with ASD should expand on the present study by collecting data from a larger sample of participants, which could result in more robust results and improve the variety of analyses. Moreover, with a larger sample size, and use of a waitlist control group matched for developmental level, future research could screen for other services being provided to ensure a more direct causal link between the PAES program, and improvement in vocational and related skills.

As there were many statements made by facilitators pertaining to the variety of ability levels displayed by attendees, it may be beneficial to screen attendees before entry into the PAES program. Doing so would allow for a better cognitively matched group and could foster an improved learning environment and better program planning strategies by facilitators. This could also further research development in contrasting different cognitive groups to see if the PAES program would be better suited for one subset of the ASD population.

Generalization of the findings should be cautioned due to sample size limitations. However, this research can be considered an encouraging step towards future research in the area of vocational ability for individuals with ASD. Prior ASD research only employing quantitative research has been considered problematic (Haan, Hawley, &

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Deal, 2002) as the overall experience of participants is not adequately captured. Furthermore, future research could employ a longitudinal design to capture the maintenance of vocational skills learned within the PAES program, and to follow individuals exploring the outcome of participation in this programming.

These findings have implications for the provision of vocational training and intervention services for individuals with ASD. As has been previously mentioned, prior literature has focused on ASD in early childhood but has not comprehensively addressed intervention for the adolescent or adult populations. This focus has neglected that the transition into adulthood can be a very difficult time (Arnett, Robins, & Rehm, 2001), and that there has been a consistent failure in the provision of adequate services and support resulting in low levels of independence and employment possibilities in adulthood (Howlin et al., 2005). Employment for individuals with ASDs increases self-reliance financially and decreases reliance from both government and independently funded programming (Hendricks, 2010). By validating programs such as these, individuals with ASD can be provided with specific programming unique to this complex population, therefore increasing the employment success of individuals with ASD. The current project highlights the necessity for continued research in the area of vocational and independence training as well as the need to focus on adolescent and young adults with ASD to provide families with a more positive outlook and hope for the future as individuals with ASD face many challenges throughout their lives, and have different needs.

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APPENDIX A: PARTICIPANT INTERVIEW GUIDE

Thank you for agreeing to participate in this research project and to talk with me today. I would like to talk with you about your experience of having been in the PAES program. Although I would like this to be more like a conversation than an interview, I do have a few questions written down to make sure I cover everything. If you feel uncomfortable with any of the questions, you can choose not to answer that question and you do have the right to stop the conversation at any point.

1. What was it like for you to participate in the PAES program?
Prompts if needed:
What did you like?
Not like?
2. What did you learn in the PAES program?
Prompt if needed:
Any new skills?
3. Has the way you get along with people changed as a result of the program?
Prompt if needed:
How so?
4. Has anything changed in your daily routine since you attended PAES?
5. Has the way you think about yourself changed this coming to the program?
6. What are the strengths of the program?
7. What are the limitations?
8. Do you have any suggestions on the way the program could be improved?

APPENDIX B: PARENT INTERVIEW GUIDE

Thank you for agreeing to participate in this research project and to talk with me today. I would like to talk with you about your experience of having your son (daughter) participate in the PAES program. Although I would like this to be more like a conversation than an interview, I do have a few questions written down to make sure I cover everything. If you feel uncomfortable with any of the questions, you can choose not to answer that question and you do have the right to stop the conversation at any point.

1. What was it like for you to have your son (daughter) participate in the PAES program?
Prompts if needed:
What did you like?
Not like?
2. What did your son (daughter) learn in the PAES program?
Prompt if needed:
Any new skills? Did you notice any change in level of his (her) motivation?
Changes in level of independence?
3. Has the way your son (daughter) gets along with people changed as a result of the program?
Prompt if needed:
How so?
4. Has anything changed in your son's (daughter's) daily routine since he (she) attended PAES?
5. Has the way your son (daughter) thinks about himself (herself) changed since attending the program?
Prompt if needed:
Self-esteem?
6. From your perspective what are the strengths of the program?
7. What are the limitations?
8. Do you have any suggestions on the way the program could be improved?

APPENDIX C: STAFF INTERVIEW GUIDE

Thank you for agreeing to participate in this research project and to talk with me today. I would like to talk with you about your experience of working in the PAES program. Although I would like this to be more like a conversation than an interview, I do have a few questions written down to make sure I cover everything. If you feel uncomfortable with any of the questions, you can choose not to answer that question and you do have the right to stop the conversation at any point.

1. How well do you think the PAES program works with the ASD population?
2. What changes have you noticed in your participants as they go through the program?

Prompts if required? Self-esteem? Social behaviour? Communication?
Workplace behaviour? Motivation? Problem solving? Independence?
Repetitive behaviours? Anxiety? Behaviour problems?

3. From your perspective what are the strengths of the program?
4. What are the limitations?
5. Do you have any suggestions on the way the program could be improved?