

Program evaluation of a community organization offering supported employment services for adults with autism

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ABSTRACT

Background: Individuals with autism spectrum disorder (ASD) have an employment rate well below the general population. One potential solution to address this issue is the implementation of supported employment services. The purpose of our study was to evaluate a Canadian community supported employment program designed for individuals with ASD without an intellectual disability.

Method: Thirty-seven individuals with ASD, who were receiving services from a local community agency (Action main-d'oeuvre) providing supported employment services, participated in the study. The research team monitored the characteristics of the participants, the number of hours of services provided, and outcome measures related to employment. We then conducted descriptive analyses, t-tests, and Wilcoxon signed rank tests to compare anxiety about work and self-efficacy before services and after outcomes of the program.

Results: Despite high levels of comorbid mental health issues, our results indicated that 62.1 % of individuals obtained paid employment within 12 months. Furthermore, participants with post-secondary education found jobs related to their degree or requiring specialized skills. Participants felt less anxious and more self-efficacious towards employment. Maintaining employment was a greater challenge and continuing support may be required.

Conclusions: The study suggests that the employment services may have supported the participants in finding a job. However, collaboration is essential to address mental health issues in job seekers with ASD, which appeared to hinder job search and maintenance.

1. Introduction

Individuals with autism spectrum disorder (ASD) have an employment rate well below the general population (Black et al., 2019). For example, Roux, Rast, Anderson, and Shattuck (2017) reported that only 38 % of American working-age adults with ASD had participated in paid work in the two weeks prior to their survey. Only 14 % of individuals engaged in paid labour worked in a community-based setting; the remaining 86 % worked in facilities where most individuals had a disability. Moreover, individuals with ASD without intellectual disability are three times more likely to be unemployed than those with autism who have an intellectual disability (Taylor & Seltzer, 2011). Employment is important for many individuals with ASD as it contributes to their quality of life and independence, but also to their ability to contribute to society and feeling of inclusion (Annabi & Locke, 2019). For example, Taylor and Seltzer (2011) found that a greater degree of independence in vocational activities was related to subsequent positive changes in

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autism symptoms and activities of daily living as well as reductions in maladaptive behaviors. Contrarily, unemployment or under-employment may negatively impact subsequent adult development of individuals with ASD, just as it affects adults without disabilities (Taylor, Smith, & Mailick, 2014).

Adults with ASD have many strengths that can contribute to job performance, such as attention to detail, logical reasoning, reliability, and focus (Kirchner, Ruch, & Dziobek, 2016; Lorenz & Heinitz, 2014). Some managers have also expressed positive opinions on integrating employees with ASD in different entry-level jobs such as cashier, dishwasher, housekeeper, or clerical assistance, even when they needed considerable support to function in the workplace (Hagner & Cooney, 2005). A certain number of companies in the information technology, professional services, agriculture, manufacturing or military industries have even developed specialized recruitment programs to tap into the strengths of individuals with ASD (Hurley-Hanson, Giannantonio, & Griffiths, 2020). In contrast, difficulties experienced in social interactions is the main factor hindering the job search and performance in adults with ASD (Hendricks, 2010; Noel, Oulvey, Drake, & Bond, 2017). The peculiarities of cognitive functioning and the behaviors considered inappropriate in the workplace may also interfere with their employability (Hendricks, 2010; Holwerda, van der Klink, Groothoff, & Brouwer, 2012). Individuals with ASD have a higher prevalence of physical and mental health conditions than the general population (Croen et al., 2015), such as immune conditions, gastrointestinal disorders, sleep disorders, depression and anxiety. These conditions create additional barriers to employment (Hendricks, 2010; Holwerda et al., 2012; Noel et al., 2017; Richards, 2012). For example, Baker, Richdale, and Hazi (2019) reported that sleep difficulties of adults with ASD were shown to be linked with unemployment. Other barriers to employment come from the work environment, such as negative attitudes of employers, human resources management policies and practices, poor fit of available jobs in the community with one's skills and needs as well as unsupportive community, social and economic systems (Harmuth et al., 2018; Noel et al., 2017; Richards, 2012).

Research on employment interventions for adults with ASD have focused on three main areas: intervention dedicated to transition-age youth to facilitate future integration in the job market, interventions aimed at specific vocational or related skills, and comprehensive interventions where employment is the primary outcome. The first area is facilitating the transition of young adults from school to adult life (e.g. Hillier, Fish, Siegel, & Beversdorf, 2011; Hotez et al., 2018; Nadig, Flanagan, White, & Bhatnagar, 2018; Strickland, Coles, & Southern, 2013; Timmons, Zalewska, Hall, & Fesko, 2017). Project SEARCH is an evidenced-based intervention designed for young adults with significant disabilities to prepare them for integrated competitive employment (Christensen, Hetherington, Daston, & Riehle, 2015). Large community businesses welcome students in their last year of high school where they participate in a 720-hr internship, rotating through three 10- to 12-week internship, while receiving 180 hr of classroom instruction. Researchers have adapted the program for individuals with ASD (Project SEARCH plus ASD Supports). A randomized controlled trial showed its effectiveness 1 year after graduation regarding employment outcomes, wages, hours worked versus usual school and community-based employment training (Wehman et al., 2019). The second area of study regarding employment interventions have focused on developing specific skills necessary to look for employment or to function in the workplace such as completing a job interview, performing specific tasks, or improving workplace social skills (Lattimore, Parsons, & Reid, 2008; Lerman, Hawkins, Hillman, Shireman, & Nissen, 2015; Liu et al., 2013; Morgan, Leatzow, Clark, & Siller, 2014; Palmen & Didden, 2012; Walsh, Hol-loway, & Lydon, 2018). Enhancing those specific skills may lead to subsequent improvements in vocational outcomes, such as obtaining and maintaining employment.

Finally, studies have examined more comprehensive programs designed at supporting individuals in finding and maintaining employment (e.g. Burt, Fuller, & Lewis, 1991; Keel, Mesibov, & Woods, 1997; Mawhood & Howlin, 1999). Comprehensive programs include a variety of personalized interventions aimed at different skills, but the primary outcomes are obtaining and maintaining employment. Business-led programs designed to recruit, assess and train candidates with ASD into their own organizations have been described in case studies (e.g., Austin & Pisano, 2017; Carrero, Krzeminska, & Härtel, 2019; Flower, Hedley, Spoor, & Dissanayake, 2019). Two systematic reviews on comprehensive programs concluded that the model of supported employment was an effective intervention (Hedley et al., 2017; Nicholas, Attridge, Zwaigenbaum, & Clarke, 2015). Supported employment is an intervention model wherein a counsellor provides personalized support to their client by assisting them during the job search process, teaching them how to apply and interview for a position, liaising between their client, co-workers and supervisor, and helping them deal with difficult workplace situations that may arise (Nicholas et al., 2015).

Despite its support in the literature, the knowledge base for supported employment has limitations (Hedley et al., 2017; Nicholas et al., 2015). Only one study had a controlled design (i.e., using a matched-control design). It showed positive effects of supported employment in finding paid work in the community, in longer job duration and in higher wages (Mawhood & Howlin, 1999). Other studies used pre-post designs (Baker-Ericzén et al., 2018; Hillier et al., 2007; Lynas, 2014; McClannahan, MacDuff, & Krantz, 2002; McLaren, Lichtenstein, Lynch, Becker, & Drake, 2017; Wehman et al., 2012) or uncontrolled retrospective designs (Brooke et al., 2018; Howlin, Alcock, & Burkin, 2005). Most studies had small or very small samples of 15 or fewer participants (Baker-Ericzén et al., 2018; Hillier et al., 2007; McClannahan et al., 2002; McLaren et al., 2017). Some studies researched supported employment, but measured other outcomes than community employment, such as reductions in autism severity scores (García-Villamizar, Ross, & Wehman, 2000), improvements in executive functions (García-Villamizar & Hughes, 2007) or changes in quality of life (García-Villamizar, Wehman, & Navarro, 2002; Katz, Dejak, & Gal, 2015).

To our knowledge, only two studies of supported employment programs have included individuals with significant challenges, such as moderate learning disability, use of non-verbal communication or need for individualized support for social interactions or behavioral issues (Lynas, 2014; Wehman et al., 2012). Of interest, Wehman et al. (2012) used a sample of 33 consecutively referred individuals to reduce selection bias. The researchers assisted 82 % of participants in reaching competitive employment in mostly entry-level occupations. In their oft-cited study, Mawhood and Howlin (1999) excluded patients with additional psychiatric and physical problems that would affect their employability. This exclusion is preoccupying as estimates of mental health difficulties for

individuals with ASD vary from 25 % to 30 % in epidemiological studies to up to 84 % in clinical samples (Howlin & Moss, 2012). To address this limitation, we evaluated a supported employment program in our community that includes individuals with ASD regardless of comorbid issues (other than intellectual disability).

We partnered with Action main-d'oeuvre (AMO), a community organization based in Montréal, Canada, devoted to providing free supported employment for individuals on the autism spectrum. We devised a program evaluation with the goal of (a) describing the characteristics of clients with ASD receiving supported employment services from a community organization; (b) documenting services used by these clients; and (c) measuring outcomes of participation in the program. Program evaluation is the application of evaluation approaches, techniques, and knowledge to systematically assess and improve the planning, implementation, and effectiveness of a program (Chen, 2005). Information gathered during a program evaluation supports decision-making regarding the program: monitoring whether inputs are adequate and well organized for the goals of the program, whether interventions are implemented appropriately, whether target groups are reached, whether clients receive quality services, and whether outputs demonstrate the attainment of goals and meet decision maker and stakeholder expectations (Chen, 2005).

2. Method

The research team and AMO collaborated in the design of the evaluation of its services. In the present study, we collected information on client characteristics, services rendered, and outcomes following services to formulate recommendations to improve service delivery, training of counsellors and funding efforts of the organization.

2.1. Description of the supported employment service

AMO is part of a network of community groups, funded by the government, to provide specialized employment services to individuals with disabilities looking for competitive community employment. AMO offers services to adults who are 16 years and older (limit of compulsory school attendance in Québec). The organization, previously serving only individuals with intellectual disabilities, started a program aimed at adults with ASD in 2006. The equivalent of seven full-time counsellors are responsible for 240 clients with ASD. Some clients are looking for employment while others are employed and can receive support in the workplace. Counsellors have diverse backgrounds such as training in special education, career counselling, and psychoeducation.

Clients of AMO must show a documented diagnosis of ASD by an authorized professional, be motivated to work, have the potential to enter the labour market, and be independent for transportation (organize their own transportation, or be able to use public transportation, drive or bike to work). School, health and social service professionals refer clients to AMO, but some individuals with ASD and employers directly apply for services themselves. Counsellors collaborate with individuals to draw up an individualized action plan to enter the labour market. They meet clients 1-hr every two weeks to assess their employment preferences and skills and to teach them relevant job-seeking, workplace, or self-advocacy skills. Most clients have assignments to carry out between meetings. Counsellors also assist clients in the job search process and in the assessment of potential jobs and work environments. The counsellor remains available to support clients that found jobs. If needed, counsellors may provide direct support in the workplace for training, developing adaptations, and raising awareness of ASD with supervisors and colleagues.

All interventions are personalized for the client and provided in an individual format, at AMO offices or in the workplace. In addition, counsellors can provide the hiring business access to a governmental program that subsidizes part of the wages of employees with disability. The counsellor will assess if their client's productivity is below what would normally be expected from an employee in this position or if he needs substantially more supervision than what is usually offered to employees in this organization. The governmental program will send the hiring business a subsidy covering a percentage of the employee's hourly wage (depending on the formal assessment sent by the counsellor). The level of the subsidy is reevaluated annually by the counsellor as the employee gains experience or meets additional challenges. In this program, the business still hires directly the employee who is thus protected by labour laws, including the provisions on the minimum wage. As such, the subsidy offsets possible additional costs to the employer related to the limitations of their employees. The organization does not limit to the duration of services, but counsellors can terminate services if they judge that the client could be best served by another organization or faces challenges preventing them from benefiting from the services at that time.

2.2. Participants

Between January 2017 and January 2019, counsellors from AMO asked all clients requesting services permission to provide their contact information to the research team. Participants could be assisted by a person of their choice in deciding to participate in the research and providing informed consent. Participants received a 15\$¹ financial compensation for each appointment with a researcher to acknowledge their time and efforts as well as offset their transportation costs. We informed participants that refusal to participate in the research would not alter provision of services from AMO and that they could keep the financial compensation even if they withdrew from the research before, during or after responding to the questionnaires. All 37 participants of this study had received a diagnosis of ASD (with no associated intellectual disability) from authorized health professionals in Québec, Canada, that was recorded

¹ All values are in Canadian dollars

in AMO's database (see Table 1 for participant characteristics). Table 1 presents the characteristics of the participants. Thirty-two men and five women ($N = 37$) with a mean age of 30 years old ($SD = 8.4$) participated in the study. The majority were single and over half were living by themselves. Nearly half of participants were bilingual, an important asset as it is a common requirement in the local job market. More than half of the participants had post-secondary education and 27 % never had a job.

Our university's research ethics board approved the project, which was conducted in accordance with the Canadian Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans.

2.3. Measures

2.3.1. Participant characteristics

To characterize individuals using AMO services, the first author collected socio-demographic information on sex, age, education, housing, and civil status from participants at intake. Other clinical information collected from participant files included diagnoses, other health concerns, and use of medication. For some participants, files contained information about additional diagnoses; for others, information was self-reported. We also administered self-report questionnaires at intake to collect clinical information on autistic symptoms, adaptive behavior and anxiety. We chose to use self-report measures as more than half of the participants lived by themselves and many had no relative that could be relied on to fill out questionnaires for this study. To measure autistic symptomatology, the participants completed the adult self-reported version of the Social Responsiveness Scale-2 (SRS-2). This 65-item questionnaire, scored on a 4-point Likert-like scale, has five subscales providing clinical descriptions: social awareness, social motivation, social cognition, social communication, and repetitive behaviors/restricted interest (Constantino & Gruber, 2012). The SRS-2 provides a T-score, which identifies individuals that may have mild (60–65), moderate (66–75) or severe impairment (76 and over).

To assess adaptive behaviors of participants, we used the adult self-report version of the Adaptive Behavior Assessment System-II (ABAS-II; Oakland & Harrison, 2008). The ABAS-II assesses 10 areas of adaptive functioning, grouped into three general domains: the conceptual domain (communications, academic, self-directional), the social domain (leisure, social), and the practical domain (use of community resources, life in the community, home, health and safety, personal care, work). The scale varies from 0 (not able) to 3 (always or almost always when necessary). The instrument has very good psychometric values (internal consistency of 0.97–0.99; Harrison & Oakland, 2008). Results indicate whether an individual's level of functioning is above average for their age (<109), average (90–109), below average (80–89), low (71–79) or extremely low (lower than 70).

To measure anxiety, the participants completed the State Trait Anxiety Inventory Form-Y (STAI-Y; Spielberger, 1983). Trait anxiety represents a generally stable predisposition to perceive one's environment as dangerous or threatening and to respond to it with a high level of anxiety. State anxiety is a transient emotional state that varies in intensity from one situation to another. Normal scores are provided for a non-autistic working-age population and for individuals with psychiatric issues. In the current study, we measured the

Table 1
Characteristics of the Participants at T1.

| | | |
|---------------------------------|--|----------|
| <i>Personal Characteristics</i> | | |
| | Men:Woman | 32:5 |
| | Age - Mean (<i>SD</i>) | 30 (8.4) |
| | Age Range | 19–49 |
| | Minority ethnic group status | n = 9 |
| <i>Civil Status</i> | | |
| | Single | 81.0 % |
| | Couple without children | 10.8 % |
| | Couple with children(s) | 5.4 % |
| | Single parent | 2.7 % |
| <i>Housing</i> | | |
| | Independent | 51.4 % |
| | With family | 43.2 % |
| | Housing with support services | 5.4 % |
| <i>Language</i> | | |
| | Bilingual - French/English | 48.6 % |
| | French | 37.8 % |
| | English | 8.1 % |
| | Bilingual - Other | 5.4 % |
| <i>Employment Status at T1</i> | | |
| | No work experience | 27.0 % |
| | Without work for more than one year | 16.2 % |
| | Without work for less than one year | 43.2 % |
| | Employed | 13.5 % |
| <i>Education</i> | | |
| | High school | 45.9 % |
| | College | 29.7 % |
| | University | 24.0 % |
| <i>Health Status</i> | | |
| | Taking medication | 59.5 % |
| | Additional self-reported physical and mental health issues | 62.1 % |

state anxiety of participants by asking them to respond to the questions about their emotions when thinking about looking for work and starting a new job at the intake interview session. The STAI-Y has previously been used, but not validated, with individuals with ASD (South, Carr, Stephenson, Maisel, & Cox, 2017); interpretation should be done with caution. Autistic symptomatology, adaptive behavior and trait anxiety were only measured at intake. Scores were expected to remain stable during the program. State anxiety was expected to vary as participation in the program addressed belief and emotion tied to participation in employment. Thus, we asked participants to answer the state anxiety questionnaire again during a second interview (see procedures).

The first author collected vocational information on education and duration since last employment. We assessed work self-efficacy using the Waghorn, Chant, and King (2005) Work Self-efficacy Scale designed for people with psychiatric disorders. Work self-efficacy represents an individual's confidence in their ability to look for employment and perform in the workplace. Association between occupational self-efficacy and employment status was previously observed for individuals with Asperger syndrome (Lorenz & Heinitz, 2014). Participants had to rate their confidence on a scale from 0 (no confidence at all) to 100 (total confidence) for 37 items. Sub-scales are career planning skills, job securing skills, work-related social skills and general work skills (internal consistency range from 0.86 to 0.94). Participants responded to this questionnaire at intake and at the second interview session to estimate whether services were associated with increased self-efficacy.

2.3.2. Services used

The first author accessed information on the number of contacts between counsellors and participants, timing of services provided in AMO's central database to examine the services used by clients and description of themes discussed during the meetings. She also looked at contact between counsellors and employers or other types of professionals working with their participants.

2.3.3. Program outcomes

To examine the impact of the program on individuals with ASD, our main outcome was employment status. This main outcome was divided in six categories: (a) having found employment without subsidy; (b) having found employment with subsidy; (c) returning to school; (d) participating in a job training or integration program provided by other organizations; (e) being referred to other services more appropriate for the participant's need or to similar service if he moved outside of the region covered by AMO; or (f) no employment found. We also collected data on duration of employment, hours worked per week and hourly wages. During the second interview session, the first author administered questionnaires on state anxiety and work-self-efficacy a second time to assess if participation in the program was also associated with changes with those measures. To assess other outcomes of participation in the program, participants responded to a 4-item questionnaire about their satisfaction with AMO's services.

Participants that secured employment or participated in a job training or integration program also completed questionnaires on job appreciation, a 14-item questionnaire on the content of the job, the work conditions and work relationships. The first author interviewed the participant about the quality of their relationship with their supervisor, using the Leader-member exchange measure (Liden & Maslyn, 1998), a validated 12-item questionnaire widely used in management research. The reciprocity of the participants with colleagues was assessed by the Team-member exchange questionnaire (Seers, 1989), a validated 6-item questionnaire. Employers responded to questionnaires regarding their satisfaction with AMO's services (9 items) and the evaluation of their employee's work performance (19 items).

2.4. Procedures

At intake, participants completed questionnaires during a face-to-face interview session. One participant received assistance from his parents and the first author assisted two participants that needed extensive help (e.g., reading questions with the participant, explaining the meaning of words or providing examples). Some participants needed breaks or additional time so we scheduled additional interview sessions as needed. Following intake, the counsellors continued to provide the usual personalized intervention to participants as described earlier.

The first author consulted participant files in AMO's database at intake and periodically during service provision until the observation period reached 12 months for each participant. If participants found employment, we contacted them 6 weeks after the beginning of employment to fill out additional questionnaires. We also asked them permission to contact their employer. The remaining participants were invited to fill out questionnaires when they did not find employment after 6–9 months of job search. The first author still periodically reviewed their files in case they found employment later during the 12-month period, which never happened. Time elapsed between the first and second interview sessions differed across participants because we hypothesized that life events rather than timing would explain variations in outcome measures, such as state anxiety and work self-efficacy. Participants could fill questionnaires online or during a face-to-face interview session according to their preference and needs. Only 27 participants responded to the second invitation to complete questionnaires, an attrition rate of 27 %. Eleven of the thirteen employers contacted participated in the study.

2.5. Analysis

We performed descriptive analyses for all variables. Our analyses explored relationships between continuous variables using Spearman rank correlations. A single sample *t*-test using norms from the STAI-Y instrument allowed us to assess the role of anxiety. To evaluate improvement between intake and post-measurement for situational (work) anxiety and work self-efficacy, we used Wilcoxon signed rank test with continuity correction. This analysis excluded participants with missing data on the variables of the analysis.

3. Results

3.1. Description of participants of supported employment services

Fig. 1 shows the number of participants in each SRS-2 qualitative score range. Average score for global autistic symptomatology was in the moderate range ($M = 66.1$, $SD = 9.4$), indicating that symptoms may substantially interfere with everyday social interactions. Thirty-eight percent of participants had adaptive behavior scores (ABAS-II) in the ranges “below average” or lower (having a score lower than 90). Their scores suggest that they have more important support needs in their daily activities.

Table 2 presents the mean scores on the clinical and vocational measures for the participants. Trait anxiety scores were high ($M = 50.3$, $SD = 12.4$) and state anxiety when asked to think about work was also high ($M = 48.2$, $SD = 15.4$). Anxiety scores were significantly higher than the instrument’s norms for working age population (Trait $t(35) = 5.9393$, $p \leq 0.0001$; State $t(35) = 5.6106$, $p \leq 0.0001$) and 62 % the participant had higher trait anxiety scores than norms for individuals with psychiatric complications ($M = 44.6$). Participants also self-reported comorbid physical and mental health diagnoses: attention deficit hyperactivity disorder (ADHD; $n = 7$), depression, anxiety, OCD, bipolar disorder or other unspecified mental health issues ($n = 10$), sleep issues ($n = 2$), physical health issues ($n = 3$; multiple sclerosis, dysphagia, rheumatoid arthritis), sensory disability ($n = 1$), and communication disorders ($n = 2$). Clinical notes written by employment counsellors also included mentions of additional mental health, physical health or psychosocial issues (e.g., unstable housing, bankruptcy, conflict with family). Data regarding physical and mental health issues should be interpreted with caution as no confirmation of diagnostic was sought.

Table 3 presents the correlations between the continuous variables. Autism symptomatology ($r_s(36) = .5167$, $p \leq 0.01$) and age ($r_s(36) = .4610$, $p \leq 0.01$) was associated with trait anxiety. Work situational anxiety was inversely correlated with adaptive behavior (ABAS-II GAC) ($r_s(36) = -.5130$, $p \leq 0.01$) and with the work self-efficacy measure ($r_s(36) = -.5307$, $p \leq 0.001$). Work self-efficacy was correlated with adaptive behavior ($r_s(36) = 0.4752$, $p \leq 0.01$) and inversely correlated with state anxiety about work ($r_s(36) = -.5307$, $p \leq 0.001$).

3.2. Services used

Participants waited an average of 4.3 months to receive services. Previous clients (i.e., job loss, need for support to prevent termination of employment) received services in a 2-week delay average, while new clients looking for employment had to wait an average of 6 months. Counsellors generally met participants for one hour every two weeks, but some clients frequently cancelled meetings. Participants met an average of 7.2 times with their counsellors in the job search phase, with a range of 1–23 meetings.

For participants who found employment, counsellors offered support to them and to their employers either by phone, in their office or in the workplace. They provided an average of 5.4 contacts, ranging from 0 to 21, during the 12-month observation period of our research project. Three participants decided to stop contact with their counsellor, and two did not ask help from their counsellor before deciding to resign from their job. The number of contacts increased with the duration of employment, with the degree of collaboration of the employer, and when clients experienced difficulties. For 24.3 % of participants, counsellors had contact with professionals outside of the organization, such as a social worker or a special education counsellor (range: 1–5 contacts). Qualitative data shows that, for some participants, time was spent during meetings to discuss access to professional services to meet psychosocial needs other than employment (e.g., grief regarding the death of a parent, conflicts with family, financial difficulties, housing).

3.3. Program outcomes

Participants improved their work self-efficacy with supported employment services: their score at time 2 ($Mdn = 75.7$) was significantly higher than at intake ($Mdn = 66.9$; $p = 0.03$). Anxiety about work also decreased, from intake ($Mdn = 49.5$) to the second interview ($Mdn = 41.0$; $p = 0.03$). Table 4 presents the job outcomes following AMO services. The services supported 62.1 % of

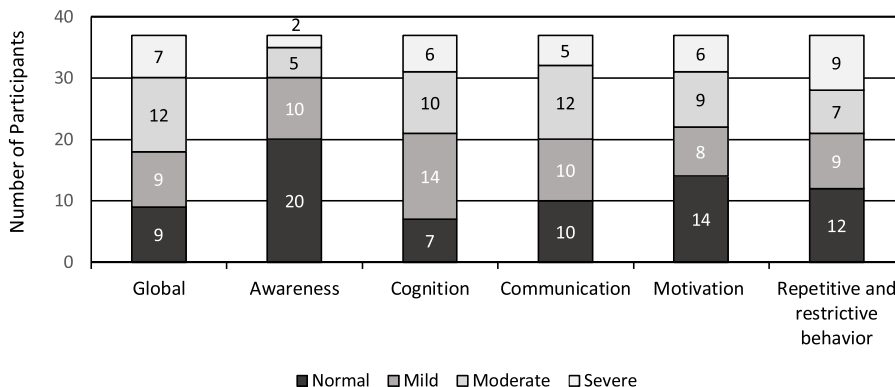


Fig. 1. Number of Participants in the Social Responsiveness Scale-2 Qualitative Score Ranges.

Table 2
Clinical and Vocational Measures.

| | <i>M(SD)</i> |
|--|--------------|
| <i>Clinical and Vocational Measures at T1 (N = 37)</i> | |
| <i>SRS-2</i> | |
| Global | 66.1(9.4) |
| Awareness | 58.3(10.3) |
| Cognition | 64.9(9.2) |
| Communication | 64.0(10.4) |
| Motivation | 64.6(9.2) |
| Repetitive and restrictive behavior | 65.5(12.0) |
| <i>ABAS-II</i> | |
| General Adaptive Composite | 92.7(12.8) |
| Conceptual composite | 97.4(11.8) |
| Social composite | 88.1(15.5) |
| Practical composite | 92.1(12.6) |
| <i>Anxiety at intake</i> | |
| STAI - State | 49.9(15.2) |
| STAI - Trait | 50.3(12.4) |
| <i>Self-Efficacy</i> | |
| Total work-related self-efficacy | 68.5(13.6) |
| Career planning skills self-efficacy | 69.2(16.5) |
| Job securing skills self-efficacy | 64.2(17.9) |
| Work-related social skills self-efficacy | 55.3(21.9) |
| General work skills self-efficacy | 75.5(12.6) |
| <i>Clinical and Vocational Measures at T2 (N = 27)</i> | |
| <i>Anxiety</i> | |
| STAI - State | 43.4(14.7) |
| <i>Self-Efficacy</i> | |
| Total work-related self-efficacy | 72.3(16.2) |
| Career planning skills self-efficacy | 73.0(16.7) |
| Job securing skills self-efficacy | 71.5(20.9) |
| Work-related social skills self-efficacy | 58.6(23.2) |
| General work skills self-efficacy | 77.0(14.8) |

Note. ABAS-II: Adaptive Behavior Assessment System-II, SRS-2: Social Responsiveness Scale-2, STAI: State Trait Anxiety Inventory.

Table 3
Correlations of Between Continuous Variables.

| | Age | ABAS-II | SRS-2 | STAI-State | STAI- Trait | Self-Efficacy |
|------------------|----------|-----------|----------|------------|-------------|---------------|
| Age | 1.0000 | −0.2792 | 0.2898 | 0.3380* | 0.4610** | 0.0362 |
| ABAS-II (global) | −0.2792 | 1.0000 | −0.2988 | −0.5130** | −0.2752 | 0.4752** |
| SRS-2 (global) | 0.2898 | −0.2988 | 1.0000 | 0.4962** | 0.5167** | −0.2348 |
| STAI - State | 0.3380* | −0.5130** | 0.4962** | 1.0000 | 0.6012*** | −0.5307*** |
| STAI - Trait | 0.4610** | −0.2752 | 0.5167** | 0.6012*** | 1.0000 | −0.2947 |
| Self-Efficacy | 0.0362 | 0.4752** | −0.2348 | −0.5307*** | −0.2947 | 1.0000 |

Note. * < .05, ** < .01, *** < .001, ABAS-II: Adaptive Behavior Assessment System-II, SRS-2: Social Responsiveness Scale-2, STAI: State Trait Anxiety Inventory.

participants in finding paid employment in a community business, of which 16.2 % found jobs where their employer received a subsidy. Counsellors referred 13.5 % of participants to job training or integration programs provided by other organizations, as they had little work experience or would benefit from developing work-related skills. Only 13.5 % did not find employment during the 12-month observation period. Qualitative data show that the five participants that did not find jobs or alternative programs during the 12-

Table 4
Employment Outcome (N = 37).

| Type of result | % of participants |
|----------------------------------|-------------------|
| Job without subsidy | 45.9 |
| Job with subsidy | 16.2 |
| Return to school | 8.1 |
| Job training/integration program | 13.5 |
| Referred to other services | 2.7 |
| Without employment | 13.5 |

Note. First result obtained during a 12-month observation period.

month period all reported anxiety or other mental health issues. One participant was 20 years old, reported high anxiety, and had been previously employed but lost his job after a change of supervisor. He decided to participate in a non-vocational community program instead of looking for employment. The other four participants were aged 29–39 years. They struggled with uneven or unavailable support and mental health services. They quit employment services, stopped pursuing employment as a goal, were unable to settle on a vocational goal or experienced life events too complex to effectively focus on employment at that time.

Median wage was \$15.35, 22.8 % higher than the local minimum wage. Most employed participants (73.9 %) obtained a full-time position. These participants found different types of jobs in the fields of manufacturing, housekeeping, warehousing, office work, professional work, information technology, retail trade and food business, according to their interests, educational attainment and support needs. Participants were moderately satisfied with their jobs ($M = 3.8$, $SD = 0.6$; scale from 1 - Strongly disagree to 5 - Strongly agree). Relationship with their supervisor ($M = 3.9$, $SD = 0.7$) and their colleagues were also ($M = 3.6$, $SD = 0.7$) positive. During the 12-month observation period for each participant, 59.2 % of participants that found employment were still in employment. Others (40.9 %) had either voluntarily left employment or were fired. Qualitative data show that clients were less successful remaining in employment or in their job training/integration program when they had no previous job experience or were out of work for more than a year.

Employers rated their employees positively, the average score was of 3.7 ($SD = 1.0$), on a measure where 0 indicated a job performance needing help, 3 an average performance and 6 an excellent performance. Employers found strengths on rule following, assiduity and punctuality whereas improvements were needed in showing initiative and independence. Employees in regular employment received higher scores ($M = 4.5$, $SD = 0.3$) than employees in jobs with subsidy ($M = 3.3$, $SD = 1.1$) and employees participating in a job training or integration program ($M = 2.5$, $SD = 0.2$). Such results were expected; subsidies are offered to businesses when the counsellors assessed that the employee had a lower productivity rate or a higher need for supervision. Moreover, clients are referred to job training or integration program when counsellors judge that they needed to consolidate work skills before applying for jobs in the regular job market.

Participants were generally satisfied with services, with an average score of 4.2 ($SD = 0.9$). Waiting time for services was the most cited complaint. Some individuals wished for more regular follow-up once in employment. Employers rated their general satisfaction with services highly ($M = 4.1$, $SD = 1.0$); the lowest rated item was on information given to colleagues of the employee with ASD ($M = 3.5$, $SD = 1.6$). Employers that voiced dissatisfaction wanted more regular follow-ups or better support for their struggling employee. Complete results of questionnaires on job satisfaction, evaluation of employees, satisfaction with services from participants with ASD and satisfaction with services from employers are available as Supplementary Material.

4. Discussion

Overall, our results indicate that supported employment services were offered to individuals with different levels of impairment due to autistic characteristics as well as additional physical and mental health issues. Notably, more than 60 % of participants self-reported physical and mental health issues. We also observed high state anxiety about working and high trait anxiety. Correlations shows that greater interference in social skills due to ASD, as measured by SRS-2, was associated with greater trait anxiety. Older participants reported more anxiety, possibly because they were more susceptible to live by themselves and experience less support in their daily life. Participants had limited confidence in their ability to find a job and function in the workplace, as measured by the self-efficacy measure. This limited confidence correlated with greater trait anxiety about work, but also with lower rate of self-reported adaptive behavior. Supported employment services may have assisted participants in feeling more self-efficacious and less anxious regarding work. The intervention supported 62.1 % of participants find a regular job in the community, but maintaining employment was a greater challenge, as only 59.2 % of these participants remained in employment. Employers rated their employees positively. Participants with ASD and employers were highly satisfied with the supported employment services. Our study adds to the literature by addressing some of its limitations. We used a prospective design, our sample was larger than most published studies and the outcomes measured are employment in the community or related to employment. Furthermore, the intervention is provided in a community setting rather than provided in a research context and participants were not excluded based on comorbidities (with exception of intellectual disability).

Supported employment services seemed to produce desirable outcomes in assisting individuals with ASD that had comorbidities, including elevated anxiety scores, find and maintain jobs. As our study did not include a comparison group, we cannot ascertain that participation in the program caused the outcomes measured. That said, our results contrast with the low workforce participation rate (28.9 %) of individual with developmental disabilities in Canada (Statistics Canada, 2013) and a 43 % reduction in odds of finding employment for males with ASD and co-occurring anxiety/depression (Sung, Sánchez, Kuo, Wang, & Leahy, 2015). Maintenance of employment is also generally difficult for individuals with ASD as they may hold, on average, four to five different jobs over a five-year period (Ohl et al., 2017).

The results obtained in our sample for finding employment is comparable with the Mawhood and Howlin (1999) study, which excluded participants with comorbidities. In addition, supported employment intervention allowed participants with higher educational attainment to find employment related to their degree or demanding specialized skills. Services were also beneficial to individuals that never had employment experience. Job retention was a challenge for many participants, but intensity of services provided was lower than reported in the literature. Other programs had higher support services provision on a long-term basis, at a level of 2 contacts per month after 18 months of employment (Brooke et al., 2018) or at a more intense level for clients with important social interaction support needs (Wehman et al., 2012). In our study, securing collaboration of some clients and some employers to work on problem situations was a challenge (e.g., participants feeling overwhelmed about tasks because of insufficient training and

quitting without asking for support, employer refusing intervention to resolve conflict between the client and a co-worker). However, losing a first job can sometime be a formative experience that allows for a better knowledge of one's need and help select a more appropriate type of job in the future (Corbière, Lesage, Villeneuve, & Mercier, 2006).

Meeting employer expectations can be stressful and affect emotional well-being (Goldfarb, Gal, & Golan, 2019). Employment should not be the only desirable outcome of adult life. Individuals that have active lives, have individualized supports, and are integrated into their communities or individuals that are happy and can make choice according to their own preferences should be considered as having a positive outcome (Ruble & Dalrymple, 1996). Professional vocational services must support self-determined choices regarding vocational goals that lead to an individualized meaningful life at different moments of the lifespan. Clinical implication of our results shows that individuals with ASD with different levels of impairment and additional comorbidities (other than intellectual disability) may benefit from a supported employment intervention while searching for work. That said, professionals must monitor anxiety levels, and other difficult life situations, in order to refer their clients to other appropriate professionals as needed.

Our program evaluation allowed us to develop recommendations in collaboration with AMO. The individualization of services was important as the clients were very diverse. Still, formalizing certain components of the program would improve service provision. Screening for anxiety and difficult life situations and referring clients to appropriate professional services should be the first steps. We also recommended adding a group intervention component to services as a preferable setting to work on social skills. Service for clients in employment was uneven. Additional hours of services need to be provided using a systematic approach, at regular pace and not depend on requests from clients or employers. In addition, counsellors should more closely monitor anxiety and difficult life situations that can lead to job loss.

Our study has limitations that should be considered. First, our evaluation did not have a control group, which limits the validity of our results. A replication within a randomized clinical trial design would confirm the effectiveness of supported employment for individuals with ASD and comorbidities other than ID. Second, the small sample size prevented us from using inferential statistics analysis beyond correlations because of insufficient statistical power or risks of inflating Type I error. Third, the participants self-reported all data on clinical and socio-demographic characteristics (with exception of the ASD diagnosis that was provided by an independent practitioner). Limited insight of one's own skills and behaviors, which can sometimes be associated with ASD (Bishop & Seltzer, 2012), may have interfered with the participant's ability to report on their difficulties and biased some of the results. In the future, researchers should consider involving multiple sources of information to provide a more comprehensive profile and find ways to circumvent the absence of relatives. Fourth, measures for anxiety and self-efficacy were not validated specifically for use with adults with ASD. Fifth, the different counsellors did not note the information on services in a similar way in their files, which prevented us to calculate more fine-grained information on the type of services rendered beyond qualitative data allowing us to interpret our results. Finally, we did not include individuals with ASD with a comorbid intellectual disability in our study, a group that has not been sufficiently studied in the literature. Including this population would require different measuring strategies.

Our results add to the limited body of knowledge on the effectiveness of supported employment intervention offered by a community organization to adults with ASD without intellectual disability, regardless of other comorbid conditions. In the future, researchers should develop interventions to assist employees with ASD in assessing unfavorable situations in the workplace and ways to ask for help. Working in collaboration with employers is a challenge as better inclusion of employees with ASD may challenge supervisory practices and displace management effort and time from other short-term business priorities. For example, Scott, Falkmer, Falkmer, and Girdler (2018) found that an intervention to improve employer self-efficacy in modifying the workplace for individuals on the autism spectrum was necessary. Collaborations between autism researchers and organizational researchers may be particularly useful when looking at strategies and approaches on establishing productive collaborations with employers (Vogus & Taylor, 2018). Addressing these issues should contribute to our understanding and the development of supported employment services for adults with ASD in the future.

CRedit authorship contribution statement

Valérie Martin: Conceptualization, Methodology, Investigation, Formal analysis, Writing - original draft. **Marc J. Lanovaz:** Conceptualization, Methodology, Writing - review & editing, Supervision.

Declaration of Competing Interest

The authors of this paper declare no conflicts of interest in the completion of the study or the preparation of this manuscript. Authors have no relevant financial relationships to disclose.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.rasd.2021.101741>.

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