

Where do autistic people work? The distribution and predictors of occupational sectors of autistic and general population employees

Autism

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Abstract

Previous research on employment outcomes of autistic adults mainly assessed if they work and under what terms, with mostly anecdotal descriptions of where they work. This study aimed to identify the employment sector distribution of autistic employees compared to the general workforce in the Netherlands and to explore possible background predictors. Participants were 1115 employed autistic adults (476 male; 627 female; 12 other; mean age: 40.75) who completed a cross-sectional survey assessing employment sector, gender, age, age at diagnosis, educational level, degree of autistic traits, and presence of focused interests. Dutch workforce data were retrieved from the Central Bureau of Statistics. Results indicated significant differences in sector distribution across the two populations. Autistic adults were over-represented in the sectors healthcare & welfare, information technology, and public–army–charity, which were the three most-common sectors for this group. In economics & finances, and industry & construction, higher proportions were found in the general workforce. Most autistic employees in the healthcare & welfare sector were females while having a higher educational degree and being male predicted placement in information technology. The broad distribution of autistic employees beyond the information technology sector was notable, supporting the need for an individual approach to employment integration.

Lay Abstract

Studies on employment of autistic individuals mainly assessed if they work and what their working conditions are (e.g. weekly hours, salary) while less is known about where they work. We explore this issue in our study, by examining which employment sectors do autistic adults work in, and comparing them to the general workforce in the Netherlands. We also explored the possibility that gender, age, age at diagnosis, level of education, degree of autistic traits and presence of focused interests could lead to a higher likelihood of working in specific sectors. We assessed data from a survey filled in by 1115 employed autistic adults (476 male; 627 female; 12 other; mean age: 40.75). Dutch workforce information was based on data from the Central Bureau of Statistics. Results showed that a higher proportion of autistic employees worked in healthcare & welfare, information technology, and the public–army–charity sectors. These were the three most-common sectors for this group. A lower proportion of autistic employees worked in economics & finances, and industry & construction, compared to the general workforce. Most autistic employees in the healthcare & welfare sector were females while having a higher educational degree and being male increased the chance of working in information technology. In addition to the common impression that most autistic individuals have interests or abilities that align with employment in information technology and technology sectors, we found that autistic employees worked in various sectors. It is important to address individual characteristics and needs of autistic individuals, while encouraging diverse employment opportunities.

Keywords

adults, autism, autistic adults, employment, occupational sectors, vocational/labor force participation

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Most adults spend the greater part of their waking hours at work, making employment participation a fundamental part of adult life, leading to multiple benefits (Blustein et al., 2019). Integration in the vocational world has shown to lead to positive outcomes for adults diagnosed with autism spectrum disorder (ASD),¹ such as earning money, pursuing interests, improving quality of life, and integrating into society (Duffy et al., 2016; Gal et al., 2015; Hendricks, 2010; Katz et al., 2015; Roux et al., 2013; Shattuck et al., 2012). In light of high unemployment rates and unsatisfactory employment outcomes in this population (e.g. jobs below educational or skill level, low salary, and fewer work hours; Beenstock et al., 2021; Ohl et al., 2017; Wei et al., 2018), efforts to increase employment rates and improve employment characteristics are continually needed.

Attaining and maintaining a job may be challenging for autistic people, and literature to date has specified central barriers to employment. Common challenges are communication and social interaction difficulties (Bury, Flower, et al., 2020; Kirchner & Dziobek, 2014; Pfeiffer et al., 2018), differences in sensory processing (Pfeiffer et al., 2018; Waisman-Nitzan et al., 2020), and difficulties in executive functions (Lorenz & Heinitz, 2014; Scott et al., 2017). Overcoming these challenges is effortful and may result in exhaustion, distress, and anxiety (Hurlbutt & Chalmers, 2004). Moreover, autism often co-occurs with other mental health conditions (Hudson et al., 2019), which are, in turn, linked to unemployment, absenteeism, and reduced productivity (Bryan et al., 2021; Lerner & Henke, 2008). In addition to the personal characteristics of autistic people seeking employment, features of the work environment can also impede or promote employment outcomes. Environmental barriers may include a lack of knowledge about autism, stigma, discrimination, and inadequate levels of support (Cooper & Kennady, 2021). Finding an optimal fit between the person, the job, and the occupational surroundings that offer proper adjustments is important and requires effort (Davies et al., 2022; Dreaver et al., 2020; Scott et al., 2019). Adjustments such as remote work, flexible working hours, and one-on-one support from colleagues, supervisors, or job coaches can help autistic employees thrive in the workplace (Goldfarb et al., 2022; Hedley et al., 2017).

Alongside these possible personal and environmental challenges, and in line with a growing shift toward strength-based approaches in autism research (Johnson, 2022; Urbanowicz et al., 2019), potential associations between specific talents and skills of autistic adults and employment have been acknowledged. Suggested strengths may point to an advantage in specific occupational fields. For example, better performance in detail-oriented tasks (Simmons et al., 2009), along with visual search abilities (Marciano et al., 2022; Scott et al., 2017)

can be utilized in visual-based occupations, such as data labeling in the technology sector or working with geographical information systems. A tendency toward systemizing (i.e. the drive to analyze systems or construct systems) may lead to high performance in fields such as mathematics and science (Baron-Cohen, 2020), and creativity with a tendency to “think outside the box” can benefit autistic employees in creative industries such as design (Cope & Remington, 2022). Along with several findings pointing to job-specific skills, other studies suggest general advantages that can be manifested in many industries such as logical reasoning, high work engagement and ethics, punctuality, and low absenteeism (Buckley et al., 2021; Cope & Remington, 2022; Lorenz & Heinitz, 2014; Scott et al., 2019).

Focused areas of interest of autistic people are also considered as potential work-related strength. Focused interests are linked to higher well-being (Grove et al., 2018), and pursuing employment in an area of interest may amplify job success and satisfaction (Kirchner & Dziobek, 2014), enable autistic employees to stand out at jobs that match those interests, or facilitate the acquisition of job-relevant expertise (Cope & Remington, 2022; Ezerins et al., 2023). If focused interests develop into vocational interests, they can also serve as a motivating factor in the process of attaining employment (Goldfarb et al., 2019). Similar to skills, studies about vocational interests also include findings that suggest an autism-specific gravitation toward technological fields, along with others that demonstrate a wider variety. In accordance with a documented proclivity of individuals with autism to demonstrate a focused interest in technology-oriented activities (Mazurek et al., 2012), a higher number of autistic university students were enrolled in computer science tracks compared to the general population (Bakker et al., 2019; Wei et al., 2013). In addition, autistic students in these tracks were more likely to persist in their education in comparison their peers in other fields (Wei et al., 2014) suggesting that perseverance may be anchored in interest and abilities. To demonstrate the diversity of interests, autistic individuals showed a significant variation in focused interests, spanning many subjects such as autism itself, computers, gardening, art, and creative activities (Grove et al., 2018; Kirchner & Dziobek, 2014).

It is important to acknowledge that findings suggesting autism-specific employment advantages and skills are commonly based on self-assessments and reported observations (Cope & Remington, 2022; Ezerins et al., 2023; Scott et al., 2019) while performance measurements are mostly collected in a lab setting (Marciano et al., 2022). Inferences from skills to potential advantages are probable, but they lack a sufficient evidence base specific to employment contexts (Bury, Hedley, et al., 2020). More research examining autism-specific strengths and interests and their potential manifestations in the workplace is

needed to substantiate an “autism advantage” whether oriented to the general workforce or to specific employment sectors.

A complementary way to examine possible association between autism-related skills, interests, and the job market is to gather information about where autistic people actually work. The concept of employment sectors is commonly used and assessed in research in association with various aspects of work characteristics and job satisfaction (Lahelma et al., 2009; Parenti et al., 2020), and can be employed as an organizing classification. Autistic people are often expected to work in the Information Technology (IT) sector and the technology sector, which commonly employ graduates of STEM (Science, Technology, Engineering, and Mathematics) disciplines (Wei et al., 2013). Representations of autistic adults in these sectors are especially common in personal reports, interviews, and the media highlighting the visibility of autistic role models in science/technology related occupations, generating a societal discourse about the advantage autistic people may have in these fields (Alexander, 2013; Annabi et al., 2017; Grandin, 2006; Robison, 2008). Characteristics of autism, including the tendency to systemize, might match the requirements of the technology sector (Annabi & Locke, 2019; Baron-Cohen, 2020). Moreover, individuals working in STEM occupations showed a higher level of autistic traits compared to employees in non-STEM occupations (Ruzich et al., 2015). There is a noticeable number of employment programs in this field, and different software companies developed recruitment and integration practices specifically for autistic adults. Example programs are carried out in global companies, such as Microsoft and SAP, which declare an implementation of educational programs about autism in their workforce and adapt the environment to account for individual autistic employee needs (Austin & Pisano, 2017). The literature on the management of neurodiversity also focuses mainly on the IT sector (Austin & Pisano, 2017; Walkowiak, 2021). Along with the intent of utilizing autism-specific skills, it was suggested that a digital skills shortage in the IT sector increased the development of neurodiversity initiatives (Walkowiak, 2021). A reinforcing process may have occurred, as successful initiatives gained high publicity that could have inspired similar projects in additional IT organizations.

Moving again from sector specificity to job market diversity, a growing body of literature also presents a variety of job placement options for individuals with autism. A few studies in the United States show employment of autistic adults in various sectors, including technology but also education, transport, retail, factory, hospitality, healthcare and more (Ohl et al., 2017; Roux et al., 2013). A recent analysis of population data in the United Kingdom also indicated that autistic university graduates transition into a wide range of employment sectors (Vincent &

Ralston, 2024). Growing attention is given to the possibly high prevalence of autistic doctors working in healthcare, with autistic traits such as curiosity, pattern recognition, attention to detail, problem-solving, and excellent recall arguably giving an advantage in the medical profession (McCowan et al., 2022; Moore et al., 2020). Qualitative studies offer an additional in-depth understanding of the employment experiences of autistic professionals in performing arts (Buckley et al., 2021) and teaching (Wood & Happé, 2023).

To sum, there appear to be two parallel narratives in research of autism and employment in regard to occupational sectors. The first aims to identify autism-specific strengths and interests and apply them in the job market for the benefit of both the employee and the organization/industry. The IT sector is the most prominent under this endeavor, which generated scientific literature, mostly in the field of neurodiversity management and human resource practices, and inspired a number of hiring programs. The second narrative, growing in recent years, aims to present and expand the variety of options that autistic people have. This approach moves away from a common societal view about what autistic people are like, what their work-preferences should be and where they are supposed to work, and diminish stereotypical notions that can be perceived as an undesirable reduction of employment opportunities for people with autism entering the job market (Bury et al., 2019). Further evidence about the sector distribution of autistic employees can lend important information on the actual representation of autistic adults in the job market in relation the general population, and beyond specific job-placement programs.

A number of variables can offer a deeper insight into the factors that may influence autistic adults' chosen employment sector. In a similar line of thought, we explore both autism-specific variables and general ones. Autistic traits were found to be higher in occupations related to STEM and IT (Ruzich et al., 2015), suggesting that the prevalence of autistic employees might also be higher in related sectors. As mentioned above, the presence of focused interests may commonly match a chosen sector of employment. For instance, an interest in autism can lead to a job utilizing knowledge from experience and self-advocacy, while an interest in computers may lead to a job in IT. Another possible association can be hypothesized between the age at diagnosis and occupational sectors. If narratives of autism-specific professions are more publicly visible, associating oneself with these conventions from an earlier age (or responding to such expectations from society or support figures) may influence what autistic people choose to focus on in educational and professional contexts, and increase the probability of choosing sectors such as IT. Moreover, receiving a diagnosis can potentially enable self-understanding and access to support, which might, in turn, increase job opportunities

and participation in programs designed for autistic adults (Crane et al., 2018). Such programs are currently more common in the IT sector.

As for exploration of general variables, the matter of gender is known to have strong associations with job choice in the general population. A higher proportion of women was found in social jobs associated with care for others and empathy in comparison to men (Cortes & Pan, 2018). At the same time, women are chronically underrepresented in STEM careers in developed countries around the world (Hausmann et al., 2010; Heppner, 2013). Higher education may also influence sector placement, enabling one to pursue a career in highly specialized sectors, such as IT (in which a higher prevalence of autistic students was documented; Bakker et al., 2019; Wei et al., 2013) or economics, both often require a university degree. Understanding these unexplored relationships may shed light on the variables associated with specific employment sectors and possible career trajectories of autistic adults.

In this study, we aim to (1) identify the employment sector distribution of autistic employees compared to the general Dutch workforce and (2) explore whether the occupational sector of autistic employees can be predicted based on gender, level of education, degree of autistic traits, the presence of focused interests, and age at diagnosis.

Method

Study procedure

Data were derived from the Netherlands Autism Register (NAR; www.nederlandsautismeregister.nl/english/). The NAR is a longitudinal database on children and adults with autism in the Netherlands, initiated by the Dutch Association for Autism (Nederlandse Vereniging voor Autisme; NVA). After registration, respondents receive a yearly request via email to fill in an online questionnaire on autism-related topics. Participation is voluntary and not compensated, with informed consent being obtained before the first administration. Ethical approval was obtained from the Permanent Committee on Science and Ethics (VCWE, 2020-041R1) of the Vrije Universiteit, Amsterdam. Questions addressing employment sectors were included in the surveys of 2016 and 2017, cohorts from which data for this study were retrieved. The questions were given in Dutch and were translated to English for the current paper.

Measures

Background variables

Ethnicity. The item “To which ethnic group(s) do you belong?” could be answered by choosing one among seven options. These included the most common ethnicities in the Netherlands as well as an option to specify “other.”

Co-occurring disorders. If the item “Do you currently have any other psychiatric diagnoses in addition to autism?” was answered with “yes,” then a follow-up question was displayed. The item “In addition to autism, what psychiatric diagnoses were made?” could be answered by choosing one or more options among 25.

Age at diagnosis. One item assessed at which age participants were first diagnosed with autism. This item could be answered by indicating years and months.

Level of education. Educational level of autistic adults was defined by their highest level of completed education. Educational levels were coded high (e.g. university), middle (e.g. secondary vocational education), and low (e.g. pre-vocational secondary school), following the guidelines of Statistics Netherlands.

Gender. Gender could be indicated by choosing either “man,” “woman,” or “other.”

Autistic characteristics. Characteristics of autism were assessed using the self-reported Autism-Spectrum Quotient, short version (AQ-Short; Hoekstra et al., 2011). The items measure different factors, such as social skills, routine, switching, imagination, numbers and patterns, and social behavior (e.g. “I prefer to do things with others rather than alone”). Each item could be rated on a four-point Likert-type scale ranging from “definitely (dis)agree” to “slightly (dis)agree.” By summing up the item’s raw scores, or reversed scores depending on the wording of the item, the overall AQ can be derived. Higher scores are reflective of a higher degree of autistic traits. The short version has been validated in a Dutch sample, showing acceptable internal consistency and strong correlation with the total score of the full version ($r > 0.93$). Different cut-off values of 65 and 70 resulted both in a specificity of at least 0.82 and sensitivity of at least 0.94, indicating a good accuracy (Hoekstra et al., 2011).

Presence of focused interests. The item “Do you currently have an intense or special interest in a subject?” could be answered with either “yes,” “no,” or “don’t know/ unknown.”

Main study variables

Occupational sectors in adults with autism. The NAR assessed the sector participants currently work in by using the item “In which sector do you mainly work?” Nineteen answer options were provided: (1) healthcare and welfare; (2) education; (3) government/municipality; (4) agriculture; (5) hospitality; (6) industry/ factory; (7) retail; (8) wholesale; (9) finance; (10) construction; (11) transportation; (12) military; (13) fashion; (14) entertainment; (15) IT; (16) charity; (17) science; (18) culture; (19) other/unknown.

Occupational sectors in the general population. Data retrieved from The Dutch Central Bureau of Statistics (CBS) in the year 2017, in which sectors were clustered in the following 12 categories: (1) education; (2) creative and linguistics; (3) commercial; (4) business economics and administration; (5) management; (6) public and safety; (7) technical; (8) IT; (9) agriculture; (10) healthcare and welfare; (11) service providers; (12) transportation and logistics. Absolute sector numbers were available for the whole population as well as split by gender.

Participants

The sample included 2584 individuals older than 16, who participated in the NAR cohorts of 2016 and/or 2017. Since an invitation to participate was sent annually, data from both cohorts was merged in order to avoid doubles, including the most recent information. Of those, 1115 were employed, meaning they followed a paid job or paid internship, were self-employed, or received additional job retention benefits. An overview of all participant characteristics comparisons between the sub-samples of employed versus unemployed individuals is included in the Supplementary Materials: Appendix 1. All participants reported a formal ASD diagnosis established by an independent qualified clinician (e.g. psychiatrist) in a professional setting (e.g. mental healthcare clinic). About 95% of those employed were Dutch. Indonesian represented the second largest ethnic group with a proportion of 1.1%. Co-occurring disorders were common among autistic employees, with a prevalence of 39%. The following had a prevalence of at least 5%: (1) mood disorders, depression, bipolar, suicidality, and dysthymia, with 18.4%; (2) attention deficit disorder and attention deficit hyperactivity disorder, with 12%; (3) obsessive-compulsive disorder, anxiety, compulsions, and phobias, with 9.3%; (4) burnout and chronic fatigue, with 6.6%; (5) post-traumatic stress disorder, with 6.2%. Further analyses regarding sector distribution are based on the group of 1115 employed individuals. Comparative data on occupational sectors in the general population were obtained from the Dutch CBS in the year 2017. The CBS is an official and freely accessible statistical register. In total, more than 8.5 million working adults were included, ages ranging from 15 to 75 years.

Data analysis

Data were analyzed using Microsoft Excel and SPSS, version 28. Whereas Microsoft Excel was used to handle the CBS data, create plots, and perform the Mann–Whitney U-Test, the remaining analyses were conducted using SPSS. If not specified differently, an alpha of 5% was used.

First, the distributions of occupational sectors of autistic and general population employees were compared.

Absolute numbers retrieved from the CBS were transcribed into proportions for each sector, once spanning the whole population and then split by gender. Occupational sectors data of the autistic employees were transcribed into overall proportions and proportions split by gender. Although collected data included the gender category of “other,” only approximately 1% of the participants chose to identify as non-binary minimizing analysis options. In addition, the CBS provides employment data under the categories of males and females only. Therefore, gender was regarded as a binary variable, excluding participants who identified as “other.” The number of sectors and what they entailed differed between the two data sources, therefore a matching procedure was carried out in agreement by two experts in the field of occupational psychology and labor economics. Since the NAR entailed more sectors, some were merged to match the categories of the CBS. In this matching process, some categories remained identical (e.g. IT, Agriculture), some required alterations in definition but categories were not changed (e.g. care and welfare was named healthcare/welfare for both groups; “business economics & administration” was named “finances” for both groups). A few changes in grouping were made in order to compare distributions (e.g. “retail” and “wholesale” in the NAR data were merged and compared to “commercials and sales” in the CBS data since they represent a comparable economic activity). As a result, 12 sectors were derived: (1) education; (2) healthcare and welfare; (3) commercials and sales; (4) IT; (5) agriculture; (6) transport and logistics; (7) economics and finances; (8) public, army, and charity; (9) industry and construction; (10) service providers, hospitality, and science; (11) creative, culture, and entertainment; (12) other/unknown. The CBS also included a management sector that could not be matched to existing NAR categories and was thus excluded. The proportions of the new sectors across the whole population and split by gender were plotted in a separate bar chart. Furthermore, it was examined whether the distributions came from the same population using a Mann–Whitney U-test. A one-sample *t*-test was performed to test whether there was an equal distribution across the sectors within the NAR data.

Second, predictors for occupational sectors entailing at least 10% of autistic participants were tested using binary logistic regression analyses. We divided alpha by the number of sectors analyzed to account for multiple testing. The assumptions for binary logistic regression were tested appropriately.

Missing data

We did not exclude participants due to missing data in the first descriptive analysis. This was handled differently in the logistic regression analyses. Specifically, if a predictor was assessed in both years, then a separate variable was

Table 1. Overview of occupational sectors across autistic and non-autistic employees across the whole populations and split by gender.

Sector	General population (%)			Employees with autism (%)		
	Total	Men	Women	Total	Men	Women
Education	6.8	3.8	10.2	7.9	5.3	9.9
Healthcare/Welfare	13.6	5.1	23.5	20.2	9.5	28.5
Commercials/Sales	11.2	9.1	13.8	6.0	4.9	6.9
IT	3.9	6.3	1.2	10.7	18.1	5.3
Agriculture	2.3	3.4	1.0	0.7	0.8	0.6
Transport/Logistics	7.2	11.2	2.6	4.4	5.3	3.8
Economics/Finances	18.2	15.5	21.3	3.9	4.6	3.3
Public, Army, Charity	3.5	4.1	2.7	13.1	16.3	10.7
Industry/Construction	14.3	23.3	4.0	5.4	8.0	3.4
Service Providers/Hospitality/Science	9.5	6.2	13.2	7.4	6.1	8.2
Creative/Culture/Entertainment	2.4	2.4	2.4	4.8	3.8	5.6
Other/Unknown	1.9	2.5	1.3	15.4	17.5	13.9

created, which either carried forward the highest number for each participant (e.g. level of education) or the lowest (e.g. presence of special interest as a “1” indicated “yes”). As a result, participants could be included if they provided data either in 2016, 2017, or both, resulting in the least missing data possible. Participants who failed to provide data on at least one predictor across both years were excluded from the analysis.

Community involvement

The NAR works closely together with autistic people in all stages of research. Autistic individuals are employed as NAR team members and consult with other community members. Thus, research priorities are defined together and ongoing counseling is provided. Within the community, employment has been emphasized as a central research interest. Autistic people or other community stakeholders were not actively involved in the design and analysis processes in this study.

Results

The distribution of occupational sectors among autistic and non-autistic employees

As indicated by Table 1, both autistic individuals and the general population were employed across a large number of sectors. The distribution of occupational sectors within autistic employees was not spread equally, $t=48.53$, $p<0.001$. In addition, we found significant differences in the distribution of the occupational sectors across the two populations, $U=83$, $p=0.007$. Specifically, autistic adults were over-represented in the healthcare & welfare sector, but also IT and the public–army–charity sector. The commercials & sales, economics & finances, and transport & logistics sectors were less common among autistic

employees compared to the general population. Almost equal proportions across both populations were found for education and service providers, hospitality, and science sectors. More autistic employees reported other/unknown regarding their sector of occupation compared to non-autistic adults. The exact proportions, along with a visualization of the differences in a bar chart, can be found in Table 1 and Figure 1, respectively.

Gender differences between and across the populations were further examined. Across both samples, women were over-represented in the healthcare & welfare sector as well as in education. The IT sector was generally dominated by men. The industry & construction sector, as well as transports & logistics, showed a higher proportion of men across both populations. However, gender differences in these two sectors were lower for autistic employees. Autistic women were under-represented in the economics & finance sector, compared to autistic men as well as men and women in the general population (see Figure 2).

Predicting occupational sectors of autistic employees

To perform the logistic regression analyses, only the sectors containing at least 10% of autistic employees were chosen. This resulted in three relevant sectors, namely (1) healthcare & welfare (20.2%); IT (10.7%); (3) public, army, and charity (13.1%). Separate logistic regression analyses with an adjusted p -value of 0.017 were performed. Due to missing data, 22.8% of participants were excluded, resulting in a sample size of 851.

For placement in the healthcare & welfare sector, a logistic regression model was fitted including gender, age at diagnosis, the total AQ score, level of education, and the presence of focused interests. The model was statistically significant $\chi^2(6)=66.18$, $p<0.0001$, and accounted for 11.9% of the variance in the outcome. Among the

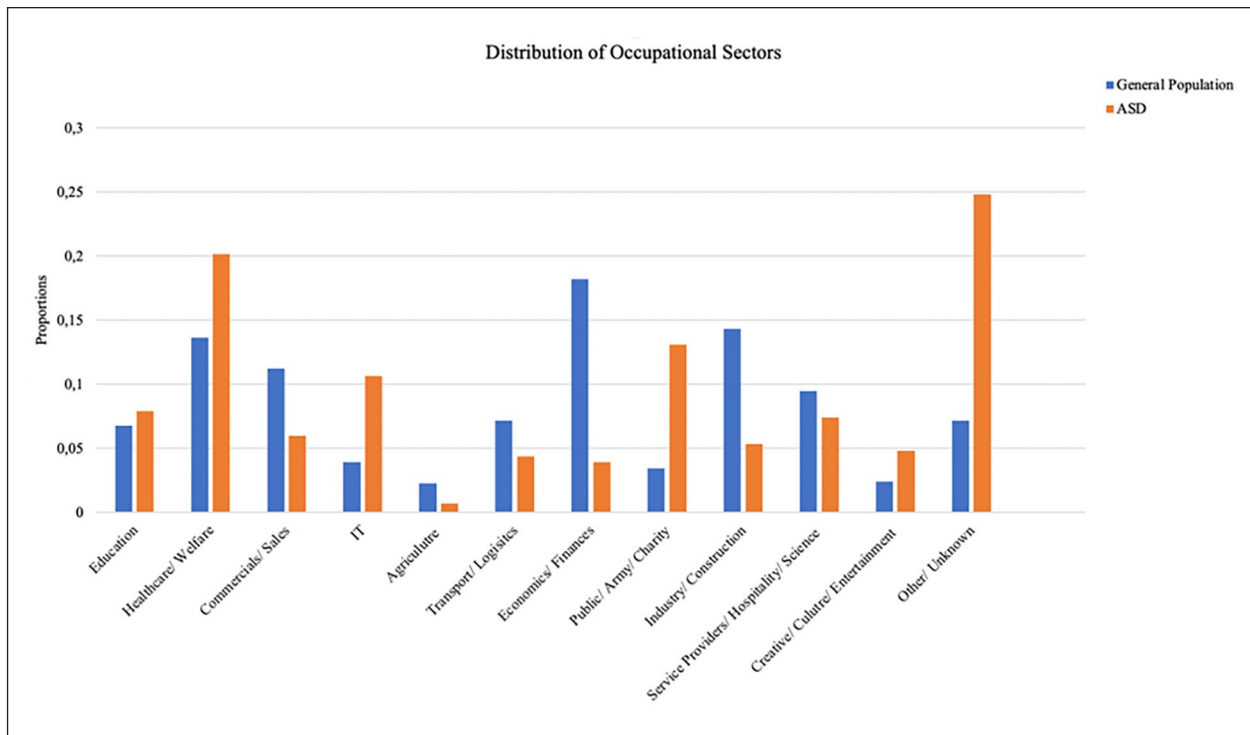


Figure 1. Bar chart of the distribution of occupational sectors across the general population and autistic employees.

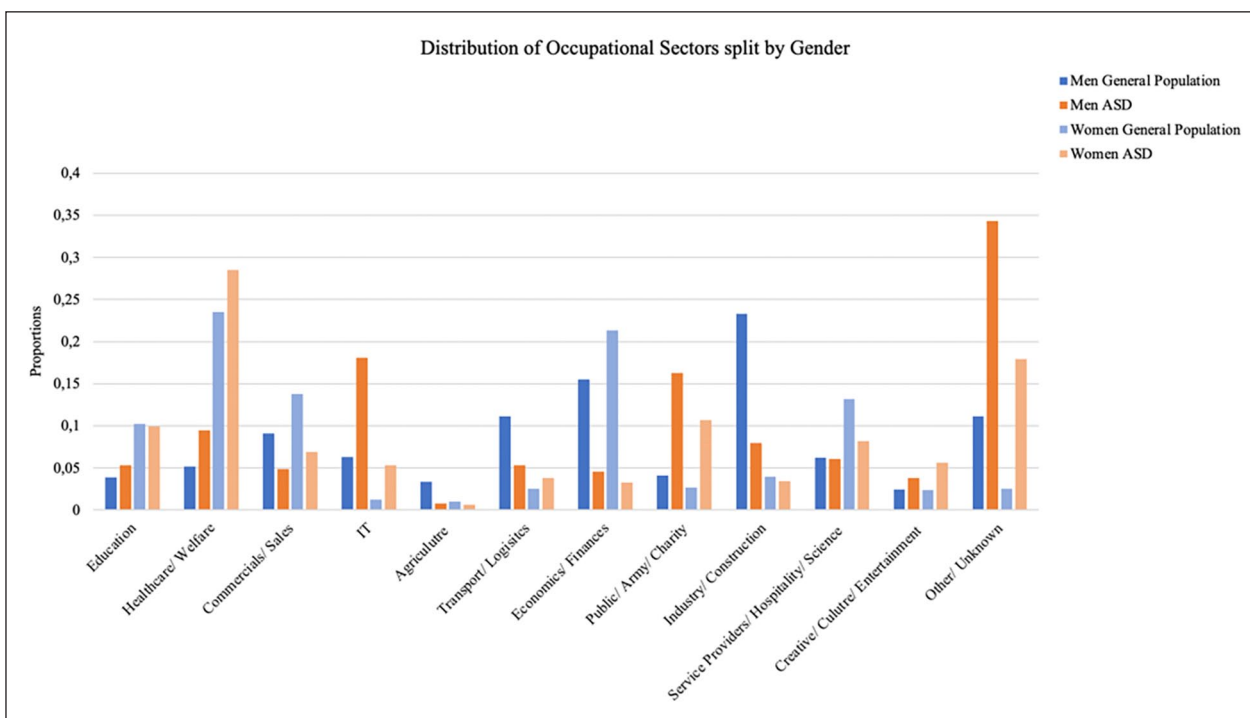


Figure 2. Bar chart of the distribution of occupational sectors among the general population and autistic employees split by gender.

predictors, only gender was significant, $p < 0.001$. Regarding placement in the IT sector, a logistic regression model was constructed containing the same predictors. The model was significant, $\chi^2(6) = 46.39$, $p < 0.001$, and

explained 10.3% of variance. Both gender, $p < 0.001$, and level of education, $p = 0.004$, significantly predicted the IT sector. Further analysis of educational level revealed that only the contrast comparing middle to high level of

Table 2. Beta coefficients and odds ratios of the predictors for the healthcare and welfare sector and the IT sector.

Sector	Healthcare/welfare		IT	
	B (SE)	OR (95% CI)	B (SE)	OR (95% CI)
Gender	-1.46 (0.21)*	0.23 (0.15–0.35)	1.37 (0.24)*	3.92 (2.45–6.25)
Age at diagnosis	0.01 (0.01)	1.01 (1.00–1.03)	-0.00 (0.01)	1.00 (0.98–1.02)
Level of education				
Low versus high	-20.15 (12,454.17)	0.00 (0.00–0.00)	-0.04 (1.09)	0.96 (0.11–8.13)
Middle versus high	-0.25 (0.19)	0.78 (0.54–1.14)	-0.76 (0.25)*	0.47 (0.29–0.76)
AQ total score	-0.01 (0.01)	0.99 (0.97–1.00)	0.00 (0.01)	1.00 (0.98–1.03)
Focused interests	-0.06 (0.2)	0.95 (0.64–1.39)	-0.36 (0.24)	0.70 (0.44–1.10)

IT: information technology; OR: odds ratio; CI: confidence interval; AQ: autism-spectrum quotient.

*Significant with an alpha of 0.001.

education was significant, $p < 0.001$. However, the model did not significantly predict the placement in the public, army, and charity sector $\chi^2(6) = 14.97$, $p = 0.02$. Table 2 presents the results of the beta coefficients and odds ratios of the significant models.

Discussion

Autistic employees reported working in most employment sectors, with varying prevalence. This variation speaks for the diversity of options and outlets through which people with autism can manifest their interests and talents and aligns with research illustrating variability in interests as well as in occupations among autistic employees (Bakker et al., 2019; Harvery et al., 2021; Ohl et al., 2017; Roux et al., 2013; Vincent & Ralston, 2024). Comparing sector distributions to the general population revealed significant differences. Autistic adults were over-represented in the healthcare & welfare sector; IT; and the public, army, and charity sector, their three most-common employment sectors. Under-representation of autistic employees was found in economics and finances and industry and construction sectors. Almost equal proportions across both populations were found in education, service providers, hospitality, and science sectors; and the creative, cultural, and entertainment sector. Consideration of the three most common employment sectors can lead to possible insights regarding the occupational environments in which autistic adults commonly integrate.

The highest number of autistic employees in this study were working in the healthcare & welfare sector. Not only are these numbers high in relation to autistic employees in the sample, but their proportion is also high compared to the distribution in the general population. While more autistic women were employed in this sector than autistic men, the percentage of autistic men was also high compared to other sectors and to male employees from the general workforce, suggesting an overall substantial presence of autistic people. Findings support the growing attention given to the experiences of autistic healthcare workers,

portrayed through subjective experiences and self-advocacy initiatives. For example, a global peer-support advocacy group for medical doctors (Autistic Doctors International; Doherty et al., 2021) was founded in 2019, including over 300 members. In a recent correspondence in the “The Lancet Journal of Medicine,” certain autistic traits were suggested as assets in medicine, such as attention to detail, excellent recall, creative problem solving, a driving passion, and a strong work ethic (Moore et al., 2020). These may contribute to successful employment in this sector. Further research is needed in order to examine the various roles that autistic employees staff in the healthcare & welfare sector in order to expand our understanding of the advantages the sector may hold for autistic employees, along with possible barriers and specific support needs.

Unlike the healthcare & welfare sector, the technology industry has already directed efforts toward employing individuals with autism. Successful initiatives are aimed at the employment of autistic adults in the IT field, such as “Specialisterne” (Denmark and globally; <https://specialisterne.com/>), “AQA” (Israel; <https://www.aqa.co.il/about.html>), and “DXC Dandelion” (Australia; Hedley et al., 2023). Organizational efforts to recruit autistic employees were made by global companies such as SAP, Google, and Microsoft, and studies accompanied the applied efforts, specifically within the disciplines of human resources and management (Walkowiak, 2021). The IT sector offers a combination of relatively structured entry-level jobs, which may utilize common autistic strengths, such as a focus on detail and a tolerance for repetitive tasks, with the material benefits of working in the technology industry. A snowball effect possibly occurred, as fruitful programs received attention and inspired other companies’ interest to replicate success in a similar organizational environment. Demonstrations of this trend have been presented primarily in anecdotal reports through the media, and the current findings provide supporting evidence of a relatively high proportion of autistic employees in this sector. Although the number of autistic women working in the IT

sector was low in relation to autistic men, it was still higher than the extremely low proportion of women from the general population working in IT, evident in the current findings as well as previous studies (Rosenbloom et al., 2008). Possibly, the high proportion of autistic women in this sector could be explained by their specific skills and the increasing opportunities for autistic people in this field. Further research can shed light on this matter, potentially providing insights that may also increase the participation of women from the general population in the IT sector.

The third sector in which over-representation of autistic employees was evident was the public, army, and charity sector. The public sector segment refers to the government as a member of a country's economic activity and encompasses a variety of activities owned or controlled by the state. In the general population, a small proportion of jobs in these fields are staffed. The relatively high proportion of autistic adults in this sector might be associated with the active movement of self-advocacy of autistic adults in the Netherlands (Waltz et al., 2015), possibly leading to more job opportunities designated specifically for autistic self-advocates. Government agencies and non-profit organizations may be dedicated to the diversity of their employees and, therefore, might offer workplace accommodations, leading to more employees that are autistic.

In reference to the two central research narratives highlighted in the introduction, it seems that an inclusive approach acknowledging the importance of sector-specific expertise and expanding the range of opportunities is in place. We suggest that the two approaches are not necessarily mutually exclusive, and both can have useful implications for autistic people. The narrative associating autism with specific sectors is more visible in the media and in popular culture and may have shaped both the job market opportunities and the choices of autistic people. The rise in autistic employees integrating in IT appears to be a result of an interplay between possible (but not exclusive) autism-specific skills/interests and characteristics of the IT sector such as a skills shortage, leading to a cascade of high profile hiring programs (Walkowiak, 2021). At the same time, the second narrative is gaining increased attention in recent studies and among the autistic community, but its influence on the job market and the general public perceptions may still be limited in breadth.

There were few associations between the examined background variables and employment in one of the three leading sectors. Autistic women were more likely to work in the healthcare & welfare sector than autistic men were. Correspondingly, autistic men were likelier to work in IT in comparison to autistic women. Applying a theoretical perspective to the job-choice processes can offer a lens through which the findings can be interpreted. Gottfredson's (2005) theory of circumscription and compromise postulates that in the advanced stages of career choice two influential processes occur: (1) eliminating the least favorite vocational options on the basis of factors such as gender role, prestige,

and interests (circumscription) and (2) developing an understanding of external constraints on job choices, such as a lack of financial means to obtain appropriate education/training opportunities, and cultural or societal expectations (compromise). A factor commonly associated with the circumscription process is gender. Women in the general population tend to rule out tech-careers and choose social and caregiving occupations and men tend to experience a higher societal pressure toward competitive or technical working environments (Cortes & Pan, 2018; Lapan & Jingleleski, 1992). These trends are also featured in the current findings. An additional factor related to the process of compromise in career choice may be the autism diagnosis and autism identity. It was previously found that being part of a minority group based on ethnicity or race could also affect the process of narrowing down job choices (Fouad & Kantamneni, 2013). Intersections of multiple minorities may lead to interesting implications on job choice. For example, lesbian women were more likely to report that their sexual orientation was a positive force in opening up academic and career possibilities for them than gay men (Schneider & Dimito, 2010). Being openly lesbian may have removed restrictive social expectations around gender, thereby permitting less traditional career paths. Recognizing that autism can also be understood as an identity-based minority (Botha & Frost, 2020), it is possible that autism-specific work expectations (whether socially enforced or internalized self-perceptions) influenced the choice of job or sector in specific ways.

In respect to the relatively high prevalence of autistic women in IT, it is plausible that the autism diagnosis, even if received in a later age, may have allowed autistic women to counteract the common female tendency to avoid tech-based careers, whether by seizing an opportunity they had, gaining internal authority, or a combination of both. The relatively high prevalence of autistic women in the healthcare sector might also suggest an adjustment to gender social norms, limiting women by assumptions about stereotypical jobs to which they should aspire (Wasan & Wilton, 2020), and might even include a form of camouflaging (Gemma, 2023). While the previous two assumptions may appear to contradict, or propose different routes that autistic women can take, it is important to stress that career choice is a complicated process that often requires the individual to manage counteracting forces and expectations, both internal and external. Intersections between the age of autism diagnosis, gender, and actual opportunities lead to multi-faceted processes. Therefore, we present interpretations of the current results with caution, but propose that adapting this theoretical lens can potentially illuminate the process of career choice of autistic individuals and should be examined more elaborately in further studies. Results also support the relationship between academic degree and the likelihood to work in the specialized IT sector. Assuming that these employees attained job-relevant academic degrees, this finding aligns with the

overall gravitation of autistic individuals toward education and employment in this field.

As for non-significant predictors, focused interests were not associated with employment sector. Like other suggested autism related advantages that show partial and sometimes contradicting evidence, focused interests can be argued as a potential barrier to employment creating a distraction or as a potential internal motivator if the focused interest aligns with job content (Goldfarb et al., 2019, 2021). This study examined whether focused interest were reported, and not the content of interest, therefore an alignment between interest and the sector activity cannot be determined. Although having a special interest did not predict sector-specific employment, examination of the issue with more nuanced measures could yield important findings in the future. A higher level of autistic traits did not predict working in the IT sector as hypothesized, or other sectors. This variable may influence the occupational status rather than the occupational sector.

Limitations, strengths, and future directions

Acknowledging the study limitations and the partial nature of the data collected is necessary. The categorization of occupational sectors is not always parallel in different data sources. This is reflected in differences across previous studies (Harvery et al., 2021), as well as differences in the NAR and CBS data. We aimed to minimize differences between the two data sources by a comparison process carried out by experts in the field. However, future research should gather data based on the same sectors across autistic and non-autistic employees to increase comparability. Moreover, given the CBS data are census data, an overlap is possible if participants in the NAR are also represented in the CBS data.

Sector affiliation may not be easily inferred or known to the employee. In the group of autistic individuals, many reported “other” or “unknown,” resulting in a large part of the sample excluded from the analyses. This group of participants could include employees that work in the analyzed sectors, suggesting a distribution somewhat different from that found, or other sectors that were not considered. Future studies could collect data regarding the organization’s primary activity for validation purposes or more elaborate descriptions of the occupational sectors to ensure that their entailments are clear. Furthermore, data were only gathered on the occupational sector, not the specific job or job tasks. For instance, being in the healthcare sector could mean being a doctor but also in hospital administration. High heterogeneity in the different tasks and requirements within a given sector might exist. Potentially, the low predictive power of the independent variables might be explained by their link to specific tasks rather than the employment sector. Future research should assess specific job characteristics in addition to occupational

sectors to validate their use and examine a more specific occupational status and information about where autistic adults work and what jobs and roles they have.

It is also important to acknowledge the time that passed since the data were collected, with possible changes made in relation to autism-awareness, prevalence of autism diagnosis, and job market opportunities for autistic adults. Initiatives to support employment of autistic individuals were funded by the Netherlands Organization for Scientific Research (NOW) only from 2019, but nationwide implementation is still lacking to date. Thus, it appears job market changes occur gradually and moderately, suggesting that data of this study are still relevant but should be interpreted in their periodical context.

Despite these limitations, this study is among the first to gather data and compare the sector distribution of autistic employees and employees from the general population, and explore possible predictors. It includes a relatively large and diverse sample of autistic employees compared to previous literature, and it is a first examination of the Netherlands’ workforce. Results are consistent with the relatively high proportions of autistic employees in IT, and also with the growing evidence of a wide range of abilities and interests within this population, extending to different occupational fields and sectors. Findings can help autistic adults, their families, and career guidance counsellors, as well as human resource professionals, to move beyond stereotypic views on where autistic adults can and should work, promote employment-related decisions that are based on an individual differences approach (Bury et al., 2019).

A high proportion of employees in a certain sector may reflect the skills or preferences of the employees. However, it might also suggest common environmental and occupational features in each sector, possibly influencing successful integration. Future studies offering a deeper look into the three most common sectors in which autistic employees work can give insight into the conditions in which they commonly gain employment. A deeper examination of industry constructs in other sectors could lend insight on how to engage more companies in promoting a neurodiverse workforce. In the finances sector, for example, a recruitment consultancy agency in the United Kingdom and Germany suggests that benefits associated with autism may be an advantage in the accounting profession,² and encourages companies to make workplace adjustments to promote such opportunities. In Israel, a government-funded program (“From Calculation to Integration”: <https://oti.org.il/en/>) is carried out in collaboration with the BDO College of Finance providing training and supports for entering jobs in finances (Hercowitz-Amir & Koren, 2023). Thus, if expanding awareness to the variety of autism skills and interests is coupled with efforts to identify possible sector-specific needs and answer to them with supports, new doors can be open and the job

market landscape can broaden, potentially helping more autistic individuals express their interests and abilities and improve overall employment participation.

Further research is also required in order to understand autistic women's labor-market participation experiences, including common sectors of employment and their specific jobs and a deeper more nuanced look into the process of career choice and its' possible counteracting influences. Another area for further research could focus on sectors in which autistic individuals do not work, aiming to understand possible structural barriers, which may impede them from finding jobs in these fields.

Conclusion

The widespread distribution of autistic employees between job-market sectors supports the need for an individual approach tailoring each person's needs and characteristics in making employment decisions, along with the possible benefit of creating sector-specific opportunities. A relatively high representation of autistic employees in IT aligns with a previous visibility of studies and programs in this industry. Concurrently, the high proportion of autistic people, and specifically autistic women, in healthcare & welfare is in fit with more recent studies highlighting integration of autistic employees in various sectors. Understanding gender and identity influences in job choice may spark new insights related to career paths and career choice. Identifying and supporting better job-market diversity can promote the realization of talent, leading to personal, social, and economic benefits.

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Informed consent

Informed consent was obtained from all individual participants included in the study.

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Supplemental material

Supplemental material for this article is available online.

Notes

1. We follow recent recommendations to use a mix of person-first language and identity-first language in order to meet different preferences (Buijsman et al., 2023).
2. <https://www.renaix.com/why-are-the-top-finance-and-accountancy-firms-hiring-people-with-autism/>

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