For a real job? Views on the teaching of competence in working life by students with Autism Spectrum Disorder (ASD)

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Abstract

In this study, twelve young students on the autism spectrum were interviewed on preparation for working life, employment guidance, the challenges and strengths of the autism spectrum, and suitable teaching methods. Interviews were supported by a structured and illustrated questionnaire. The data were analysed using key statistics. The results showed that, from the students' perspective, the most important issues in preparation for work are familiarisation with different jobs, guidance in searching for a suitable job, evaluation of the suitability of the working environment, integration of occupational safety into work skills, and acquiring conversational skills in the workplace. The selection of a suitable working environment is clearly emphasised before transitioning to work. Acquiring and keeping a job require investing in social situations and skills in studying. The structuring should be flexible and adaptable according to situations and personal needs. Educationally, social interaction, social skills, and communication should form a coherent whole. The main goal for everyday life ought to be communicative and based on a structure for acquiring different skills. The results can be utilised in a vocational education and training (VET) context, because they support the importance of preparatory education as part of these studies. In addition, the results can also be used in on-the-job learning plans for VET.

Keywords: autism spectrum disorder (ASD), employment, preparatory education, communication, participation

Introduction

Work opportunities

Employment after vocational education and training can be hard for those who need special support, especially for young people with autism spectrum disorder, ASD (Frank et al., 2018). According to a study in the United States, the employment rate among people with ASD was 10% (Bush & Tassé, 2017). The estimate by the European Economic and Social Committee (2017) is similar, with less than 10% of people with ASD in paid work. In a German longitudinal study, the employment rate for ASD was 13.5% (Frank et al., 2018). In a longitudinal study conducted in the states of Wisconsin and Massachusetts, the employment rate for people with ASD as well as intellectual disability (ID) was 14.3% (Chan et al., 2017). Employment rate for ASD only was 25% (Taylor et al., 2015). The employment rate among those people on the autism spectrum is lower than it is among those with learning difficulties, linguistic difficulties, or mental disability (Shattuck et al., 2012). According to a study by Bush and Tassé (2017), 16% of individuals with Down Syndrome and 14% of individuals with idiopathic ID were employed (the same rate for ASD was 10%). According to them, employment can be influenced by political, social, and cultural factors. For Finland there are no statistics about the workforce with ASD, but the employment of intellectually disabled people has not changed significantly in the last decade (Vesala et al., 2015). According to a study by Vesala et al. (2015), of the clients at job centres or those in unpaid job opportunities in regular workplaces, approximately 30% would have the chance to be employed in paid work. Most clients with ID are guided to unpaid jobs at regular workplaces. In Finland, there are about 25,000 people of working age with intellectual disability. About 3% of them are in paid employment (Finnish Association on Intellectual and Developmental Disabilities, 2019). Yet in many countries, work centre activities or unpaid work in sheltered workshops or the open labour market is considered the first step to full employment. According to previous studies, work centre activities did not support job placement (e.g. Cimera et al., 2012). In contrast, according to a study in Sweden, community-based day centres had a positive effect on employment (Baric et al., 2017). In a study by Baric et al. (2017), preparatory transitional activities support further employment or education. Preparatory transitional activities promote the organisational and planning skills required for the work and reduce stress and anxiety at work.

Autism spectrum traits

The DSM-V (Diagnostic and Statistical Manual of Mental Disorders) defines the autism spectrum through two dimensions: difficulties in social communication and social interaction across multiple contexts, as well as restricted, repetitive

patterns of behaviour, interests, or activities (Reynolds & Kamphaus, 2013). It has been widely discussed that the extent of support needed, and the challenges linked to ASD, also inhibit employment (see Howlin, 2004). Most often, challenges are related to difficulties in regulating social situations, communication, and emotions, as well as rituals and changes (Anderson et al., 2020). The pedagogical approach is examined in this study from an autism-friendly perspective. An autism-friendly perspective means adapting the environment (Clouse et al., 2020) and interaction to the person with ASD, as well as teaching essential skills and leveraging strengths (Hayward et al., 2019).

In this study, extensive support means holistic and continuing intensive pedagogical support for study, self-expression, and interaction as well as for independent living, life management, and working life. The neurobiological background of ASD has a multidimensional effect on one's social interaction, the ability to function in everyday life, and on social participation. Nevertheless, employment has an important meaning for people with ASD in need of extensive support. Participation in the world of work enables both the skills needed in the workplace and the learning of wider everyday skills. Work affects the perception of one's self. In addition to income, the influences of work appear in social contacts, self-esteem, and identity along with daily routine and the meaningfulness of life (Attwood, 2012).

Preparatory education for work

According to the Finnish National Agency for Education (2020), 'the purpose of vocational education and training (VET) is to increase and maintain the vocational skills of the population, develop commerce and industry and respond to its competence needs.' In Finland, vocational special education institutions offer vocational and preparatory education for young people and adults who need individual support, special teaching arrangements and student services in order to study. Preparatory education includes vocational training as well as education for work and independent living. The goal of education for work and independent living is to become familiar with working life and find suitable forms of work as well as to develop work and occupational skills (Law of Vocational Education, 2017).

It has been widely argued that vocational education has a significant impact on employment (Rast et al., 2019; Vesala et al., 2015). However, in Finland only 24% of students with intellectual and developmental disabilities who have completed vocational education have a paid job. In Finland, most graduates (76%) do not find paid jobs (Vesala et al., 2015) or the tasks they end up performing are not relevant to their skills (Frank et al., 2018). Therefore, it would be valuable to evaluate the content and quality of VET for students with ASD. For these reasons, improving teaching to support employment is essential. It is also interesting to see what kind of working environment and what kind of support methods at

work would promote employment the most. According to Baric et al. (2017), the central aspects of employment are occupational transition for long-term preparation, practical work experience and support beyond work. Young adults with ASD feel that employment is affected by preparation for workplaces, harnessing strengths and interests, and developing work-related skills (Lee et al., 2019). The young people with ASD in Baric et al. (2017) gave similar responses.

Pedagogical methods and support at work

Minimal or missing support received in the workplace is an obstacle for employment (Howlin et al., 2005; Migliore et al., 2012). In order to promote employment, the development of support measures and training as well as consultation for employers on the perspectives of people with ASD are still needed. Follow-up research by Taylor et al. (2014) states that if the work and working environment are structured this has a positive influence on behaviour. A good environment promotes flexible behaviour and independence in daily activities.

Howlin et al. (2005) and Howlin (2004) have studied the effect of supported employment directed at individuals with Asperger's Syndrome (AS) in terms of finding work, staying at work, and learning tasks at work. According to their findings, acquiring a job and keeping it are most impacted by difficulties in following a schedule, focusing on tasks, multitasking, productivity, communication, behavioural regulation, and change management. The strategies of instructions for work were selected based on these problems. Typically used procedures included role-plays, scripted instructions, and schedules, raising awareness of the autism spectrum and tailored briefings, setting goals, 'how to' manuals, and encouragement. Of the participants, 70% got jobs, their tasks and workplaces diversified, workplaces became more permanent, difficulties alleviated, and social relationships at the workplace increased. Eight percent of the participants were people with ASD in need of extensive support. They also benefitted from the workplace guidance. Moreover, adjustments of working conditions promote successful employment (Nevala et al., 2011). Adjustments mean individual solutions to the organisation of work, working time, work spots, work equipment, and tasks.

Research of people on the autism spectrum in need of extensive support in working life is scarce, as Levy and Perry (2011) state in their overview. Participants in the studies discussing the effects of support have predominantly been people with high-functioning ASD, or people with Asperger's (Dalferth, 2013; Howlin et al., 2005; Kanizsai-Nagy, 2013). The factors that enhance employment cannot be unequivocally transferred from the people in need of minimal support to those in need of extensive support. Research (Howlin, 2004; Howlin et al., 2005) shows that individuals with ASD in need of extensive support benefit from employment support services and work environment.

This study is also a contribution to the awareness raising for self-expression and participation in decision-making. Research on vocational training and education among people with ASD in need of extensive support is rare. This study gives voice to the students themselves, since their participation is not fully actualised in the planning of services and education (Kivistö, 2014). The objective of this study is to learn directly from people with ASD in need of extensive support what kind of education they value to further prepare them for employment and commitment to work. In this study research questions are as follows:

1. How do students with ASD in VET describe the *optimal place to work*?
2. What do students assess as the *benefits* of the autism spectrum trait in work?
3. What kind of *training content* is important from students' perspectives for employment?
4. What kind of *pedagogical approaches* do students with ASD find useful for learning working life skills?

Methods

Participants and procedure

Participants studied at a Finnish vocational college in preparatory education for work and independent living. More than 1,300 students attend this college. All students need individual support to study. This study involved 12 students with ASD from preparatory education for work and independent living. The age of students varied from 17 to 20 years. Table 1 presents the background information of the participants. Specific data on socioeconomic status and race or ethnicity background were not recorded. The pedagogical approach of the training is based on currently available knowledge of the autism spectrum.

Quantitative research was chosen as the research method in order to distinguish the most general guidelines on the topic. Descriptive statistics can be exploited when the sample is small. In this case, the sample serves as a so-called sample of the group. Statistics can be used to open up the structure and characteristics of a group. In addition, the options provided made it easier for people with ASD to respond and share their own views. The statements were easier to get in a clear and illustrated form. The number of participants was influenced by the amount of time available. Illustrating the questionnaire and conducting interviews with speech and description interpreters was time consuming.

Table 1. Background information of the participants in the study (N = 12).

	n	%
Gender		
Female	3	25
Male	9	75
Year of studies		
First year	5	41.7
Second year	3	25
Third year	4	33.3
Residence		
With parents	6	50
Supported housing	5	41.7
Own apartment, independent living without assistance	1	8.3
Familiarisation with working life in compulsory education		
Yes	9	75
No	3	25

Measures

The themes of the questionnaire were based on studies that have identified the conditions for successful employment for people with ASD (Dalferth, 2013; Hendricks, 2009; Howlin et al,. 2005; Wehman et al., 2012). According to these studies, successful employment requires guidance, support from the work community, modification of work tasks and working conditions, and adequate training in work tasks. The questionnaire surveyed the perceptions about employment of people with ASD who need extended support.

Students participating in the study were interviewed using a structured and illustrated questionnaire (Image 1). The structured questionnaire included 140 items. In addition to the items, it included seven multiple-choice questions and 14 open questions. Participants were asked to show their level of agreement with given items on a scale 1 to 4 (1 = very important… 4 = very useless; 1 = makes much more difficult… 4 = makes much easier; 1 = very useful… 4 = very useless). The items were grouped into four themes: (a) essential training content for competence in the world of work (40 items), (b) important factors at the workplace (33 items), (c) own strengths and challenges (39 items) and (d) essential teaching methods for competence in the world of work (28 items). The teaching methods section was divided into two entities: discussion and interaction skills (14 items) and executive function (14 items). The challenges of the autism spectrum were divided into interactional (8 items), social (8 items), and functional difficulties (8 items). Strengths were presented as one entity (15 items). Furthermore, age, gender, year of studies, residence, and familiarisation with working life in compulsory education were collected as background information.
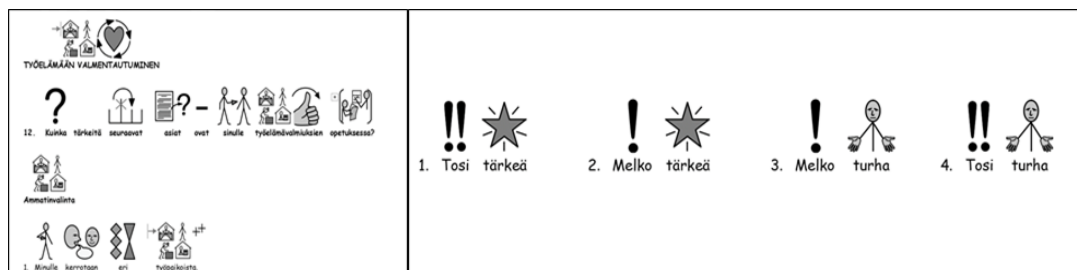
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Image 1. Left: part of the questionnaire, questions illustrated with Symwriter software; right: the illustrated scale: 1 = very important, 2 = somewhat important, 3 = somewhat useless, 4 = very useless (©Widgit Software. Finnish copyright Comp-Aid Oy, Haltija Group Oy).

Procedure

The questionnaire and instructions were illustrated with the Symwriter symbol writing software (Image 1). The questionnaire's quality of plain language, intelligibility, and the suitability of images compared to the questions were evaluated by a professional interpreter for the speech impaired and a special education teacher. In addition, one pilot interview with a student was carried out. Some parts of the questionnaire were tested multiple times because of the difficulty to choose the correct concepts. If needed, use of the scale and expressing one's opinion were practiced with the respondents. Essential aspects in the questionnaire's intelligibility were found to be the concepts and illustration of those concepts, the understandability of plain language, and outlining of text with numbers, fonts, and pages. The interviewer completed the questionnaire during the interview. The author of this article conducted all interviews, except for three of them. Those three were interviewed by a teacher, supervisor, or assistant who knew how to communicate with the participant. Having a familiar person interview them was important for their interaction and behaviour, but from the point of view of the research, their answers were more relevant than was the interaction situations being practiced. The researcher discussed the questionnaire and the answer options with the interviewer beforehand. The interviewer was instructed to write the respondent's answers and possible support questions on the answer form. After the interview, the researcher checked the notes and verified the unclear points from the interviewer.

During the interviews, AAC (Augmentative and Alternative Communication) methods were used when needed: writing, drawing, pictures, the augmentative communication apps Chatable and Predictable (Therapy Box), AAci communication folder (Valteri Centre for Learning and Consulting), and Symwriter (symbol-supported word processor – Widgit Software, Finnish company Comp-Aid Oy at Haltija Group Oy). Some of the respondents used facilitated writing (developed by Rosemary Crossley) as a means of communication, but it should be

noted that facilitated writing is a controversial method due to its questionable reliability as a client expression. According to the American Speech-Language-Hearing Association (ASHA), facilitated writing is a discredited method without scientific evidence (ASHA, 2018). For this reason, respondents who used facilitated writing gave their answers by independent communication with images. They had the opportunity to complete the answer by facilitated writing.

Individual planning of the interview is important. Individual AAC methods, communicative support, language comprehension, the impact of environmental factors, and social interaction style vary in people with ASD. In this study, the support methods for communication included the path model (communication moves from wider topics to more specific options), task analysis, image modification, and clarification of concepts. Based on individual needs, a personal assistant and/or interpreter for those with speech impairments participated in the interview situations. The place for the interview was chosen as a suitable environment for the respondent. The interview was sequenced or divided into separate sections if needed. The intelligibility of the questions was also checked in the interview situation. The duration of the interviews was 90 minutes on average. The interviews took a total of about 18 hours.

The reliability of the questionnaire can be evaluated from multiple perspectives. The whole questionnaire was tested four times among respondents, with special attention given to its informativity, directions, and clarity, as well as the compatibility of its images and text. The questionnaire was edited based on feedback from respondents. Moreover, a special education teacher and an interpreter for those with speech impairments participated in the compilation of the questionnaire.

Data analyses

The data were processed and analysed using SPSS Statistics 24.0. Due to the small dataset, descriptive statistics were used. The chosen descriptive statistics were frequency, mean, median, mode, quantile, average, and average deviation, and minimum as well as maximum values. Each statement was likewise analysed with all statistics to avoid misinterpretations.

The qualities of the optimal workplace were measured using three sum variables: tasks ($α = .630$), relationships ($α = .664$), and work environment ($α =. 671$). Differences between training content were studied using four sum variables: choice of a profession (e.g., familiarisation with different workplaces), work skills (e.g., working independently), work community skills (e.g., conversational skills), and preparation for work in an authentic work environment (e.g., suitability of the work environment). Cronbach's alpha for sum variables were as follows: choice of a profession .755, work skills .605, work community skills .788, and preparation for work in an authentic work environment .771. Cronbach's alpha for other statements were as follows: benefits of autism spectrum traits at

work .756, suitable pedagogical methods .748, and autism spectrum traits impeding work .874.

Results

Optimal workplace for students

Table 2 presents the views of students with ASD about the qualities of the optimal workplace from each section (tasks, relationships, and work environment). The tasks sum variable measured the work arrangements and the skills related to the work. The sum variable of relationships in the workplace measured involvement in the work community. The location and suitability of the workplace were measured by using the work environment sum variable. By comparing the mean of the three sum variables, the work itself most affected the respondents' experience of the optimal workplace. The mean for the tasks sum variable was 2.02. The mean for the work environment sum variable was 2.05. Social demands were emphasised in the workplace's relationships (relationships sum variable $M = 2.09$). The difference between the means of the sum variables was small, but consistent with the respondents' view of work skills as the primary goal of training.

Table 2. Views of students on the autism spectrum (N = 12) about the qualities of the optimal workplace.

Tasks	M	Relationships	M	Work environment	M
Schedules	1.50	Reasonable social demands	1.67	Getting familiar with the workplace	1.58
Visualised instruction	1.67	Workplace habits	1.67	Working in peace	1.83
Clarity	1.75	Common coffee breaks	1.83	Valuing diversity	1.83

When looking at the means of single items, the most important qualities of the workplace (Table 2) were getting acquainted with the workplace beforehand, the scheduling of the workday, and tasks and reasonable social demands. Respondents' answers also showed the need for independent action ('I know when the workday begins and ends') and interaction at the workplace ('I can talk with my co-workers'). Getting acquainted with the workplace beforehand was much more important than getting to know co-workers beforehand. Similarly, private life and friendships in one's spare time were not valued highly. Satisfaction with one's private life can influence a person's experience of work.

Benefits of autism spectrum traits at work

There were 15 statements that addressed respondents' views about the benefits of autism spectrum traits (e.g., reliability, honesty, conscientiousness, logic). The views of the respondents were divided into each value of the scale on each feature. From this perspective the features represent either individual personality traits, or individual manifestations of autism. Based on this study, the benefits related to the autism spectrum would seem to be more individual than universal. About half of the respondents considered liking routines and detail management as useless. Employers and families also see these skills as useful for employment (Anderson et al., 2020). From the students' perspective, the most useful traits (Table 3) were honesty, good at work if tasks are clear, good at noticing mistakes, and logic.

Table 3. Autism spectrum students' views on the most useful traits of the autism spectrum at work (N = 12).

The most useful traits of the autism spectrum at work	M
Honesty	1.83
Good at work if tasks and expectation are clear	1.83
Good to notice the mistakes	1.92
Logic	2.00
Good at details	2.25
Good at exceptional solutions	2.33
Good at routines	2.42
Accuracy	2.42

Student perspectives of important training content

Table 4 presents the paramount training content of an internship according to the respondents. The order of importance is based on the mean of each statement's observed value. According to students, the most important issue in preparing for working life was learning work skills. Equally important was learning work community skills. Preparement for work in an authentic work environment was unexpectedly less important than the abovementioned work skills or social skills. Instead, the choice of profession was considered less important as part of the preparation for working life.

The respondents had little previous work experience. Although Finnish basic education includes a short period of on-the-job training, three of the respondents had no experience of work. In basic education, on-the-job training for the rest of the respondents varied from a few hours to one week. All felt that training with a short duration (hours or single days) was not enough. Eight of the respondents

hoped for longer and more regular work preparation than they had previously had.

The most important content concerning competence in working life, related particularly to work skills, were occupational safety and knowledge of the autism spectrum in the workplace. Regarding work community skills, the respondents considered topics of discussion with a colleague the most important. In relation to choice of profession, the most important things to respondents were familiarisation with different workplaces, guidance in searching for a job, and assessment of the work environment. Respondents believed that the most essential part of teaching is occupational safety ($M = 1.33$) and safety protocols ($M = 1.92$), understanding the world of autism ($M = 1.67$), learning of work steps ($M = 1.75$), and the suitability of the work environment ($M = 1.92$).

Table 4. The most important educational content for working life preparation, as chosen by students on the autism spectrum (N = 12).

Work skills	M	Work community skills	M
Occupational safety	1.33	Topics of conversation with a	2.08
Learning job stages	1.75	colleague	2.17
Everyday life skills	2.00	Emotion recognition	2.17
Versatility of work skill	2.08	Social skills	2.17
Working independently	2.08	Approaching a colleague	2.25
		Understanding instructions	2.25
		Making friends	

Preparation at the workplace	M	Choice of profession	M
Knowledge of the autism	1.67	Familiarisation with different jobs	2.17
spectrum	1.92	Job search guidance	2.17
Suitability of the work	1.92	Assessment of the work	2.17
environment	2.00	environment	2.33
Safety protocols	2.00	Identifying strengths	2.33
Sustainability of tasks		Utilising special interests	2.33
Preparement for illness		Determining support needs	

The least important content for the respondents included the chance to settle down at the workplace, learning gestures and facial expressions, practicing the use of a phone, conversation about workplaces, and getting acquainted with new jobs. Half of the respondents considered conversational skills and functioning in changing situations to be important aspects of work community skills.

Suitable pedagogical methods

The importance of diverse pedagogical methods and equipment was studied with 28 statements. The statements related to relevant teaching procedures among individuals on the autism spectrum. To students, the most important teaching methods for competence in working life, by mean (Table 5), were illustrated instructions, computer, or tablet, and writing and drawing. Additionally, next in importance were time aids and images. The preferred teaching methods were characterised by specific visual clarity and structure, flexibility, and communicativeness, while the type of method varied among respondents. Serial conversation, concept maps, and the communication folder were the least useful for learning working life skills. Respondents' views support the important role of visualisation in the teaching of people with ASD. Visualisation should be a supportive effect for executive function and communication.

Table 5. Respondents' view of the challenges concerning the autism spectrum and teaching methods (N=12).

Challenges of the autism spectrum	M	Teaching methods	M
Difficulty functioning with changes	1.50	Illustrated instructions	1.58
Occasional inappropriate social behaviour	1.83	Computer or tablet	1.58
	1.83	Writing and drawing	1.58
Difficulty dealing with strange people	2.08	Time aids	1.67
	2.50	Images without instructions	1.75
Unusual way of conversation	2.50	Social narratives	1.83
Difficulty understanding social situations	2.67	Clarity and order at work	1.83
	3.00	Clock	1.83
Difficulty dealing with new situations			
Need for support in daily activities			
Difficulty making conversation			

Autism spectrum traits impeding work were examined with 24 statements, which were related to conversational skills, understanding directions, social situations, and following timetables. The range of the answers displays how well the students are able to talk about their individually varying challenges. Table 5 offers an interesting result in terms of preparation for working life. For the respondents, social and new situations do not unambiguously impede work yet changes and strangers are seen as a challenge. Conversational skills are seen as only a minor hindrance in terms of job achievement, whereas unusual ways of discourse would seem to have a more significant impact on work. Respondents

thought that decreased ability to deal with change, occasional inappropriate social behaviour, and difficulty dealing with strangers decreased the ability to work the most.

Discussion

The purpose of this research was to identify the views on preparation for working life held by students on the autism spectrum in need of extensive support. Teaching methods in the preparation for working life, the qualities of optimal workplace, the benefits and challenges of autism spectrum traits along with suitable pedagogic methods were examined with the help of a questionnaire.

Regarding criteria for the optimal workplace, students on the autism spectrum considered the arrangements of work and work skills to be more important than social relations and the location and suitability of the workplace. The most useful traits of ASD, from the students' perspective, were honesty, good at work if the tasks are clear, susceptibility to mistakes, and logic, which are all seen as features of the autism spectrum. Routines and detail, often linked with ASD, were less useful than expected. In the students' view, unusual ways to discuss (e.g., a special way to start a conversation) were more harmful for work than the difficulty of discussing.

The most important training content in preparing for working life were learning work skills and work community skills. Respondents believe that the most essential part of teaching is occupational safety and safety protocols, knowledge of the autism spectrum in the workplace, learning of work steps, and the suitability of the work environment. The meaningfulness of work and work skills affected most of the respondents' experience of a good workplace. The most important qualities of the workplace were getting acquainted with the workplace beforehand, the scheduling of the workday and tasks, and reasonable social demands. From a pedagogical perspective, learning the job stages should be integrated into occupational safety. Regarding work community skills, the respondents considered topics of discussion with colleagues the most important.

The aspiration for social interaction as well as the willingness to succeed in it were clearly highlighted in work community skills. Pedagogically, this means teaching social interaction, social skills, and communication simultaneously in an authentic environment, not apart from one another. Special attention should be paid to supporting spontaneous communication (see Rämä, 2015). Supporting spontaneous communication demands flexible, adaptable, and supplemental use of speech-facilitating and speech-replacing communication devices. The results of the study suggest the importance of spontaneous communication. The skill to approach a colleague and choose suitable topics for conversation, along with accurately interpreting the emotional scale of the work community, are emphasised.

The respondents clearly saw social interaction skills in conversations as more important than the technical skills of using tools. Conversation skills can only be learned by actively participating in daily interaction situations in various social contexts. Interaction unequivocally happens in social contexts, where the tool is conversation skills and communication. The teaching of conversation skills and communication in natural social situations is essential.

The spontaneous communication of people on the autism spectrum often manifests in unusual ways of conversation. Interview situations showed that the sensitivity and flexibility of the discourse partner, in addition to the reciprocation of cues initiated by the respondent, best supported conversation. Sensitivity and flexibility had to do with simultaneous use and implementation of the communication-facilitating devices (writing, drawing, sequencing, communication apps). Structuring needs to be flexible as well as respond and react to the respondents' initiative. Structuring and facilitation of conversation formed a sort of spiral of support. The need for support in daily activities divided the opinions of the respondents evenly.

It appears that in training single images by themselves would not seem to be enough. Instead, images are needed specifically to visualise interaction and as a discussion tool. Furthermore, they are needed in anticipating and structuring situations and events that include elements from conversational situations. This is supported by the data collected in interview situations about the sensitivity and adaptability of the discussion partner. The leading edge is comprised of so-called flexible methods, which either technically yield according to the situation, or whose objective is to teach flexibility and different functional variations. The use of a computer or tablet received an interesting position in the responses. In addition to the teaching applications, the responding students used computers and tablets as discussion aids via communication applications (Chatable and Predictable). In this study, the communication folder seemed to have a lesser role in teaching competence and communication in working life. The lower importance of the communication folder may also be due to the technical communication applications of the respondents.

Knowledge and understanding of ASD, work environment, and job match are the main drivers of employment. The educational contents per subject area chosen by the respondents form a united entity, one of which sections are strongly connected to working life as a learning environment. Subject areas constructed from educational content form the core of teaching, which consequentially enables attachment to work and accumulation of work experiences, along with guiding planning and the implementation of teaching. People on the autism spectrum in need of extensive support also require alternative choices, such as job tasks combined with everyday life skills learning. Moreover, the choices of the students on the autism spectrum compiled in Table 4 offer a structure for individual planning. The results show the relevance of personal choices and the importance

of enabling those choices. Individual plans are achieved only by listening to one's own views.

The studies show that the people on the autism spectrum in need of extensive support have the ability for flexibility, readiness for change, and the adjustment of one's behaviour, provided that their environment can support this ability. The difficulty to function amid changes and with strangers, along with occasional difficulty in controlling one's own behaviour, were seen as challenging. At the same time, the methods that can be applied in flexible situational anticipation, along with guidance of behaviour, interaction and communication (writing, drawing, illustrated instructions), were seen as vital pedagogical tools. Based on these findings, the structure should yield and adapt according to the situation and the individual. Our study results suggest that the best support is formed by a structure that is built flexibly on interaction, one that adapts and yields if needed.

Structuring in the moment and interactional possession of changes are keys to flexibility, the readiness for change, and the adjustment of one's own behaviour. Changing situations at work were seen as challenging. Instead, one's own ability to adjust to changes were seen as less important. From a teaching and guidance perspective, it's important to think about how we respond to this challenge by specifically advancing the adaptability, independence, and flexibility in changes of people on the autism spectrum. Structuring used in teaching is too rigid and formulaic. The significance of the aforementioned factors was also emphasised in a study by Taylor and Mailick (2014). Furthermore, finding employment was affected by contextual factors (the amount of services, the participation and activity of parents), in addition to personal factors. Taylor and Mailick (2014) show that situations in becoming independent should be actively arranged on both work and free time alike, so that advancement and evolvement in them would be possible. Work supports independence and independence supports employment. This requires that the education of people on the autism spectrum in need of extensive support would be developed to be more job oriented.

A further significant aspect of this study was that students on the autism spectrum who need more extensive support were given a chance to present their own views and that they were supported in every possible way in their self-expression. Social skills are often regarded as important skills in working life. The difficulties faced by people with ASD in social situations are often seen as a barrier to working life. Instead, people with ASD emphasise the importance of work skills more in adapting to working life. Participation is about influencing things and making choices. Plain language and the significance of individual ways of communication were also underlined in this study. The reliability of the responses was ensured by checking the correct understanding of the content and common language as well as by paying attention from a pedagogical perspective to the differences between an opinion and the right answer. For people on the autism spectrum, self-expression begins with open questions. Assuming that

open questions do not provide sufficient information, the conversation is then specified with closed questions. The objective of closed questions is to achieve as extensive cognitive breadth as possible. *Yes*, *no*, and *I can't say* are used considerably as possible answers. Dichotomic division is not adequate, but a variation in the answers is needed, so that the possibility of alternatives is increased, and an individual has the chance to acknowledge context and to provide a more comprehensive description. Usage of the questionnaire in the interviews reaffirmed how important it is to support the intelligibility of a message. The meaning of intelligibility and the respondents' understanding of questions are strengthened by the division of the responses into all values of the scale. Responses clearly represented the individual views of the respondents.

When reviewing the results of the study, the measure and the AAC methods are transferable to support the transition of people with ASD into the world of work. The results of the studies can be utilised in developing preparatory education for work and independent living. Research data are also transferable in building individual work paths.

Precise transcription of the measure enables the transference of methods supporting self-expression into more general use among people on the autism spectrum. Meticulousness and precision in the usage of the measure, along with teaching its usage, increase transferability. Acquiescence bias was also acknowledged in the study. Acquiescence means that *yes* answers were presented often in this study. Finlay and Lyons' (2002) results on mitigating the acquiescence bias were taken into account when applying the measure and conducting the interview. Plain language was used, and an effort was made to recognise situations where there was an increased possibility for acquiescence. The respondents were allowed to be uncertain, but there was also the aim to verify the responses. The respondents had the opportunity for facilitated writing. This, however, assumed they had used it before, that the facilitator was an interpreter for the speech impaired and was familiar with the subject, and that the respondent had some other communication method available to them as well. With each question, the respondent answered using the illustrated scale. The respondent could complete their answer by writing if they wanted. A written answer was still verified with photos. There were three respondents who used facilitated writing. Moreover, research ethics were followed regarding the privacy of the responses, but also by informing the respondents appropriately considering their linguistic and structural environment. The info sessions and research permissions were all intelligible and illustrated.

The research provides guidelines for teaching working life skills, taking into account students' views and planning teaching. The study models how participation and communication can be taught and supported in many ways and how the self-expression of an opinion can be increased. Moreover, the study elaborates which issues in conversation situations should be addressed as well as the

usage of alternative communication methods. Flexible and situationally adaptable structuring along with social communication can be utilised in all situations with people on the autism spectrum. The results of the study have many possibilities that can be implemented into everyday work with people on the autism spectrum in need of extensive support.

Teaching working life skills requires transferring teaching to workplaces in genuine work environments. Learning environments, such as working life, do not support learning enough, especially since the challenge of generalising skills is a clear challenge in autism. Transferring jobs to schools does not produce the skills that students in the autism spectrum consider to be key skills in working life. Only at work you can practice work community skills. This research shows that a real job in a real workplace has a significant impact on the development of working life skills. People with ASD value workplace learning.

This study has two main limitations. The first is the small number of participants. This amount was small because there are fewer students with ASD in need of extensive support in vocational special education. Yet the small number of participants also made it possible to get better acquainted with the functionality of the interview. When the number of participants is small, it makes it possible to open up the context of the subjects and utilise it in the future (Etz & Arroyo, 2015). Quantitative research was chosen as the research method. The students' responses were facilitated by the opportunity to choose from the given structured options.

Future research and practical implications

Results suggest that the teaching and guidance of competence for working life should be further assessed and diversified. The training content for competence in working life, criteria for an optimal workplace, and the suitable teaching methods for working life preparation identified in the results can be exploited in the planning of teaching. In the future, concrete measures, and experiences in the advancement of employment, offer an interesting field of research. Combining knowledge from three perspectives – students, the personnel of the vocational school, and employers – offers essential information on measures to promote employment among people with ASD.

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