



Augmentative and Alternative Communication Assessment Practices Followed in a School Setting: A Survey of Cypriot-Greek Speech and Language Pathologists

Elena Theodorou¹ · Eliada Pampoulou¹

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Abstract

Objectives Many countries throughout the world have achieved significant advances in Augmentative and Alternative Communication, whereas in Cyprus the evidence suggests that it is still in its early stages of development. The focus of this study was on assessment methods, which are the foundation for a successful intervention.

Methods For the study objectives, aspects from the participation model relating to opportunity and access barriers and existing literature on AAC assessment were used to create a questionnaire with multiple-choice answers. A total of 89 speech and language therapists working in a public school setting participated in the study.

Results The results show that AAC assessment is mainly for pupils with autism spectrum disorder. During the evaluation process, participants used various stimuli, but mostly hearing and visual, whilst using touch, smell, and taste to a much lesser extent. As part of the evaluation process, the participants reported that they focused on whether the individual could express yes/no and voice their basic needs, whereas language domains were not thoroughly assessed. Lastly, the participants focused on the ability of pupils to follow instructions, with other behaviors being assessed to a lesser extent.

Conclusion Various ideas have emerged regarding how to improve AAC assessment practices in schools.

Keywords Augmentative and alternative communication · Complex communication needs · Speech and language pathologists · Assessment · School · Cyprus

It is argued that people with a severe communication disability, who cannot use and/or understand speech for everyday communication have complex communication needs (CCN) (Raghavendra et al., 2011; Sheehy & Budiyo, 2014). People with CCN comprise a heterogeneous group as their difficulties might be attributed to various medical diagnoses, such as syndromes, cerebral palsy, autism spectrum disorder (ASD), and deafness (Beukelman & Light, 2020; Beukelman & Mirenda, 2013) as well as physical, psychological and/or cognitive factors (Thirumanickam et al., 2011). Due to this heterogeneity, they have different skills and abilities since they experience various difficulties in different areas, such as motor, language, and cognition. Those with limited

or no speech face lifelong limitations in their participation in education, employment, healthcare, home life, and community activities (Light, 1997).

Augmentative and alternative communication (AAC) is a field that incorporates a range of communication methods, strategies, and tools designed to support individuals with CCN to engage in meaningful participation in all areas of life (Agius & Vance, 2016; Beukelman & Light, 2020; Beukelman & Mirenda, 2013; Erickson & Geist, 2016; Geytenbeek et al., 2010). The AAC field focuses on both unaided and aided forms of communication, with the goal being efficient interaction with others through total communication support (Charalambous & Kambanaros, 2021). Unaided methods of communication are those where the person requires nothing more than their body in order to communicate their thoughts (e.g., facial expression, body language, crying). Pampoulou and Fuller (2021) have explained that unaided symbols extend from non-linguistic symbols (e.g., pointing, yes/no gestures, vibrotactile codes) to linguistic ones (e.g., sign languages, manual alphabet).

✉ Elena Theodorou
eleni.theodorou@cut.ac.cy

¹ Department of Rehabilitation Sciences, School of Health Sciences, Cyprus University of Technology, Vragadinou 15, 3041 Limassol, Cyprus

Regarding the aided forms of communication, these require something additional to the person, and they vary from printed communication boards to speech-generating communication devices (Fuller & Pampoulou, 2022). Pampoulou and Fuller (2021) also pointed out that, regarding the representation of the vocabulary included in these aided tools, aided symbols are categorized based on their linguistic characteristics. Examples of non-linguistic symbols are photographs and Microsoft clipart, whereas those of linguistic symbols are Blissymbolics, visual phonics, and traditional orthography.

AAC services in school settings are essential as pupils with CCN have the right to communication and to receive an education. The role of speech and language pathologists (SLPs), who provide services in school settings, is pivotal. More specifically, over half of SLPs who work in schools in the USA reported providing services to individuals with CCN (ASHA, 2018), which is also the case for Cyprus (Pampoulou et al., 2018; Theodorou & Pampoulou, 2022). However, no published epidemiological data is available regarding the number of pupils who receive AAC services in Cyprus. On the island, professionals called on to provide relevant services often lack the necessary training to support people with CCN and who use AAC, thus resulting in limited services being provided in school settings for this population (Pampoulou et al., 2018; Theodorou & Pampoulou, 2022). This statement is in line with the international research evidence that AAC services in school settings are inconsistent and problematic (Ayres et al., 1994; Dodd et al., 2015; Enderby et al., 2013; Hetzroni & Roth, 2003).

A brief description of SLP provision in public schools in Cyprus is important here. The Ministry of Education, Youth, and Sports (MoESY) employs special education professionals, such as SLPs, occupational therapists, and special education teachers, to support students with special needs (Mavrou, 2011). Several actions have been taken to develop the legislative framework of service provision in Cyprus, these being: (a) the Education and Training of Children with Special Needs Law 1999 (113(I)/1999, Cyprus House of Representatives, 1999); (b) the Mechanisms for Early Detection of Children with Special Needs Law (185(I) 2001, Cyprus House of Representatives, 2001); and (c) the Law for Regulations for Education and Training of Children with Special Needs (186(I) 2001, Cyprus House of Representatives, 2001). The fundamental goal has been to support all children in the public school system and provide them with the same learning opportunities as typically developing children, regardless of their abilities (Phtiaka, 2007). Despite the fact that the AAC service is not explicitly mentioned in Cypriot law and relevant regulations, it is argued that AAC is necessary to secure the appropriate support for pupils without or with limited speech (Beukelman & Mirenda, 2013). Currently, a total of 30% of the 806

active SLPs in Cyprus provide their services in public settings (Cyprus Registry of Registered Speech Pathologists, 2022), having CCN pupils on their caseload (Pampoulou et al., 2018). However, findings from a recent study show that these professionals are not necessarily adequately educated in matters related to the AAC field (Theodorou & Pampoulou, 2022).

It is worth mentioning that, beyond the services provided by MoESY, other stakeholders fund the services provided to AAC users. Since 2020, the newly established General Health System, which the Cyprus Ministry of Health regulates, has funded a number of speech therapy sessions for individuals with CCN. The Department for Social Inclusion of Persons with Disabilities (which belongs to the Cyprus Ministry of Labour, Welfare and Social Insurance) aims to promote independent living and the social inclusion of people with disabilities. As part of its AAC services support, the department provides individuals with appropriate assistive technology (AT) products after a multidisciplinary assessment has been conducted. Furthermore, some private foundations offer funding to AAC users in a different way; they provide direct financial support to the family to pay for needed therapy services delivered by private sector professionals (e.g., SLPs, occupational therapists). As shown here, a number of stakeholders support people with CCN in fulfilling their rights to communication and education.

AAC assessment is the initial step of the clinical procedure, which is of paramount importance since it guides the clinical decision about intervention for individuals who experience CCN (e.g., Beukelman & Mirenda, 2013; Dietz et al., 2012), and it has been pointed out that it is a prerequisite for successful AAC services (Binger et al., 2012). AAC assessment is complex due to the substantial heterogeneity of difficulties' severity among individuals with CCN, with the need also to take into account the diverse characteristics of communication partners and the different environments in which these pupils are situated (Dietz et al., 2012). This assessment is a continuous and ever-changing procedure that considers intrinsic factors related to the children with CCN, including communication, language, and cognition as well as the selection of appropriate AAC means of communication. As for communication, it is of paramount importance to assess the current forms (e.g., sign language, pointing, talking products, communication device) that the pupil uses, as well as taking into account their potential to maximize their communication abilities. This might include the trialing of different forms, methods, and strategies of communication (e.g., the trialing of a communication device). Furthermore, communication functions of the pupils should be assessed, including expressing feelings, commenting, and giving instructions. The ultimate goal is that the chosen form allows for the person with CCN to express and develop a number of communication functions (Beukelman & Mirenda, 2013).

It is also generally agreed that AAC assessment should consider extrinsic factors beyond the individual's abilities, such as those of their peers and the competency skills of communication partners (Beukelman & Mirenda, 2013). Individuals' assessments in different environments also need to be considered (e.g., Baxter et al., 2012; Light & McNaughton, 2014; Thistle & Wilkinson, 2015). All of the above require effective communication and collaboration between children with CCN, their families, and professionals trained in AAC (Karnezos, 2018).

Despite the readiness of SLPs to provide assessment services being of paramount importance for quality services provision (Beukelman & Mirenda, 2013; Dietz et al., 2012), research thus far has shown that pre- and in-service preparation is not adequate, which has led to, in many cases, evidence-based clinical decisions not being made (Karnezos, 2018). Whatever the case, it is essential that the procedures employed by SLPs to reach their diagnostic conclusions and set recommendations are clearly identified, something which as yet has not been investigated (Lund et al., 2017; Theodorou & Pampoulou, 2022). Furthermore, SLPs tend to be less confident in assessing individuals with CCN who are experiencing severe physical impairment (Sanders et al., 2021). Johnson and Prebor (2019) argued that they will be less confident in the outcomes, if there is a lack of collaboration with other professionals better able to assess AT devices and understand body positions, namely AT specialists and occupational therapists, respectively. As for Cyprus, previous research has shown that not all SLPs collaborate with other professionals for AAC assessment purposes. Notably, only a few reported collaborating with physiotherapists and occupational therapists (Theodorou & Pampoulou, 2022).

The existing literature has demonstrated that several factors contribute to the inconsistency in AAC assessment in the context of schools. Amongst others, these are inadequate time for the multidisciplinary team to assess the student with CCN; lack of familiarity with the student; absence of ongoing training to support AAC users; significant gaps in pre-service and in-service training; and the inconsistent application of AAC selected support (e.g., Dada et al., 2017; Dodd, et al., 2015; Douglas et al., 2020; Enderby et al., 2013). For the case of Cyprus, it is also evident that SLPs who provide services in school settings do not utilize formal or informal assessment protocols/guidelines, but rather, use their own evaluation protocols, thus resulting in assessment inconsistency. Furthermore, it was found that SLPs interview parents of individuals with CCN to gather information about the potential AAC user, rather than to obtain a better understanding of their abilities and potential to be able to support their child effectively. Further, whilst they do observe pupils in the classroom, they do not collect information relating to their peers and teachers (Theodorou & Pampoulou, 2022).

To synthesize the findings thus far, the research indicates that SLPs' AAC assessment is not comprehensive (Binger et al., 2012; Dietz et al., 2012; Lund et al., 2017; Theodorou & Pampoulou, 2022). One of the first studies that investigated the assessment procedures followed by SLPs found that general practice ones describe the assessment as a two-step process, including language and symbol assessments (Dietz et al., 2012). Consequently, SLPs do not assess important intrinsic skills, such as sensory perception (e.g., visual, tactile, hearing) and motor skills, nor do they assess extrinsic factors, such as the characteristics of communication partners and the environment (Karnezos, 2018). Further, the assessment goal has been about focusing on formulating decisions regarding device recommendation, rather than determining the appropriate teaching skills for children with CCN or the instructions for partners on interaction strategies and the pertinent environmental adaptation (Dietz et al., 2012). Theodorou and Pampoulou (2022) have suggested that by implementing a protocol including all the AAC assessment domains, this will enhance the decision-making process and, hence, the effectiveness of the intervention.

It is acknowledged that there are a number of available models that are utilized as part of AAC assessment purposes by practitioners. Some of these are the AAC model (Lloyd et al., 1990), the participation model (Beukelman & Mirenda, 2005, 2013), the human activity assistive technology model (HAAT) created by Cook and Hussey (2002), and the student–environment–tasks–tools (SETT) developed by Zabala (2007), all of which can be utilized by clinicians as part of the assessment process. While these models guide various aspects of AAC assessment, not all provide clear instructions for SLPs on the different issues in comprehensive assessments that need assessment protocols or decision-making guidelines to facilitate their work (Dietz et al., 2012). For instance, Lund et al. (2017) commented that, whilst the participation model provides a holistic view of the different elements related to AAC assessment, little information is available regarding how directly to apply the model in a service delivery context.

In order to close the gap and thereby contribute to the service delivery context, the participation model parameters were used as the backbone for this study to develop the research questions and methodology (Beukelman & Mirenda, 2013). For assessment purposes, the model considers (a) the existence of communication participation patterns; (b) the barriers to participation in communication situations; (c) the effectiveness of previous strategies in enhancing participation, and (d) the potential for new strategies to enhance communication (Beukelman & Mirenda, 2013).

The research presented here is part of a more extensive investigation that explores the assessment process followed by SLPs who work in public schools (mainstream and special schools) and support pupils with CCN in Cyprus. An

earlier publication (Theodorou & Pampoulou, 2022) found that SLPs providing assessment services in school settings in Cyprus consider several elements, including language, communication, and social skills. However, the assessment process is neither comprehensive nor systematic. The study found that further training was required for SLPs tasked with conducting AAC assessments for people with CCN, thus ensuring high quality of services for those with special needs.

This paper focuses on the part of the aforementioned study where the focus was on identifying the most critical elements of the evaluation process, in terms of the associated intrinsic and extrinsic factors. In doing so, we address the following research questions: (1) Which of the services different stakeholders provide do SLPs utilize to support AAC users? (2) What elements do SLPs utilize during the assessment process? (3) What are the specific parameters of communication and language assessed by SLPs?

Method

Participants

The researchers contacted all the SLPs in Cypriot public schools ($n = 180$) by holding a total of six 2-day training courses, organized jointly by the MoESY and the Cyprus University of Technology, where they are based. These courses were provided between November 2017 and February 2018. Based on the inclusion criteria, the researchers asked only participants who had assessed students with CCN in the previous or current year to complete the questionnaire to ensure that they described current practices. Eighty-nine SLPs, 45% of the invited participants, completed the paper questionnaire. The majority of the participants were female (96%), and most had been working in the public education system for more than 10 years. Eighteen participants reported that they had been working for less than 10 years, 56 for 11 to 20 years, and 14 had been working for more than 20 years. Regarding the participants' level of education, 19 had completed a bachelor degree, 67 a masters' degree, and one had a PhD. As for the training received about AAC, only 47 (52%) had attended a class related to AAC during their studies, while 78.6% ($n = 69$) engaged in learning about new intervention methods concerning the field by attending seminars and conferences, by searching for information on the internet and/or by reading books.

Procedure

On the first day of the training participants were asked to fill out a paper-based questionnaire in their own time and to return it on the following day. The average time needed to

complete the questionnaire was about 20 min. The study's goal was explained to the prospective respondents verbally and in writing, emphasizing that there was voluntary participation. Prior to data collection, since the participants were employees of MoESY, permission to conduct research was obtained by the Centre of Educational Research and Evaluation of the Pedagogical Institute of Cyprus.

Measures

A paper-based questionnaire consisting of 35 close-ended questions based on the participation model and drawing on the existing literature about AAC assessment was developed to collect the data. Prior to the actual investigation, the researchers ran a pilot study, and the need for research tool modification was revealed.

The questions included in the survey investigated the profile of the participants (8 questions), the types of AAC provision (5 questions), and the AAC assessment process (21 questions). The first part focused on demographic information that regarding years of professional experience, level of study, country of study, and AAC training. The second part focused on the characteristics of services provided to people with complex communication needs (e.g., CCN population, available AAC services in Cyprus). The third section dealt with the AAC assessment and asked participants to call to mind a person they had worked with in the last academic year with little or no functional speech and to answer the questions based on that case. Based on the participation model (Beukelman & Mirenda, 2005, 2013), the questions focused on the procedures followed by SLPs for AAC assessment regarding opportunities, and the barriers to their being able to carry out AAC assessment effectively, whether internal or external.

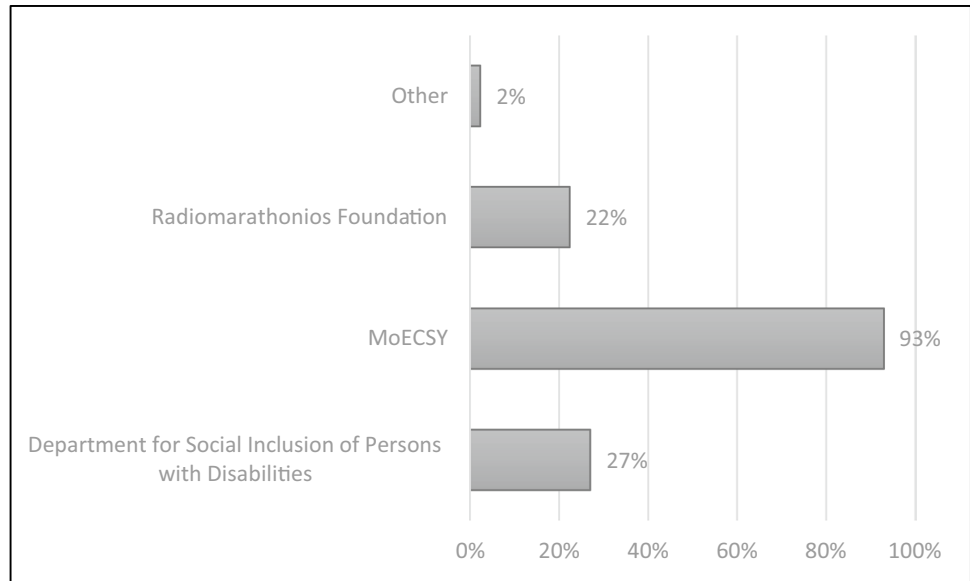
Data Analyses

Paper-based responses were entered manually on an Excel Sheet. The data relating to closed-ended questions (with pre-coded response options) were analyzed descriptively using the frequency distribution of items, and percentages for each item were calculated. Descriptive analysis was performed using all available responses, excluding missing values.

Results

The first research question focused on the existing services provided by different stakeholders the SLP participants utilized in order to support their AAC users. The question specifically asked "from your experience, which of the current service providers are utilized by you and/or other professionals and/or parents/guardians to support cases who need AAC

Fig. 1 Services support for AAC users



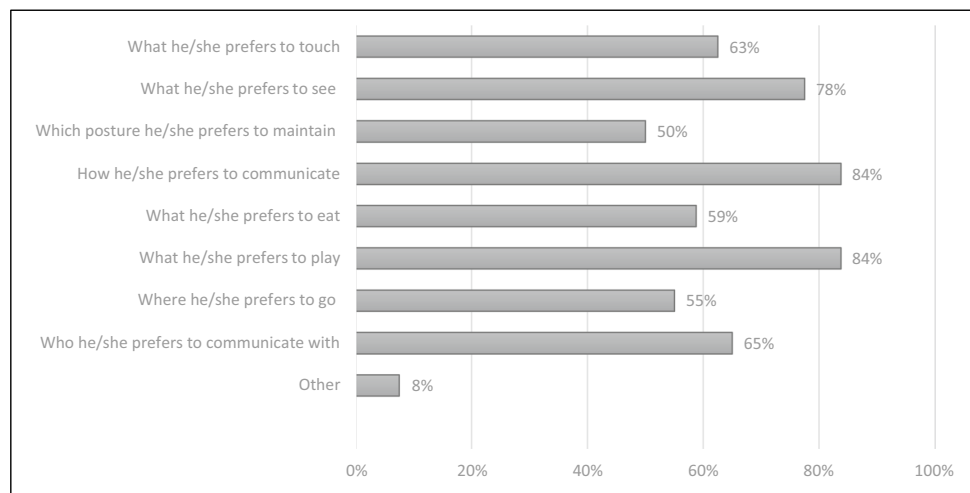
services?”. The participants were asked to choose one or more of the available options illustrated in Fig. 1. Regarding policy support, the Cyprus government provides support via different stakeholders/avenues. Those that are the most popular were provided as choices when participants were asked to identify the services they and their colleagues used when providing support to AAC users. Eighty-four out of the 89 participants answered this question. As is shown in Fig. 1, the majority ($n = 79$) chose the MoESY, whilst much fewer sought support from the Department for Social Inclusion of Persons with Disabilities ($n = 23$) and even fewer sought help through the Radiomarathonios Foundation ($n = 19$). The option pertaining to other support included the responses of parents and the private sector (SLP colleagues).

The second research question was regarding the aspects SLP participants utilized during the assessment process. It should be noted that they were asked to focus on a particular

person with little or no functional speech, with whom they had worked during the year of data collection or had worked in the previous academic year. Firstly, they noted the person’s diagnosis. The highest percentages pertained to pupils with autistic spectrum disorder ($n = 27$) and for those who had no diagnosis ($n = 30$). They also supported pupils with cerebral palsy ($n = 10$) and genetic syndromes ($n = 7$). Next, the participants responded to a number of questions concerning the different aspects they utilized during the AAC assessment process.

The question included in the questionnaire was “What information did you take into consideration during the assessment process that focused on the individual’s preferences?”. The options provided are highlighted in Fig. 2, and eighty participants responded to this question. Of those, more than two-thirds probed how the pupils preferred to communicate with ($n = 67$), play with ($n = 67$), and see

Fig. 2 Individual’s preferences



($n=62$). About half reported that they also focused on who the person preferred communicating with ($n=52$), what they preferred to eat ($n=47$), and what places they liked to go to ($n=44$). In the option “Other”, four participants added what the pupils under assessment prefer to listen from other people in their environment and one noted that they also considered the favorite toys/games of the pupil.

Participants were also asked “During the assessment process what AAC means of communication, beyond the verbal one, were evaluated for the person you describe?”. A number of options were provided as listed in Fig. 3, of which participants ticked those that applied to their case. In total, 80 SLT participants responded. As shown in Fig. 3, these were mainly pictures ($n=78$), real objects ($n=70$), photographs ($n=70$), gestures ($n=58$), and facial expressions ($n=52$). Assistive technology ($n=20$) and sign language ($n=19$) were utilized to a lesser degree. In the option “other”, the participants wrote the words “songs” and “playing”.

Another question inquired “What type of sensory stimuli did you use during the assessment process of the person?”. A number of choices were provided, which are listed in Fig. 4 and 80 participants in total answered this question. Predominantly, the reported stimuli were visual ($n=78$), auditory ($n=73$), and tactile ($n=60$). Sign language and real objects were included by the participants in the option “Other”.

The next question sought to collect information about the specific parameters of communication and language assessed by SLPs. Focusing first on communication, the questions were related to the assessment of communication functions (assessment and perceived importance). Regarding which, the question posed was “Which communication functions did you assess for the person?”. A list of options was given and these are shown in Fig. 5 to which 79 participants responded. As shown in Fig. 5, 71 focused on the ability of the person to express yes/no. More than two-thirds of the SLPs focused on how pupils

Fig. 3 Means of communication by the assessor

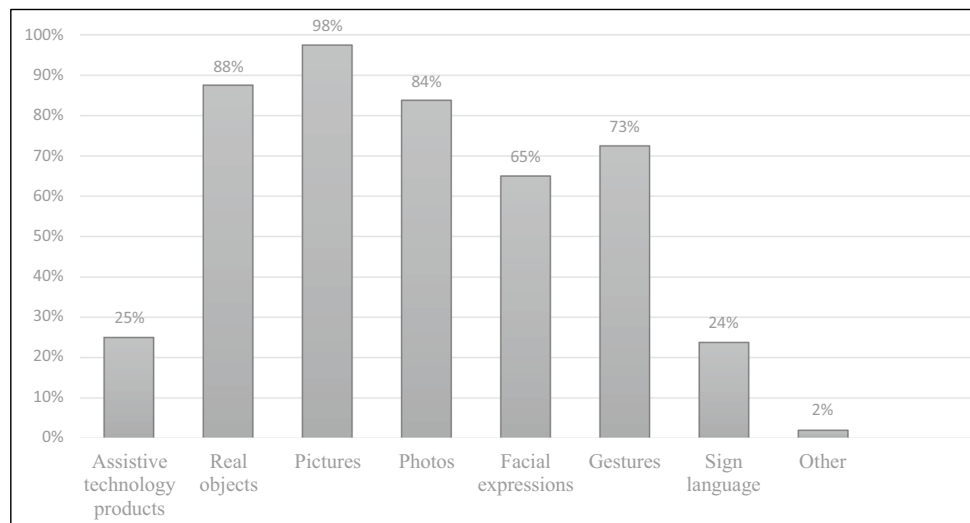


Fig. 4 Stimuli used

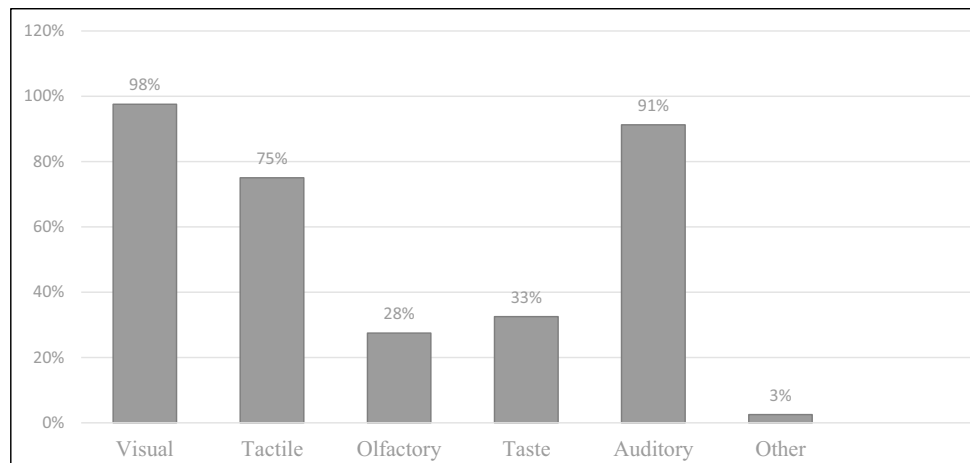
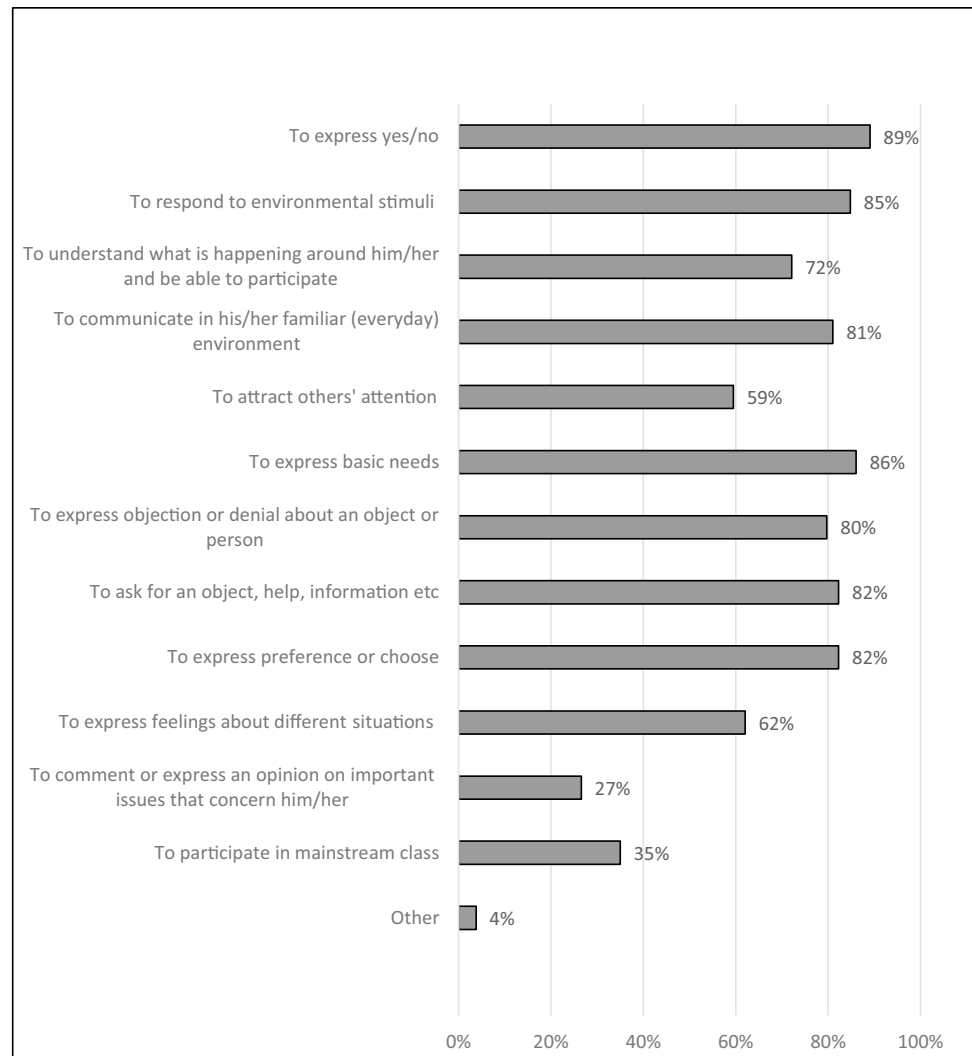


Fig. 5 Assessment of communication functions

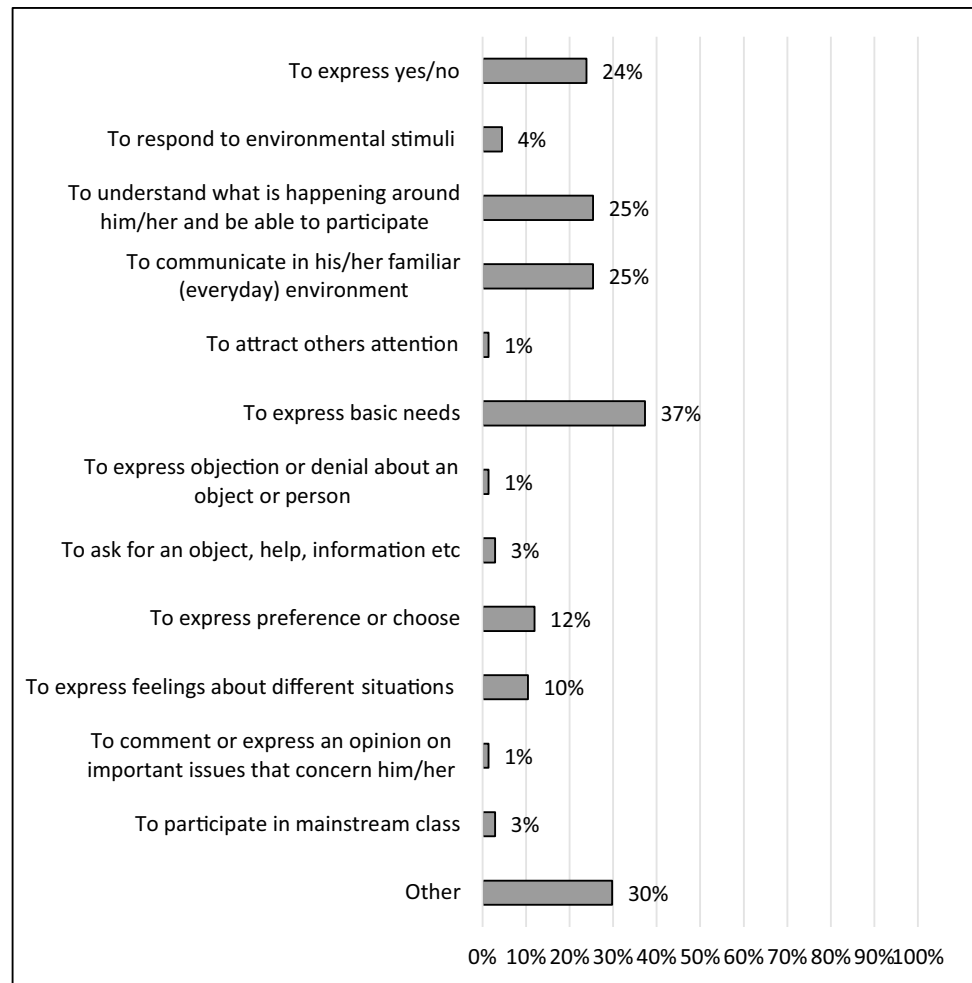
expressed their basic needs ($n = 68$), responded to environmental stimuli ($n = 67$), asked for a particular object, help, or information ($n = 65$), expressed preferences and choices ($n = 65$), and/or how they communicated in their familiar everyday environment ($n = 64$).

The next question was also related to communication functions, but this time the participants were asked to rank the top two communication functions that they considered to be the most important ones for the pupil they had assessed. Sixty-seven participants completed this question. As shown in the figure below (Fig. 6), the most predominant answers were to express basic needs ($n = 25$) and to communicate in their familiar (everyday) environment ($n = 24$).

Regarding language skills, the question that was put was “What language skills did you assess for the person?”. The majority of the 79 who answered focused on assessing the person’s understanding of simple instructions ($n = 75$) and slightly more than half on expressive

vocabulary ($n = 57$) and phones production ($n = 50$). As shown in Fig. 7, approximately only one-third of the participants focused on other areas concerning language skills.

Shifting the attention to the assessment of the individual’s behavior, the participants were asked to tick the options that were relevant to them for the question: “During the assessment process what elements of the person’s behavior were evaluated?”. As illustrated in Fig. 8, a high number of the 78 participants who completed this question assessed the individual’s ability to follow instructions ($n = 76$); findings that resonate with the previous question (assessment of language skills). Seventy-six of the participants also assessed the individual’s concentration level, duration of their attention, and eye-contact ability. Fewer participants assessed the imitation skills of students ($n = 65$), and their participation in different activities ($n = 50$). Slightly less than half ($n = 41$) assessed the impulsivity of the person and atypical movements.

Fig. 6 Top communication functions

Discussion

Regarding the first research question, most of the participants indicated that they utilized the services provided by MoESY, as it employs them. At the beginning of this article, it was explained that official government policies on speech and language service provision in Cyprus are currently based on Law 1999 (113(I)/99) about the Education of Children with Special Needs. That is, the state offers services in the context of special education, as happens in other countries (ASHA, 2018; Siu et al., 2010; Sutherland et al., 2005). However, at present, there are no published epidemiological data regarding the number of pupils who receive AAC services in Cyprus nor in-depth description of the type and quality of services provided to people with CCN (Pampoulou et al., 2018; Theodorou & Pampoulou, 2022; Theodorou et al., 2019).

Regarding the diagnosis of pupils receiving support for AAC, in contrast to other countries (e.g., Malaysia: Joginder Singh et al., 2020; UK: McCall & Moodie, 1998; New Zealand: Sutherland et al., 2005), where the majority of children

who receive AAC services experience cerebral palsy, in the current study, one third of the SLP participants stated that they provided services to children with autism spectrum disorder. Another interesting fact is that another third of the participants served children with communication problems, but without knowledge of their diagnosis and this may be a barrier to the obtaining an optimum quality of service, for often the diagnosis is related to the prognosis regarding the progress of the disease. For instance, for children with RETT syndrome, the prognosis, because of their physical skills over time, is not encouraging and SLPs need to understand it in order to make appropriate interventions (Tarquinio et al., 2015).

Shifting the attention to the elements the SLPs utilized during the assessment process, participants indicated that they focused on what the person preferred to communicate with. Based on the existing literature, the individual's preference is a key factor when it comes to the acceptance of the method of communication (Pampoulou, 2019). As also indicated in the literature concerning assessment in the field of speech and language therapy, because the person is at the

Fig. 7 Assessment of language skills

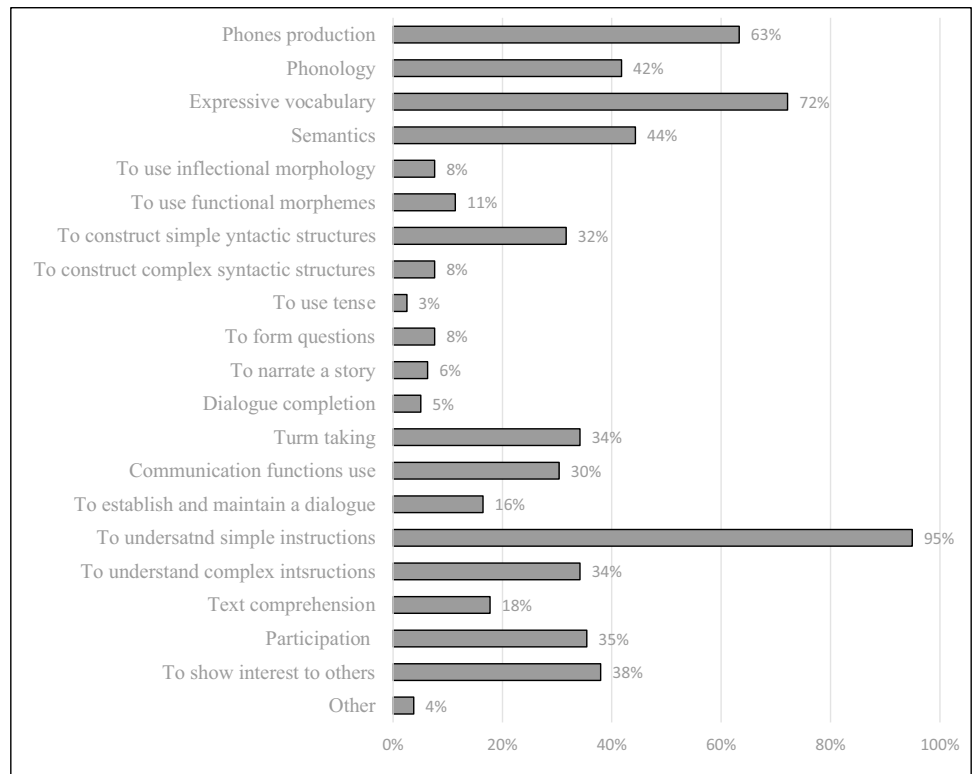
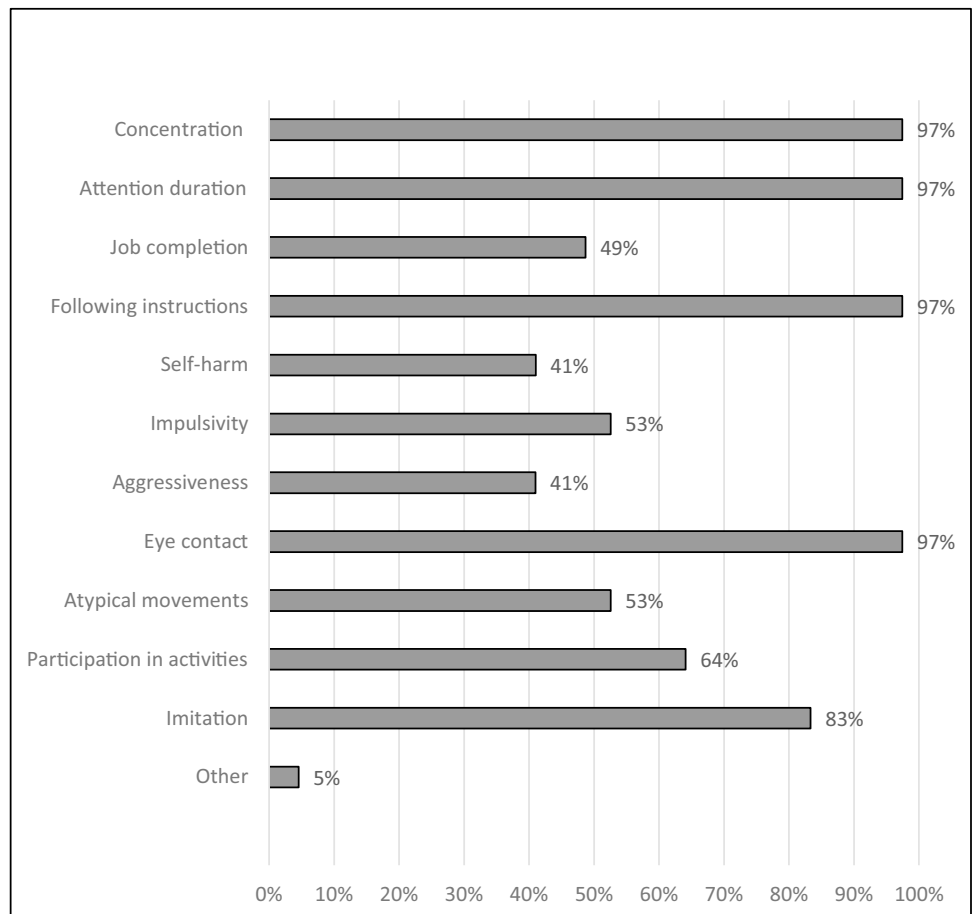


Fig. 8 Assessment of behavior



center of any practices their voice should be heard during that process (Dietz et al., 2012; McNaughton et al., 2018). That is, obtaining the person's preferences is vital when aiming to promote efficient communication interaction between the sender (individual with CCN) and the receiver (communication partner).

Almost all the participants, beyond verbal speech, reported that they used pictures as a means of communication when interacting with the pupils with CCN. In the SLP field, many diagnostic and intervention tools utilize pictures. In addition, pictures can be easily found on the net, and clinicians use them to develop their own informal assessment tools. In Cyprus, SLPs use their own self-made AAC assessment tools, rather than using the existing standardized ones (Theodorou & Pampoulou, 2022). It also emerged that very few SLP participants use sign language as a means of communication. This can be attributed to various reasons, such as SLPs and/or pupils are not familiar with this method of communication and this method requires motor movement, which is often not available for many pupils with CCN.

Furthermore, it was not surprising to discover that the type of stimuli that most of the participants used during the assessment was visual. This resonates with the findings discussed above that the SLPs used mainly pictures (visual stimuli). Auditory stimuli was another method employed by the most of the participants, which was to be expected, given the fact that SLPs use their speech as a method of communicating with their clients during the assessment process. Tactile stimuli are also used often during the assessment process, when SLPs use a number of objects (i.e., toys, clothes) with the person in order to elicit communication interaction. In particular, tactile stimuli are used with people experiencing visual impairment.

Moving to the third research question, the focus was on the specific parameters of communication and language assessed by SLPs. In terms of the first parameter, the yes/no response was considered to be the most important, with the next most salient being that concerning the expression of basic needs. In spite of the fact that a variety of communication skills are essential for social competence (Light & McNaughton, 2014), the majority of the participants mentioned the yes/no response and expression of basic needs. Additionally, recent research evidence has shown how effective AAC interventions are in teaching these skills (Alzrayer et al., 2019; Logan et al., 2017; Muharib and Alzrayer, 2018), which is still not taken into account in assessment processes, according to the findings of this study.

Regarding the assessment of language skills, even though there are some assessment tools for language that are standardized in Greek, and thus, available for use for use in Cyprus (Theodorou et al., 2016; Theodorou and Pampoulou, 2022), the findings show that the participants in this study focused primarily on assessing the comprehension of simple

instructions, rather engaging with other language domains or utilizing these tools. This is in contrast to what has been reported in Kovacs' (2021) study, where SLPs agreed that abilities in each language domain are crucial for persons who use AAC and that people who do so can benefit from assessment and intervention services targeting skills in each language domain. Kovacs (2021) has pointed out that SLPs entrusted with providing language-based AAC assessment and intervention services across all language domains need more training.

In terms of an individual's behavior assessment, almost all the participants reported assessing their ability to follow instructions, while other behavioral parameters are considered to be equally important. Sometimes, children with CCN exhibit inappropriate behaviors or do not complete activities. This may be due to the difficulty of the activity, which might be related to its nature or duration. It may also be associated with the environment where the action takes place, which may be noisy or unfriendly (Byiers & Reichle, 2015). Therefore, behavioral assessment and differentiation of behaviors in different settings need to be evaluated for effective intervention planning.

In an era when evidence-based practice is promoted, it is critical to examine all assessment process elements extensively. Establishing practice guidelines that show SLPs how to employ evidence-based assessment procedures would aid those with only rudimentary AAC expertise. When preparing pupils with complex communication needs for developing language and communication skills, engaging in academic learning, and making recognizable progress, having proper AAC systems is very important (Johnston et al., 2018). Researchers have recommended a comprehensive assessment approach that helps integrate AAC consideration, acquisition, and implementation (e.g., Beukelman & Mirenda, 2013; Dietz et al., 2012; Glennen, 1997). When evaluating pupils' skills, capacities, preferences, and external elements, such as the environment, personnel, and support, a comprehensive evaluation must address any barriers preventing those with CCN from meaningful participation (Beukelman & Mirenda, 2013). The observed research-to-practice gap must be bridged, and this scientific body of evidence must be converted into clinical practice on a widespread scale (Harold, 2019). For practicing SLPs who educate themselves through on-the-job experiences and self-study (Theodorou & Pampoulou, 2022), this evidence base should be made easily accessible and consumable. The findings described above and in other articles examining the AAC field in Cyprus raise fundamental questions about the effectiveness of the assessment process in decision-making. All parties involved in this field must tackle this issue by promoting awareness about AAC and providing professionals with the necessary training to conduct comprehensive assessments and to be able to effectively interpret the results.

Collaboration with other stakeholders, such as universities and professional associations specializing in assessment methods and/or the AAC field, could accelerate this.

Limitations and Future Research

Several issues may have affected the findings of this investigation. First, the findings are limited to SLPs' experiences in Cyprus; assessments in other countries may be influenced by cultural factors. Second, the questionnaire was completed by SLPs who provide services in schools, and private practitioners may well use different procedures than those described in this study. Third, the options provided in the closed-ended questions might have inadvertently inflated the responses obtained, as a number of participants might have ticked the answers randomly. However, they were asked to choose the appropriate answers/options for a real case that they had assessed, as it was requested at the beginning of the questionnaire. Fourth, the participants were not observed completing an actual AAC evaluation by the researchers. The researchers would have been able to confirm the individuals' actual practice and compare it to what they reported, if they had included this observational data. Fifth, the current study was focused on SLPs, when ideally, the AAC assessment process requires a multidisciplinary approach (Dietz et al., 2012). As a result, the current article solely reveals the procedures of specific specialists and a whole range.

The findings of this study stimulate several areas for future research. It would be useful to examine the AAC assessment process that includes not only SLTs, but also, other experts from other disciplines (e.g., education, occupational therapy). In addition, future research projects could focus on collecting data through applying mixed methods, such as interviews and observations. Finally, new research should examine any relations between assessment practices and the proposed AAC intervention.

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Author Contribution ET: conceptualized, designed and managed the study, analyzed the data as well as collaborating in the writing and editing of the manuscript throughout the whole process. EP: collaborated in the design of the study, collected the data, collaborated for the data analysis as well as collaborating in the writing and editing of the manuscript throughout the whole process.

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Declarations

Ethics Approval All procedures involving human participants were in accordance with the ethical standards of the institutional and national research committees and with the 1964 Helsinki Declaration and its

later amendments. Approval was granted by the Centre of Educational Research and Evaluation of the Cyprus Ministry Education, Sports and Youth.

Informed Consent Statement This study was classified as exempt, and informed consent did not apply. Completing and returning the questionnaire to the researchers was an inducement to participate in the survey.

Conflict of interest The authors declare no competing interests.

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