

The Perceptions of Speech-language Pathologists toward Augmentative and Alternative Communication in China

Yanan Li*, Qingqing Xie, Lifang Zhang

Department of Rehabilitation Engineering, Beijing College of Social Administration (formerly the Ministry of Civil Affairs Management Cadre Institute), Beijing, China

**Corresponding Author.*

Abstract: The purpose of this study is to investigate the awareness and use of Augmentative and Alternative Communication (AAC) systems, as well as the related training received by speech therapists in China. A questionnaire survey was designed and distributed to speech therapists in hospitals, rehabilitation organizations and universities in China. A total of 50 valid questionnaires were returned. The results showed that 94% of the speech therapists had heard of various AAC tools. However, only 10% of the speech therapists considered themselves proficient in providing AAC assessment and intervention services. 30% of them had never received AAC training, 48% had attended seminars or lectures related to AAC but had not received systematic training, and 20% had only received less than 1 day of training. 80% of the speech therapists expressed a strong interest in participating in AAC training, and most of the speech therapists believed that the AAC tools helped improve their patients' communication skills. This research provided insights into how Chinese speech therapists perceived AAC devices. However, the research also revealed a lack of training and experience with AAC in China.

Keywords: Augmentative and Alternative Communication; Communication Disorders; Speech and Language Therapists; AAC Education

1. Introduction

In recent years, there has been an increasing number of studies on Augmentative and Alternative Communication. Augmentative and Alternative Communication (AAC) refers to various methods and devices used to supplement spoken communication for

individuals who have difficulty with speech or language, including no-tech, low-tech, and high-tech options [1]. No-tech AAC includes gestures, facial expressions, writing and drawing, etc. Low-tech AAC refers to simple electronic devices or aids that assist with communication, such as Text-to-speech apps on tablets or smartphones and simple voice output devices that can play recorded messages when buttons are pressed. High-tech AAC usually means using an app on an iPad or tablet to communicate or using some speech-generating devices to produce "voice" for people who have difficulty with talking [1]. Talking is not the same as communicating. To promote the development of children's communication skills, it is also important to focus on whether children can communicate in other ways and to focus on the functionality of communication [2]. The AAC system includes a variety of communication styles and is designed to help people with communication disorders improve their communication skills and participation, and it is suitable for children with a wide range of disorders, such as cerebral palsy, autism, and children with speech and language developmental delays [3,4]. People who are non-verbal or have limited oral communication can all benefit from some specific types of AAC [5].

According to the percentage of persons with disabilities published by the China Disabled Persons' Federation in 2006 and data from the Sixth National Population Census in 2010, the total number of persons with disabilities in China had reached 84.5 million by the end of 2010, of whom about 13 million were children with communication disorders [6]. Children with communication disorders do not acquire language as naturally as other typically developing children. Speech and language communication disorders can have a serious impact on a child's quality of life, both now

and in the future, affecting the child's integration into society, access to education, independent living, and social interactions [7]. Speech-language therapists are pivotal professionals involved in screening, assessing, diagnosing, and planning treatment for individuals who may require and benefit from AAC intervention [8]. If all of the speech-language therapists who work with this group of people have sufficient knowledge of AAC systems and get appropriate training in their application, clients might be able to communicate much more efficiently. Given the multitude of individuals potentially benefiting from AAC and the growing accessibility of AAC systems, it appears prudent to gather foundational data on the familiarity of speech-language therapists with these AAC systems. Additionally, it's important to assess the readiness of clinicians to effectively deploy diverse assistive programs and strategies. Due to the limited information previously accessible on this matter, the study opts to survey a randomly chosen sample of SLPs. This study aims to investigate speech-language therapists' training for utilizing AAC systems, their practical application of AAC systems, and their self-assessment of proficiency in this field. The survey aimed to explore the following inquiries:

How confident do speech-language therapists feel in their ability to use and manage AAC systems?

What level of education and experience do most speech-language therapists have in employing AAC systems?

How frequently do speech-language therapists engage with clients that could benefit from AAC system usage?

Speech-language therapist's willingness to participate in continuing education for AAC.

2. Method

2.1 Participants

The survey was distributed to speech-language therapists who work in different clinical settings in different provinces of China. A total of 50 valid questionnaires were returned in this study.

2.2 Procedure

All the participants were asked to complete a

32-item questionnaire. The questionnaires were randomly distributed to speech-language therapists in different areas online. The questionnaires were retrieved electronically after completion.

3. Results

3.1 Demographic Information

In total, 50 valid questionnaires were returned. Table 1 provides a demographic profile of the respondents. Of the 50 speech-language therapists who responded, the majority of therapists are around 20-25 years old, or 32%.

Table 1. Demographics of Participants (N=50)

		Number (percentage)
Age	20-25	16 (32%)
	26-30	15 (30%)
	31-35	8 (16%)
	36-40	5 (10%)
	41-45	3 (6%)
	46-50	0 (0%)
	≥51	3 (6%)
Employment Setting	Hospital	12 (24%)
	Special Education School	3 (6%)
	Public Rehabilitation Centers	3 (6%)
	Private Clinics	28 (56%)
	Universities	4 (8%)
Years of Practice	1-5 years	28 (56%)
	6-10 years	11 (22%)
	11-15 years	5 (10%)
	16-20 years	4 (8%)
	≥21 years	2 (4%)
Highest Academic Degree	College	10 (20%)
	Bachelors	27 (54%)
	Masters	12 (24%)
	PhD	1 (2%)
Professional Background	Communication Science and Disorders	18 (36%)
	Rehabilitation Therapy	17 (34%)
	Special Education	8 (16%)
	Medical-related specialties	5 (10%)
	Other	3 (6%)

This is followed by therapists in the 26-30 age group at 30%. Since the therapists are very young, their years of experience are relatively short. Therapists with five years or less make up the largest percentage, about 56%. 12 of the respondents reported they worked in hospitals and 28 in private clinics. 2 respondents responding more than 21 years of practice

worked at rehabilitation centers directly under the Federation of Disabled Persons. 10 of the respondents got a college degree and 27 of them had a bachelor's degree. Only 1 got a PhD degree. Interestingly, the speech-language therapists who got a lower degree (i.e., college and bachelor's) tend to work in private clinics, those who got higher degrees were more likely to work in hospitals or rehabilitation centers directly under the Federation of Disabled Persons. When asked about their professional background, 18 of them responded they majored in communication science, disorders and 17 of them majored in rehabilitation therapy, and a few of them majored in special education or medical-related majors.

3.2 Speech-language Therapists' Awareness and Knowledge of AAC

According to Figure 1, AAC has begun to be known by speech-language therapists in China, only 3 of the respondents reported never heard of AAC. The number of AAC-trained speech-language therapists is 35, or 70%. The number of those who have never received AAC training is 15, or 30% (See Figure 1). The data revealed that AAC is not new to most of the speech-language therapists.

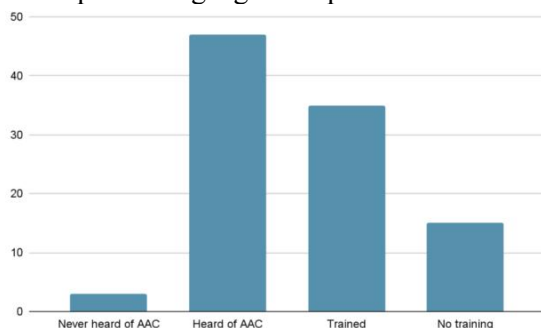


Figure 1. Distribution of Speech-Language Pathologists' Knowledge of the AAC

When asked "what type of AAC have they heard of," 87.23% of the speech-language therapists had heard of no-tech AAC, 97.87% reported that they had heard of low-tech AAC, and 85.11% had heard of high-tech AAC. It can be seen that the number of speech-language therapists who are aware of no-tech AAC and low-tech AAC is higher than high-tech AAC. Table 2 shows AAC types that were known by the respondents.

Table 3 indicates that a few of the types of disorders that speech therapists believe AAC applies to, in descending order of percentage, are autism spectrum disorders, cerebral palsy,

stroke, traumatic brain injury, and ALS.

Table 2. Type of AAC Known by Speech-language Therapists

AAC type	Number	Percentage
No-Tech: Gestures, facial expressions, body language, etc	41	87.23%
Low-Tech: Picture exchange systems, writing, communication books & sign language, etc	46	97.87%
High-tech: Speech Generating Devices (SGDs) or Voice Output Communication Aids, eye-tracking devices	40	85.11%

Table 3. The Types of Disorders That Speech-language Therapists Believe AAC is More Suitable for

Disorders	Number (Percentage)
autism spectrum disorders	43 (86%)
cerebral palsy	37 (74%)
stroke	30 (60%)
traumatic brain injury	29 (58%)
ALS	27 (54%)

58% reported they had experience working with clients who use AAC devices (See Figure 2). Moreover, in response to the question "How often do they work with clients who use AAC?" approximately 20.69% of the respondents reported frequent exposure to AAC, 44.83% reported occasional exposure, and 17.24% said they rarely or never encountered AAC in their practice (See Table 4). Only 13.79% reported very frequent or daily exposure to AAC. When considering years in the profession, 1 speech-language therapist with 21 or more years of experience reported frequent exposure to AAC (50%). Among speech-language therapists with 1-5 years of practice, 1 (8.33%) reported very frequent exposure, 5 (41.67%) reported frequent exposure. 2 (22.22%) of the speech-language therapists who have 6-10 years of practice also reported very frequent exposure. However, only one of the speech-language therapists who have 11-15 years of practice reported very frequent exposure. Table 3 indicates that the most experienced speech-language therapist in the profession (16–21 years or more) and those who recently entered the field (1–5 years of experience) reported the highest frequency of working with clients using AAC. In terms of practice settings, speech-language therapists working in private clinics reported the greatest

exposure, whereas those working at universities reported the least.

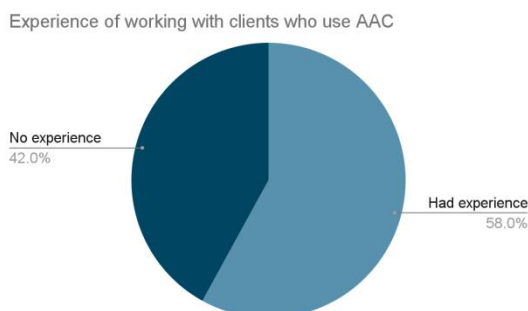


Figure 2. Speech-language Therapists' Experience of Working with Clients Who Use AAC

Table 4. The Frequency at Which Speech-language Therapists Work with Users of Augmentative and Alternative Communication

Years of practice	Very frequent	Frequent	Sometimes	Infrequently
1-5	8.33%	41.67%	41.67%	8.33%
6-10	22.22%	0%	55.56%	22.22%
11-15	20%	0%	40%	40%
16-20	0	0	50%	0%
≥21	0%	50%	0%	0%

When asked about "What would you consider your level of proficiency in providing AAC assessments and rehabilitation," only 1 reported proficient. 10% reported good, and 54% reported an average level. However, 28% reported a poor or limited level. The level of comfort (or discomfort) was evenly distributed across different settings. In terms of the time of practice, clinicians with 21 or more years of experience reported lower levels of competence compared to speech-language therapists with fewer years of service.

3.3 Speech-language Therapists' Use of AAC

76.67% of the respondents reported they used AAC devices for their clients. Therefore, the questionnaire investigated what type of AAC they usually used for their non-verbal clients. Table 5 shows those speech-language therapists' AAC utilization. According to Table 5, most of the clinicians used no-tech and low-tech AAC devices, and high-tech AAC was rarely used.

In terms of the source of AAC, 62.07% of speech-language therapists reported they used self-designed AAC to meet their clients' special needs. 27.59% used an AAC provided

by the client and their family, and 79.31% used an app downloaded from a cell phone or iPad. The proportion of purchasing AAC from related companies was 34.48%. Based on the data, self-designed pictures, cards, or communication boards were the most commonly used tools.

Table 5. AAC Utilization

AAC type	Number	Percentage
No-Tech: Gestures, facial expressions, body language, etc	14	28%
Low-Tech: Picture exchange systems, writing, communication books & sign language, etc	36	72%
High-tech: Speech Generating Devices (SGDs) or Voice Output Communication Aids, eye-tracking devices	0	0%

Concerning the effectiveness of AAC use, 74% of speech-language therapists felt that their clients' communication skills improved somewhat with AAC use, while 11% felt that their clients' communication skills improved dramatically. 4% of the speech-language therapists felt that AAC did not improve their patients' communication.

3.4 Speech-language Therapists' Perspectives on Factors that Affect the Use of AAC

The questionnaire also investigated the difficulties encountered by speech therapists in using AAC (See Table 6).

Table 6. Difficulties of Using AAC in the Clinic

	Number	Percentage
lack of knowledge of providing AAC assessment and intervention	2	40%
clients or family refuse AAC	3	42.86%
no devices can perfectly meet the client's special needs	5	71.43%
AAC is expensive	3	42.86%
The complexity of administering AAC	1	14.29%

The primary reason was that children differ significantly in the type and severity of their impairments and have diverse needs for communication aids, leading to a shortage of suitable AAC options available. Another reason is that clients or their families strongly refused to use AAC, believing that it would hinder their verbal communication. Additionally, a lack of knowledge of AAC

also affected the use of AAC. AACs were not easily accessible, and high-tech AACs were more costly is another important reason impeding the use of AAC.

The respondents were also asked about the factors that affect their choices for AAC. A lot of factors were mentioned. 86% of the therapists reported they would consider the cognitive level of the clients when they make a choice. Ease of use was the second most influential factor. Most of the therapists also reported affordability was an important factor. Table 7 describes all the factors that were considered by the respondents. In addition, one therapist mentioned in the comment that parents' ability to learn to use AAC was also an influencing factor since parents play a very important role in AAC intervention. Parents need to support their child's use of an AAC device by receiving education and training on the technology, collaborating with professionals to design the application display, and actively using the AAC device to serve as a model for their child.

Table 7. Factors Affecting AAC Selection

Factors	Number	Percentage
affordability	35	70%
ease of use	40	80%
durability	31	62%
client's cognitive level	43	86%
client's physical and motor abilities	32	64%
whether it promotes language development	29	58%
whether it promotes social interaction	32	64%

3.5 Speech-language Therapists' Perspectives on AAC Training

In response to the question "If you have attended AAC-related training, what is the type of training", a majority (45.71%) reported they had both online and in-person training. 20% of them had in-person training and 17.14% reported that they had received online training. 11.43% of the group identified themselves as self-taught (See Figure 3). Two therapists mentioned in the comments that they attended classes related to AAC in graduate school.

In addition, most of the therapists' training was short-time. Only 20% of the respondents reported their training lasted for more than 1 month. The majority of them participated in

training for about 1-3 days. Conversely, when all therapists were asked to evaluate the training and education they received on AAC systems, nobody rated as unhelpful, while 5.71% described their education as fair. 42.86% of the respondents considered their AAC training to be good. 51.43% thought their training was very helpful (See Figure 4). However, when reviewing their responses to the question, "What would you consider your level of proficiency in providing AAC assessment and rehabilitation," only four of the therapists who felt their training was very helpful thought they were proficient in providing AAC services. It indicated that although some therapists rated their training as very helpful, the training time was too short and the training was not adequate.

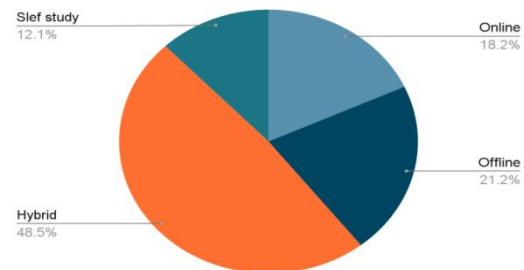


Figure 3. Type of Training

As expected, most of the respondents, irrespective of their work setting or years of experience, expressed a strong desire for more extensive preparation in AAC. They are very interested in receiving AAC training to learn more about AAC equipment, AAC assessment and adaptation, and parent training.

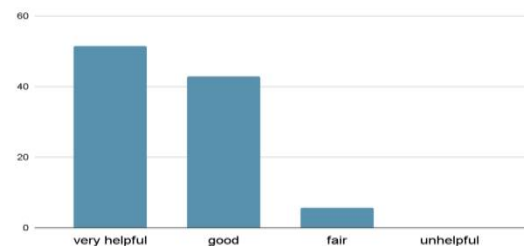


Figure 4. Speech-language Therapists Perspective on the Helpfulness of Training

4. Discussion

AAC is an important mode of communication for people with communication disorders [9,10]. Research and technology of using AAC to enhance the communication ability of people with communication disorders in developed countries and regions are relatively mature, while the research on AAC in China

has just begun. It is estimated that there are more than 13 million people with speech and language disorders in China, and the proportion of non-speaking people with communication disorders is large, so the demand for AAC is huge. Although there is a lack of relevant research in China, there are still many studies showing that AAC can help improve patients' communication ability, reduce emotions and problematic behaviors brought by miscommunication, and increase social interaction [11-15]. Speech and language therapists are the main communication target for people with communication disorders, and their views and use of AAC directly affect patients' communication opportunities and social participation.

Currently, the level of awareness of AAC among speech-language therapists as a whole remains low. Therapists have recognized and used mainly no-tech AAC and low-tech AAC, and know little about high-tech AAC. The main reason for this is probably that there are fewer AAC equipments and related services in China, rehabilitation institutions lack the funds to buy related equipment, and the research on AAC in universities is still in the initial stage. In addition, the use of augmentative communication systems needs to go through the stages of evaluation, selection, acquisition, and use [1]. The results of this study show that most speech therapists are not confident to say they are skilled in evaluating and adapting AAC for their patients. Although some therapists have participated in relevant training, the training is superficial and does not meet clinical needs.

In conclusion, speech-language therapists in China still face several difficulties in using AAC, including the impact of the type and severity of the patient's disorder, the lack of professional services and support, the therapist's lack of competence, the lack of funding, parents' negative attitudes toward AAC, and so on.

To promote the use of AAC, we need to popularize AAC knowledge increase people's awareness, and try to change the views of the public about AAC, so that they can accept and use AAC. Also, it is very necessary to build a mature AAC service system and improve the quality of AAC service in China. In addition, the professional team should be strengthened

and the clinical training for speech therapists should be increased, for example, by providing AAC-related courses in special education and rehabilitation therapy programs in colleges and universities. The introduction of AAC regulations and policies should also be actively promoted so that AAC can flourish in China.

5. Conclusion

This study aimed to explore speech-language therapists' perspectives on awareness and use of AAC systems, focusing on 3 main aspects: awareness and knowledge, frequency and type of use, education, and training. Results indicated that almost all the therapists had heard of AAC devices. Compared to high-tech AAC, they know and use no-tech and low-tech AAC more often. Results also suggest that a majority of the therapists who work with clients using AAC rate their proficiency in providing AAC services as fair or good. Although they had AAC training, the training time was short and the training was not adequate for them to be comfortable in the clinic. Overall, speech therapists' attitudes toward AAC were positive, not only in terms of positive attitudes toward the meaning and role of AAC but also in terms of their willingness to receive AAC-related training and to use AAC in their clinical settings.

All in all, starting from the current situation of using AAC in China, this study investigated the awareness and use of AAC by speech and language therapists in clinical settings and learned about the attitudes of speech and language therapists toward AAC, the difficulties they encountered when using AAC, and the support they needed. This study can provide a reference for therapists on how to view augmentative and alternative communication correctly and how to use AAC to provide better rehabilitation services for non-verbal clients. Due to the limited resources, only 50 questionnaires were collected, which prevented a more in-depth analysis of AAC applications in China. Future studies could gather perspectives from speech therapists and parents across different regions.

Acknowledgements:

This paper was supported by the Funding Program of Basic Research Operating Expenses of Central Universities (JBKYQN2024-32).

References

- [1] Beukelman, D. R., & Light, J. C. (2020). Augmentative & Alternative communication: Supporting Children and Adults with Complex Communication Needs. Brookes Publishing Company.
- [2] Wangfei. (2015). Research on the teachers' and parents' perspective and application of Augmentative and Alternative Communication. [Thesis]. East China Normal University.
- [3] Drager, K., Light, J., & McNaughton, D. (2010). Effects of AAC interventions on communication and language for young children with complex communication needs. *Journal of pediatric rehabilitation medicine*, 3(4), 303-310. <https://doi.org/10.3233/PRM-2010-0141>.
- [4] Ronski, M., Sevcik, R. A., Barton-Hulsey, A., & Whitmore, A. S. (2015). Early intervention and AAC: What a difference 30 years makes. *Augmentative and Alternative Communication*, 31(3), 181-202. <https://doi.org/10.3109/07434618.2015.1064163>.
- [5] Lloyd, L. L., Fuller, D. R., & Arvidson, H. H. (1997). *Augmentative and alternative communication: A handbook of principles and practices*. Needham Heights, MA: Allyn & Bacon
- [6] Ma Rong-rong. (2013). Application of Augmentative and Alternative Communication (AAC) Systems in the Study of Communication Disorders in Children with Autism. [Doctoral dissertation]. Zhejiang University of Technology.
- [7] McNaughton, D., Rackensperger, T., Benedek-Wood, E., Krezman, C., Williams, M. B., & Light, J. (2008). "A child needs to be given a chance to succeed": Parents of individuals who use AAC describe the benefits and challenges of learning AAC technologies. *Augmentative and Alternative Communication*, 24(1), 43-55. <https://doi.org/10.1080/07434610701421007>
- [8] Ganz, J. B., Pustejovsky, J. E., Reichle, J., Vannest, K. J., Foster, M., Pierson, L. M., & Smith, S. D. (2023). Participant characteristics predicting communication outcomes in AAC implementation for individuals with ASD and IDD: A systematic review and meta-analysis. *Augmentative and Alternative Communication*, 39(1), 7-22.
- [9] Ibrahim, S., Clarke, M., Vasalou, A., & Bezemer, J. (2024). Common ground in AAC: how children who use AAC and teaching staff shape interaction in the multimodal classroom. *Augmentative and Alternative Communication*, 40(2), 74-85.
- [10] Laubscher, E., Pope, L., & Light, J. (2024). "You just want to be able to communicate with your child": Parents' Perspectives on Communication and AAC use for beginning communicators on the autism spectrum. *American Journal of Speech-language Pathology*, 33(2), 716-735. https://doi.org/10.1044/2023_ajslp-23-00254
- [11] Liu Ya-nan, Liu Jian-jun. Application of Augmentative and Alternative Communication in Communication Training of Children with Autism (review). *Chinese Journal of Rehabilitation Theory and Practice*, 2017, 23(4): 410-414.
- [12] Zhang, X. (2012). Intervention and methodological elements of augmentative communication systems for children with autism. Chongqing Normal University. (Doctoral dissertation, Chongqing Normal University).
- [13] Liu, M., & Feng, W. (2013). A review of the research on the Picture Exchange Communication System (PECS) in autism intervention. *Journal of Suihua University*, 33(10), 93-98.
- [14] Qi, H. (2018). The impact of augmentative and alternative communication (AAC) system training on the communicative abilities of nonverbal intellectually disabled children. [Thesis]. Southwest University.
- [15] Qian, Y. (2018). "Promoting the Development of Language and Communication Skills in Children with Autism through the Application of Augmentative and Alternative Communication Systems." *Gejie*, 8, 138-138.