

Opening Up a ‘Whole New World’: Employer and Co-Worker Perspectives on Working with Individuals who use Augmentative and Alternative Communication

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Fourteen employers and co-workers who worked with individuals who used augmentative and alternative communication (AAC) completed a survey describing their employment experiences. A qualitative analysis identified four major themes in the responses: (a) benefits of employing individuals who use AAC, (b) challenges to the employment situation, (c) supports to the employment situation, and (d) recommendations for improving employment outcomes for individuals who use AAC. Respondents identified the following as key factors that had a significant impact on employment outcomes for individuals who use AAC: (a) identification and development of good job matches, (b) educational and vocational preparation, (c) reliability of AAC technology, (d) attitudes of co-workers, (e) accessibility of the workplace, and (f) availability of transportation and personal care services.

Keywords: Augmentative and Alternative Communication; Cerebral Palsy; Employment; Employer; Co-worker; Survey; Qualitative Analysis

INTRODUCTION

Work provides opportunities for financial and residential independence, social interaction, community integration, a sense of self-worth, and a chance to improve overall quality of life (Blackory & Wagner, 1996; Light, Stoltz, & McNaughton, 1996; Odom & Upthegrove, 1997; Schloss, Wolf, & Schloss, 1987; Wehman, 1981). Although obtaining employment is a clearly stated objective of many individuals who use augmentative and alternative communication (AAC), it has remained an elusive goal for many (McNaughton & Bryen, 2002). Compared to the national unemployment rate of 5.7% (US Department of Labor, 2002), it is estimated that over 85% of individuals who require AAC are unemployed (Blackstone, 1993).

While the national picture is bleak, there are a growing number of documented cases of successful employment experiences for individuals who use AAC (Light et al., 1996; McNaughton, Light, & Arnold, 2002; McNaughton, Light, & Groszyk, 2001; Odom & Upthegrove, 1997). Many factors

contribute to successful employment experiences for individuals with severe disabilities, including appropriate educational preparation, barrier free environments, and assistive technology (Roessler & Sumner, 1997).

Previous research with individuals with developmental and acquired disabilities has also indicated employer and co-worker attitudes as a key variable in successful employment (Ochocka, Roth, & Lord, 1994). Employers differ widely in their willingness to provide needed supports for workers with disabilities (Roessler & Sumner, 1997). Clearly, employers play critical roles in relation to creating a climate of acceptance in the workplace and typically serve as major influences on other employees (Wehman, 1981).

Preliminary investigations provide evidence that employer and co-worker attitudes may also play an important role in the employment success of individuals who use AAC (Light et al., 1996; McNaughton et al., 2001, 2002; Odom & Upthegrove, 1997). Much of the research to date, however, is based on the perspectives of individuals who use AAC. There has been no research

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into the perspectives of employers and co-workers toward employment of individuals who use AAC. A better understanding of the perspectives of these two groups is critical to obtaining desired employment outcomes for individuals who use AAC.

Research Objectives

The purpose of this study was to document the opinions and experiences of employers and co-workers who had hired, supervised, or worked with individuals who used AAC and who were employed in a community-based, competitive work environment. Specifically, the aim of the study was to investigate employer and co-worker perspectives of benefits, negative impacts, challenges, and supports in employment situations. A further aim was to investigate employers' and co-workers' recommendations for improving future employment experiences for individuals who use AAC.

METHOD

Research Design

A qualitative research design was used to gain a better understanding of employer and co-worker perspectives. Questionnaires and interviews were used to gather information on the opinions, attitudes, preferences, and perceptions of persons of interest (Borg, Gall, & Gall, 1993). Three survey formats (postal mail, e-mail, and telephone) were used in an effort to increase participant response rates (Salant & Dillman, 1994).

Participants

Selection Criteria

Individuals who used AAC and who had been identified through prior research (McNaughton et al., 2002) as employees were asked to nominate their employers and co-workers to serve as participants. The employees were selected based on the following criteria: (a) they had cerebral palsy; (b) their speech was inadequate to meet their communication needs; (c) they used AAC; (d) they participated in community-based, paid employment; (e) they worked a minimum of 10 hr per week; and (f) they had been employed for a minimum of 3 months at the time of the study. These employees were asked to nominate employers or co-workers who met the following criteria: (a) their employment status was equal to or above that of the employee, (b) they were familiar with

the job responsibilities of the employee, (c) they were familiar with the employee's job performance as it related to expectations for the job, and (d) they were familiar with supports and barriers that helped or hindered the employee.

Description of Participants

Ten employees nominated a total of 14 employers and co-workers who served as participants. Nominated individuals were contacted by e-mail or telephone and provided with a description of the study. All employers and co-workers contacted agreed to participate and provided informed consent.

The individuals who used AAC were employed by a variety of companies, agencies, and organizations: Six worked for organizations that provided government, agency, or educational services for people with disabilities; 2 worked for companies that provided assistive technology for people with disabilities; and 3 worked in areas not directly related to disabilities¹. Three of the individuals who used AAC had worked with their present company or agency for less than a year, 6 had been with their current employer for 1–3 years, and 2 had been with their employer for 3 or more years.

Eight of the participants were supervisors or employers of the individuals who used AAC and 6 were co-workers. Of the 14 employers and co-workers, 7 were male and 7 were female. All reported their ethnicity as Anglo-American. With respect to education, 3 of the participants had obtained a master's degree, 5 had obtained a bachelor's degree, and 2 had completed some college coursework. A summary of employer and co-worker characteristics is provided in Table 1.

Materials

A survey, the results of which are summarized in Table 2, was developed by the principal investigator to solicit information on the experiences of employers and co-workers. The survey content was based on a review of the literature on employment and disabilities, with a special focus on employer and co-worker attitudes and workplace supports. Three researchers who were based at an American university and who were experienced in AAC and employment reviewed an initial draft of the questionnaire and revisions were made as necessary. The survey was then field-tested with an employer of an individual who used AAC to ensure that salient issues had been adequately addressed and that the intent of all questions was clear. The employer was invited to respond to the questions, to comment

TABLE 1 Demographic characteristics of employers, co-workers, and places of employment

Employer ^a	Gender	Age	Employee	Relationship to AAC User	Title	Company/organization	# of employees in workplace	Previous experience ^b
A	Male	NR	A	Employer	Supervisor	Evangelical church	10–50	0
B	Male	40s	A	Co-worker	General Manager	Non-profit organization to promote assistive technology	5–10	0
C	Male	30s	C	Employer	Coordinator of Augmentative Communication Services	Institute that serves as a community resource for people with disabilities	50–250	12
D	Female	40s	D	Co-worker	Therapy Co-ordinator	Agency providing OT, PT, speech services	250 +	10
E	Female	40s	D	Co-worker	Consumer Affairs Specialist	Non-profit office of disability services	10–50	20
F	Female	50s	D	Co-worker	Project Director	Non-profit office of disability services	10–50	9
G	Male	50s	G	Employer	Manager,	Information System Services at a large university	250 +	3
H	Male	50s	H	Employer	Chairman/CEO	Communication technology manufacturer	50–250	7
I	Female	NR	I	Co-worker	Department Chair	Public high school	50–250	0
J	Male	30s	J	Employer	Program Director	Non-profit advocacy organization for people with disabilities	10–50	0
K	Female	40s	K	Employer	Executive Director	Institute that serves as a community resource for people with disabilities	50–250	12
L	Female	20s	L	Co-worker	Project Coordinator of Technology	Educational agency that provides training and technical assistance to school districts through out the state	50–250	0
M	Female	40s	L	Employer	Managing Director	Educational agency that provides training and technical assistance to school districts through out the state	50–250	3
N	Male	NR	N	Employer	Vice President	Software development company	10–50	0

^a For ease of communication, both employers and co-workers are referred to as “Employer”. ^b Previous experience refers to the number of individuals with severe disabilities with whom the employer/co-worker had worked in the past. NR = Not reported.

TABLE 2 Topics and issues addressed in employer/co-worker questionnaire

Topic	Issue
Place of employment	Number of workers
	Goal of place of employment (e.g., manufacturing, sales, printing)
	Work relationship with employee (e.g., employer, co-worker)
Employee activities	Number of hours of work per week
	Length of employment (in months)
	Job responsibilities of employee
	Process by which employee obtained job
Communication activities	Communication activities in the workplace (e.g., one-to-one conversations, large group meetings)
	Most challenging communication activities
Face to face communication techniques	Techniques used
	Most successful technique
	Positive features/difficulties with this technique
	Least successful technique
	Positive features/difficulties with this technique
Written communication techniques	Techniques used
	Positive features/difficulties with these techniques
Employment activities	Most challenging/successful activities
Impact on the workplace	Positive impact of employing individual who uses AAC
	Challenges of employing individual who uses AAC
Recommendations	For individuals who use AAC to improve employment success
	For government to support employment success for individuals who use AAC
	To employers thinking of hiring an individual who uses AAC
	For improving AAC technology to meet the needs of the workplace

on their clarity, and to make recommendations for additional questions. The responses and comments provided by the employer during the field-test were reviewed by the research team, and the questionnaire was revised and edited as required. The final version consisted of 10 multiple-choice questions about demographics, and 19 open-ended questions about the employers' and co-workers' insights into benefits and challenges related to the employment situation².

Questions addressed 10 topics: (a) demographic information on the participant's organization; (b) the hours per week worked by the employee who used AAC; (c) the length of time the employee had held the job; (d) the employee's job responsibilities; (e) the employee's spoken and written communication activities during the work day; (f) employment activities that proved to be challenging for the employee who used AAC; (g) employment activities at which the employee was successful; (h) ways in which AAC technology could be improved to better meet the employee's needs; (i) the impact the employee had on the workplace; and (j) the participant's recommendations for educators, government, technology manufacturers, other employers and/or other individuals requiring AAC who might be seeking employment. Employers and co-workers were not asked questions regarding the employee's work

performance, in order to preserve the confidentiality of the working relationship.

Procedures

In order to accommodate individual schedules and preferences, the questionnaire was distributed to the employers and co-workers via e-mail, postal mail, or read aloud over the telephone, according to the participant's choice. Each participant was asked the same questions, regardless of the means by which he or she responded.

In some cases, the participant had worked with more than one individual who required AAC in the workplace. In these instances, participants were asked to focus on 1 individual as they completed the questionnaire. Surveys completed via telephone interview were tape-recorded using a hand held audiocassette recorder (Sony model TCM-459VTM) that was connected to a telephone; the taped interviews were subsequently transcribed. Follow-up questions were conducted with any participant whose answers were unclear or incomplete.

Data Analysis

Employer and co-worker responses to the survey questions were transcribed verbatim. Data analysis

then followed a five-step process, adapted from Vaughn, Schumm, and Sinagub (1996) and Yin (1994). First, transcriptions were unitized according to Lincoln and Guba's (1985) definition of a unit as the "smallest piece of information about something that can stand by itself . . . interpretable in the absence of any additional information other than a broad understanding of the context in which the inquiry is carried out" (p. 345). These units were typically a single phrase or sentence (e.g., "The government should provide reliable and customer responsive wheelchair transportation").

Next, the units were reviewed and organized into themes on the basis of topic and content. As part of this process, operational definitions for the themes were developed by the third author and used in the sorting of information. The units of information coded for a particular theme (e.g., benefits of employment) were reviewed to identify the existence of sub-themes (e.g., benefits for the employer).

As a third step, the researchers used the operational definitions to code the data for samples of text drawn from the discussion. The researchers met to review areas of agreement and disagreement, to create new themes and sub-theme titles for information that was not addressed by the original themes identified, and to adjust theme titles and operational definitions, as necessary.

Four themes were identified: (a) benefits of the employment situation, (b) challenges to the employment situation, (c) supports to the employment situation, and (d) recommendations for improving employment outcomes. Complete definitions are provided in the Appendix.

The unitized data were organized into four categories: (a) participant's identification code; (b) questionnaire response number; (c) numeric code (for the coding theme and subtheme); and (d) unitized data (i.e., participants' comments). The operational definitions were then used by the third author to code all of the data. On completion of the thematic coding of the data, a reliability check was conducted with a trained coder, a graduate student in speech language pathology familiar with the operational definitions of the codes and coding procedures. Twenty percent of the data was randomly selected and recoded by the researcher and the graduate student. The Cohen's Kappa (Suen & Ary, 1989) agreement score was 0.91. Kappa values above 0.81 are considered to be "almost perfect" (Landis & Koch, 1977). Disagreements were resolved through discussion.

RESULTS

The results of the current study are presented according to the four major coding themes

identified earlier: benefits of the employment situation, challenges presented by the employment situation, supports to the employment situation, and recommendations for improving employment outcomes.

Benefits of the Employment Situation

This first theme identified in the employer and co-worker responses dealt with the benefits of the employment situation. Three subthemes were identified in this category: benefits for the individual who used AAC, benefits for the employer, and benefits for the general public (see Table 3).

Benefits for the Individual who used AAC

Employers and co-workers reported three ways in which employment was beneficial for the individual who used AAC: opportunities for positive social interaction, personal enjoyment, and financial gains. Employer E, for example, presented the idea that employment provides new opportunities for social interaction that may not typically occur for individuals who use AAC: "Working in a workplace is a social activity that forces communication interaction and gets the individual who uses AAC into more contact with more people and into more situations." Employer L felt that social opportunities might be one of the more important aspects of having a job for individuals who use AAC: "I really believe that Employee L enjoys [the social part] of his job the most. He thrives on interactions with others at work." Other employers and co-workers felt that the individual who used AAC experienced an overall personal enjoyment as a result of being employed. Employer N commented that, "Employee N always seemed to be upbeat and positive. I think he enjoyed it." Financial benefits for the individual who used AAC were also noted, as reported by Employer C: "The position Employee C has now is actually a fully paid, pretty generously paid, position."

Benefits for the Employer

In addition to benefits to individuals who used AAC, employers and co-workers also reported several ways that they or their company as a whole had benefited from employing an individual who used AAC. The most notable benefits discussed were personal inspiration, the positive effect the employment situation had on other employees, the impressive work performance of the individual who used AAC, the loyalty displayed by the individual who used AAC, and

TABLE 3 Summary of themes, sub-themes, and examples of benefits to employing individuals who require AAC

Themes	Sub-themes	Examples
Benefits of the employment situation	Benefits for individual who used AAC	Social interaction Personal enjoyment Financial gains
	Benefits for employer	Personally rewarding Positive effects on other employees High quality work performance by employee Advantage for grant competitions Loyalty of the employee Ability to fill a “hard to fill” position
	Benefits for general public	Abandonment of stereotypes of people with severe communication impairments Increased awareness of AAC Visible positive role models for other individuals who use AAC

the ability of the individual who used AAC to succeed in a “hard-to- fill” job position.

With regard to feelings of personal inspiration, Employer H, an executive in an assistive technology manufacturing firm, stated, “Working with an individual who uses AAC can be an empowering experience.” Employer B, co-manager of a non-profit firm promoting assistive technology, added, “Getting to know Employee A has opened up a whole new world for me.”

As previously stated, any employers and co-workers also acknowledged the positive effects the employment situation had on other employees in the workplace. Employer A stated:

The benefits to your other employees by having this person in your organization will be astounding. You will find them nervous and apprehensive at first, but after they see what a person using this kind of technology can do, they will be amazed. You will see morale go up.

Employer K discussed how Employee K’s work as a disability advocate had an impact on their disability-related organization:

It brought authentic voices to the subject we teach. It taught us more about accommodating a diverse workforce. It gave us credibility within the disability community. It really reflects who we are, our mission, our vision, and our values. It made our training and our teaching much more powerful, authentic.

Employer N spoke about the influence Employee N had on his computer software company in terms of company morale: “I think it made the company feel good as a whole to know that they

had given this guy a chance and he was doing a decent job.” Employer B described the impact Employee A had on others in the workplace: “Because of Employee A’s extremely difficult physical situation, he truly provides motivation to those around him. Because of his ‘can do’ attitude, others around him are impacted to recognize how good they have it in life.”

The talent, skills, and performance of the individuals who used AAC in their job-related tasks were also seen as benefiting employers and co-workers. Employer J commented on Employee J’s performance as a disability advocate: “He knows the law and regulations related to disability rights and does very well at contacting non-compliant entities and advocating with them to become compliant.” Employer C had similar thoughts on Employee C’s performance in disability-related training sessions: “The sessions Employee C did on making phone calls, hiring personal attendants, those went really good. He really did a hell of a job when he came in the first time.” Employer H felt that Employee H’s input on the technological design of their company’s product made a “direct contribution to improved product features”. In the case of an organization that competed for federal grants, Employer F reported that by demonstrating the willingness to hire an individual with a severe disability, the organization had a competitive advantage that helped them win a grant.

The employers and co-workers also felt that they had benefited from the strong sense of loyalty displayed by employees who used AAC – something that was not always evident with other employees. Employer K described one particular incident that illustrated Employee K’s dedication to his job: “He needed to be somewhere the next morning, and he had (been having)

some trouble with paratransit³, which was always a problem. He slept on the floor here (at the office), so he could be here (on time). So, the motivation is extraordinary and I do respect that.”

Finally, Employer G reported how, in hiring Employee G, he had filled a position that was otherwise difficult to fill:

Employee G performed (well) with numbers and doing that task she was 100%. Here's the beauty of this. She could put in a social security number in roughly 10–15 s, using the (on-screen) numeric keypad because the head movement was really small. And that would generate, say, 10 reports. But she would have to wait on the system. And that would give her a breather and a rest, because intensive movement with the head and neck got very tiring after a while. And nobody else wanted to do that job because they had to sit there and wait on the printer.

Benefits to the General Public

In addition to the benefits for individuals who used AAC and their employers and co-workers, some of the participants discussed the benefits for the general public and society at large. Specifically, employers and co-workers talked about abandonment of stereotypes, increased awareness of AAC, and visible positive role models for other individuals who use AAC.

Many employers and co-workers felt that employing an individual who used AAC helped to overcome social stereotypes about people with severe communication impairments. Noted Employer E: “Use of electronic AAC tears away the stereotypes about people with severe cerebral palsy as being ‘retarded’ or whatever, as it is clear that Employee D has plenty to say and can use vocabulary to the same degree as anyone else.” Employer I concurred: “[Hiring Employee I] sends a strong, positive message that people with severe disabilities can function and contribute to the workplace. I think it has opened many people's eyes to what technology can do to improve life for people who have a disability.”

Other employers and co-workers reported that the presence of AAC itself in a work environment increased public awareness of communication technology. Employer I noted that employing an individual who uses AAC benefited “people unfamiliar with such sophisticated assistive technology [and they] get to see it in action.” Lastly, Employer C commented that because Employee C is an augmentative communicator

himself, he “set a real positive role model” for other individuals who use AAC.

Challenges to the Employment Situation

Despite the many benefits described, employers and co-workers also discussed challenges to the employment situation, specifically factors that impeded the ability of individuals who used AAC to participate in the workplace. Nine sub-themes emerged from this theme: challenges finding a good job match, challenges with communication, challenges with accessing traditional office tasks, challenges with education or vocational skill level, lack of knowledge of traditional work culture, physical challenges, need for assistance from others, challenges with accessibility, and financial challenges (see Table 4).

Challenges to Finding a Good Job Match

With respect to this sub-theme, job placements that imposed minimal physical demands, yet still produced a valued product (i.e., “low input, high output”) were seen as key components of a good job match. Employer G commented that finding a position of low-input and high-output was “a big order” and that during the course of Employee G's employment many of the jobs that had been a good match were automated and were done by computers.

One of the challenges associated with finding a good job match was obtaining a realistic picture of an employee's skills. Employer C felt that some of the challenge might lie in the perceptions individuals who used AAC: “I think a lot of [individuals who use AAC] have been told they have more technical skills than they actually do. I think that's a real issue and if you are hiring someone to do a skill, you need to make sure they have that skill.” The issue of honest feedback to individuals who used AAC was also raised by Employer K: “This man, I don't think he ever got feedback. And he had almost completed a university degree. I think that's absolutely patronizing.”

Employers and co-workers also discussed factors that were of assistance in identifying or developing a good job match for individuals who used AAC. Past experience working with individuals with disabilities was helpful, but working with individuals who used AAC sometimes presented special challenges. As Employer G, who had had previous experience working with individuals with visual impairments, stated, “I thought I had a reasonable idea of what I was getting into. But basically, once I got into it, I was almost somewhat [sic] over my head.”

TABLE 4 Summary of themes, sub-themes, and examples of challenges to employing individuals who require AAC

Themes	Sub-themes	Examples
Challenges to employment situation	Challenges finding a good job match	Lack of “low-input, high-output” jobs Difficulty obtaining realistic picture of employee’s skill Unrealistic perception of personal skills by individual who used AAC Employer’s feelings of being overwhelmed with responsibility
	Challenges with communication	Increased time for communicative exchanges Difficulty with unaided and “low tech” means of communication Difficulty speaking in noisy places Difficulty with unfamiliar partners Reluctance of coworkers to socialize Unreliability of equipment
	Challenges with access to traditional office tasks	Difficulty using the telephone Lack of privacy using the telephone Difficulty accessing the computer Inability to manipulate paper material
	Challenges with education or vocational skill level	Insufficient education Insufficient literacy skills Lack of work experience Unrealistic perception of skills/abilities given by Office of Vocational Rehabilitation counselor or other advocate Difficult to provide training in basic skills in the workplace
	Lack of knowledge of work culture	Lack of awareness of office etiquette
	Physical challenges	Difficulty in using office equipment Difficulty eating
	Need for assistance from others	Assistance with troubleshooting assistive technology/ AAC equipment Assistance with activities of daily living Lack of consultation from a rehabilitation specialist, job coach or other employment specialist Lack of mentors who use AAC
	Accessibility challenges	Difficulty with accessible workplace environment Difficulty with transportation Difficulty with accessible business travel
	Financial challenges	Fear of increased insurance costs to company

Challenges with Communication

The most commonly mentioned examples of the multiple challenges associated with communicating using AAC were (a) the increased time required for exchanges with co-workers; (b) the inability of communication partners to understand unaided (e.g., gestures, speech approximations) or low tech (e.g., communication boards) means of communication; (c) difficulty speaking in noisy places; (d) difficulty with unfamiliar partners; (e) reluctance of co-workers to socialize; and (f) the challenge of communication technology not working when it was needed.

The increased time needed for communicative exchanges when an individual was using AAC

was the most frequently cited concern of employers and co-workers. Employers and co-workers stated that AAC devices were far slower than natural speech and required communication partners to wait for extended periods of time for a response or comment from the individual who used AAC. Employer G described his attempts to help Employee G troubleshoot a computer problem:

Waiting for her to explain and try to demonstrate the problem requires enormous patience. Things will take much longer. And you tend to get nasty, like ‘come on, get the next word,’ but you can’t do that when they have to go through a long process

[of inputting into the device]. So it was just something that was really a big problem.

Many employees recognized the challenge of the slow rate of communication and would, at times, use unaided or low-tech means of communication. Although unaided and low-tech means of communication are based on techniques that are quick and easy to use (e.g., gestures, speech approximations, pointing to vocabulary on a communication board), they often require more involvement from the listener. In some situations, these techniques allowed the individual who uses AAC to rapidly exchange simple information; in other situations, they led to breakdowns during communication exchanges. Employer G, for example, commented that Employee G's communication board was "not as effective" as her computer-based device and that her gestures were "often unclear".

Other external factors, such as environmental noise and the inexperience of communication partners, contributed to communication challenges. Employer F remarked: "Communicating in crowded or noisy places" was difficult for Employee D, and Employer A observed "large spaces that echo" made it hard to hear the voice output of the AAC device.

Employers and co-workers reported that communication partners who were less familiar with individuals who used AAC or the communication devices (e.g., new employees or business clients) posed more challenges than those who were familiar with individuals or devices. Employer B explained: "Most people don't know when they ask Employee A a question that he has to type out an answer for them. The biggest challenge we face is making people aware of how to best communicate with Employee A."

In some situations, employers and co-workers noticed a significant lack of socialization between the individual who used AAC and other co-workers. Employer G described his experience with Employee G's co-workers: "I think probably 80% of the people that worked in that building would not set foot at (her) door to provide any social communication with Employee G."

Lastly, there existed challenges with the AAC technology itself, especially because many of the devices utilized by the employees operated on rechargeable batteries. Once the battery charge ran out, the device was rendered unusable until it was charged again for a number of hours. Employer E summed up this issue by stating, "Dead batteries are a nightmare!"

Challenges with Accessing Traditional Office Technology

The third sub-theme identified was challenges with accessing standard office technology. Overall, employers and co-workers reported that individuals who used AAC had limited access to the telephone, limited privacy when using the telephone, limited access to standard personal computers, and restricted access to tasks that required them to physically manipulate paper material (e.g., instruction manuals, memos, reports).

Difficulties communicating effectively over the telephone — both with and without an AAC device — were reported by several employers and co-workers. Employer A, for example, offered this observation: "Using the telephone is very challenging for Employee A because most people mistake the electronic voice as either a sales or crank call." Added Employer N:

(On the telephone) you don't have the added benefits of the facial cues and stuff like that, that would help you. When somebody's sitting there and you are face to face when they are poking things out on that Liberator thing, you're watching him and you can tell when they're done. On the phone all you can hear is that "ding, ding", and you're like, "Hmmm, what's going on?"

In many cases, a speaker phone was required in order for the individual's voice to be transmitted over the phone. One employer reported that this, in turn, reduced or eliminated any privacy during telephone use.

Many employers and co-workers said that individuals who used AAC had difficulty accessing standard computers. Such challenges included difficulty with accessing assistive hardware and software and problems interfacing an AAC device with a computer. The employers and co-workers described unreliable equipment, physical and architectural barriers to accessing company computers, and difficulties navigating through company computer systems, which required multiple steps to start (e.g., password protected programs). As an example, Employer C described some of the situations Employee C faced:

[The AAC device] is a large piece of equipment and when he's working on the computer and everything, it gets to be a lot of things in front of him and he starts to have trouble with reaching. The other thing we encountered here was, and this is actually a

big one, a lot of places have networked computers, they have a lot of the features under (electronic) “lock and key”, like the accessibility features. So at some of the labs, it’s very difficult to just go in and turn on Sticky Keys⁴ and Mouse Keys⁵.

Challenges with Education or Vocational Skill Levels

The fourth sub-theme to arise had to do with individuals’ education or vocational skill levels. Two employers found that their employees who used AAC were poorly educated and had inadequate literacy skills. Furthermore, they and the co-workers reported that these deficits surfaced only after the employee had been hired and worked for a period of time. They suggested that the Office of Vocational Rehabilitation (OVR) counselors or other advocates for the individual had provided an unrealistic description of the skills of the individual who used AAC. Employer G explained:

Determining what they really know, and their true education level (is challenging). You quickly learn that “graduated high school” may not have (any real) meaningAs far as we could tell, we had someone reading at a third or fourth grade level . . . [Employee G did not know the meaning of] words like ‘dismissed’ or ‘empowered’, things that we could have used to provide a job opportunity to allow Employee G to do searches on various things. And that was a real problem. You’re likely to find out things that are going to surprise you considerably from the reports you get from the case workers and OVR, that indicate the person’s education level.

While employers were willing to provide training in specific tasks, addressing basic skill deficits in reading and writing was seen as more challenging. Employer K agreed that individuals who use AAC are “not being properly educated to be working adults” and felt that “the schools have failed them”.

Lack of Knowledge of Work Culture

This fifth sub-theme focused on individuals’ lack of familiarity with acceptable standards relating to actions, etiquette, and appropriate dress in professional office settings. Some employers and co-workers reported that they felt their employees had limited knowledge of these “customs” and acted in ways that were atypical for the workplace. Employer K described a situation in which

an employee interrupted a private meeting; she attributed this lack of awareness of office etiquette to a lack of employment experience.

Physical Challenges

The sixth sub-theme consisted of challenges that resulted from the physical limitations among many of the individuals, whose impaired motor control (associated with cerebral palsy) had resulted in muscle spasticity and difficulty with daily living activities such as eating. According to some employers and co-workers, these physical challenges subsequently had an impact on their daily job performances as well as on how others perceived them. Employer E felt that these issues might “put off employers or co-workers and create difficulties.”

Need for Assistance from Others

The physical challenges experienced by individuals who required AAC led to this seventh subtheme. Employers and co-workers reported various ways in which the individuals who used AAC required assistance throughout the day. Some employers and co-workers mentioned the need to assist individuals who used AAC with maintaining their assistive technology and the importance of being familiar with the equipment. Employer G explained:

I think probably everybody in the place felt the amount of work to keep up her AAC equipment, (her) headset in (the) proper place so it was aimed properly, making sure that the computer was booted properly, clear jams. Everybody in the place felt, at times, overburdened (and) that this was something they wished they didn’t have to do.

Employer C felt that assisting with technology was such an integral part of Employee C’s employment situation that, “If the employer wasn’t as savvy [with technology], they wouldn’t be able to go through all this [troubleshooting] stuff with him and it wouldn’t work as well.”

Employers and co-workers also discussed the need for assistance with daily living activities, whether provided by co-workers themselves or by hired personal care assistants. Employer F described these challenges: “In the past, one co-worker objected to being expected to remove/put on Employee D’s hat, coat and mittens. She complained to HR [Human Resources].” In some cases, the individuals who used AAC required vocational rehabilitation support or a job coach to help meet the demands of the job.

All individuals who start a new job need assistance and often turn to their peers for help; however, this posed special challenges for individuals who used AAC and especially if they needed help with disability-related issues. One employer noted the lack of other individuals with severe disabilities in the workplace to whom individuals who used AAC could turn for support and the need for external support groups.

Accessibility Challenges

The eighth sub-theme, accessibility challenges, included wheelchair accessibility to the workplace environment, transportation, and business travel. Many employers and co-workers reported that reliable, accessible transportation was a critical issue. Employer C stated that finding reliable transportation services was “a major challenge”.

Difficulties with transportation meant that employers had to pay additional attention to planning and accessibility issues. While working with Employee D, Employer D reported that she was forced to always consider location when scheduling presentations, consultations, and work-related social functions. She also said that although many travel services (e.g., buses, hotels) may claim to be accessible, their accommodations are not always appropriate for individuals with severe physical disabilities.

Financial Challenges

The final sub-theme was financial challenges. One participant suggested that increased insurance costs to the company may dissuade employers from hiring individuals with severe disabilities, although this had not been a factor at her place of employment.

Supports to the Employment Situation

Although employers and co-workers described significant challenges faced in working with an individual who used AAC, they also mentioned many supports that enriched or improved the situation. Six sub-themes were identified: supports to communication, supports to accessing traditional office tasks and activities, supports to education or vocational skill level, personal care assistance, accessibility supports, and the personal commitment of the employer and co-workers (see Table 5).

Supports to Communication

This first sub-theme included face-to-face and/or written communication support. Significant

examples included AAC devices, the employee’s personal communication skills, and the co-workers’ willingness to take extra time during social interactions with the employee.

Overwhelmingly, employers and co-workers commented that AAC devices were key supports to clear communication. The use of voice output communication aids was described by participants as “very effective,” as leaving “little ambiguity,” and as a “successful way to convey details of thoughts and feelings to others.” The use of pre-programmed vocabulary and phrases in AAC devices was also viewed positively.

In addition to AAC technology, employers and co-workers emphasized the importance of the personal communication skills of the person who used AAC. Specifically, employees were described as “witty”, “articulate”, and “using a wide range of vocabulary”. Employers and co-workers stated that the more time co-workers spent in communication interactions with individuals who used AAC, the more successful was the exchange. Employer J explained: “[Communication] is successful because both Employee J and the people he usually communicates with at the office take the time to try and make it work. When things aren’t understood, we take time to ask again.”

Supports to Accessing Traditional Office Tasks and Activities

This sub-theme included supports that allowed otherwise inaccessible office tasks or activities to be completed by individuals who used AAC. Examples of such supports were (a) providing alternative access to computers and other office equipment, (b) technical competence of the individual who used AAC, (c) limiting the overall need to use the telephone or to participate in spontaneous conversation tasks, and (d) having other employers and co-workers work together with individuals who used AAC.

The importance of assistive computer hardware (e.g., expanded keyboard, trackball mouse) and software (e.g., on-screen keyboard, Sticky Keys™) was heavily emphasized. These assistive technologies proved crucial in allowing many employees who used AAC to carry out typical office tasks that required use of the computer (e.g., writing reports, sending e-mail, developing web sites, conducting Internet searches, and maintaining databases). These assistive technologies often served as an impressive complement to the skills of individuals who used AAC. Employer B reported that, “With complete control of his computer, there is very little Employee A can’t do.”

TABLE 5 Summary of themes, sub-themes, and examples of supports to employing individuals who require AAC

Themes	Sub-themes	Examples
Supports to the employment situation	Supports to communication	Use of a high-tech AAC device Use of pre-programmed phrases and acceleration techniques in high-tech AAC devices Communication skills of person who uses AAC (e.g., being witty, articulate) Co-workers taking extra time during social interactions
	Supports to accessing traditional office tasks and activities	Alternative access to computers Person who uses AAC's ability to be "tech savvy" Employer's willingness to modify tasks and activities
	Supports to educational and vocational skill levels	Literacy training Skills and talents acquired through personal experience Specific training in use of AAC device
	Personal care assistance	Personal care attendant Coworker support with activities of daily living Family support with activities of daily living
	Accessibility supports	Inclusion of individual who uses AAC in business travel planning Use of telecommunications at conferences or off site work Use of county or state funds to make accessibility modifications to workplace (e.g., ramped entrance to building)
	Personal commitment of employer and co-workers	Employer's and co-workers' willingness and commitment to people with disabilities

Given the importance of assistive equipment in the workplace, employers and co-workers also felt it was advantageous for individuals who used AAC to be "tech savvy" and to be able to use such technical tools with minimal assistance. Such was the case with Employee C, who lived hours away from his actual workplace but was able to remain employed by the organization because, as Employer C explained, he had "a really good handle on the technology end of things."

Employers and co-workers also reported that they made modifications to job tasks to facilitate employment by individuals who used AAC. As an example, when Employee A's job required public speaking at various events, Employer A noted that they "often worked on [speeches] together so that he could present the topic or passage and then someone else could help him field questions or comments." Similarly, Employer N described how he modified regular supervisor/employee meetings for Employee N:

I tend to talk kind of fast and unload things on people. I almost insist that people have a pen and paper and write down what I say so I don't have to repeat myself. I found what I would do is explain things to Employee N, then I would always follow up with a short written memo of what we had talked about so that he would have it.

Supports to Education or Vocational Skill Level

The third sub-theme involved employer and coworker reinforcement of previous and current skills. Employers and co-workers noted literacy training and previous work experience as valuable and also acknowledged acquired skills, talents, and personal characteristics. When describing Employee I's role as a special education teacher, Employer I felt that he was "extremely knowledgeable about special education, given his own personal experience [as a young student in such classes]." Employers and co-workers also spoke to the importance of specific training in the use of the AAC devices so that the employees would become proficient users in the workplace.

Personal Care Assistance

The fourth sub-theme focused on the individual's need for assistance from others, with employers and co-workers identifying personal care assistants as primary forms of required support. Personal care assistants were reported to work part-time and full-time, with some paid directly by the employee and others funded through outside sources. Employer K emphasized the importance of personal care assistants and described how her organization funded their

wages: “We built it into our grant and the Office of Vocational Rehabilitation puts in a little bit. We build in; in the same way we would build in a secretary as an assistant, we build in a work-related assistant.” Employer C described an arrangement that allowed funding for personal care assistants in the employee’s home state to be transferred to a different state, in order to accommodate the employee’s needs during business travel. One co-worker also reported that she or other co-workers provided assistance with daily needs such as removing or putting on a coat and filling the water dish of an employee’s assist dog. Finally, family support from a parent or spouse was mentioned as a “key ingredient” in supporting people who used AAC on the job.

Accessibility Supports

A fifth sub-theme of supports to employment included identification and procurement of accessibility supports. Identified activities included consultation with the individual who used AAC when making business travel arrangements, the use of telecommunications, and obtaining funding for accessibility modifications to the workplace.

Employer D reported that involving Employee D in business travel plans provided more insight into the potential problems with accessibility and was a good way to prevent many unfortunate situations. Employer K felt that technology had provided ways to overcome unforeseeable accessibility dilemmas, and cited an example of how telecommunications was helpful:

I had a presentation that Employee K was participating in and he was in a major state conference and I had a panel of AAC users. There was a huge snowstorm. Well, wheelchairs and snow don’t go well together. We had prepared for this. We had everyone hooked up by speaker phone.

Lastly, some employers and co-workers discussed physical modifications to the workplace. Employer N added that his local county had contributed funds to put a wheelchair ramp in his building so that Employee N could enter.

Personal Commitment of Employer

The final sub-theme within supports to employment was the personal commitment of employers and the conscious efforts put forth to improve quality of life for employees who used AAC. Employer G described his enthusiasm when hiring Employee G:

I had worked with the blind, the visually handicapped, for 7 to 8 years at that point and I thought I had solved a lot of problems ... this person Employee G can actually type words into a computer using that system and I said, “Gee, I could put this person to work” and I (felt) very positive at that point.

At times, it was an entire staff that worked to create an inclusive environment. As Employer G commented, “A lot of people, a lot of the staff rose to the challenge to create a viable position.”

Recommendations for Improving Employment Outcomes

Recommendations for improving employment outcomes was the final major theme. Five subthemes were identified, including recommendations to technology manufacturers, government, other employers, other individuals who use AAC, and professionals in the field of ACC. A summary of recommendations for improving employment outcomes is provided in Table 6.

Recommendations to Technology Manufacturers

When asked how AAC devices and assistive technology could be improved to maximize employees’ abilities, employers and co-workers had many recommendations for technology manufacturers. Finding ways to help people who use AAC to communicate at faster speeds was the most frequently observed response. Providing wireless access to the Internet and improved interfacing for telephone services were other frequently identified priorities. Improved reliability was also important to employers and co-workers. As Employer G commented, ensuring that “the staff around (the individual who used AAC) didn’t have to intervene to fix things is just a huge issue.” Other significant recommendations included (a) easy wireless interfacing with computers, (b) a detachable speaker that could be mounted in different positions, (c) the creation of a “rewind” button so that device activity immediately prior to a break-down or freeze could be observed, and (d) providing a screen so that the communication partner could read the text as it was entered into the device. Two participants also suggested the incorporation of business accessories, such as a pager, appointment book, business card, and cellular phone, into the AAC device.

TABLE 6 Summary of recommendations for improving employment outcomes for individuals who use AAC

Sub-themes	Examples
Recommendations to technology manufacturers	<ul style="list-style-type: none"> Increase speed of input techniques for AAC device Provide wireless internet access Provide a detachable speaker Improve reliability Create a “re-wind” function so activity immediately before breakdown can be observed Provide a screen for communication partner Improve interfacing of AAC device with telephone Incorporate of typical business tools into AAC device Improve interfacing of AAC device with computers
Recommendations to government	<ul style="list-style-type: none"> Provide funding for personal care assistance services Improve government income support for employed people with disabilities Support reliable, accessible transportation Offer tax incentives for hiring an individual who uses AAC Provide funding for workplace adaptations and assistive technology equipment Simplify the process which provides people with AAC devices Create a job skills/ work experience program for individuals who use AAC Include AAC in disability awareness campaigns
Recommendations to employers	<ul style="list-style-type: none"> Focus on the individual’s talent and skill, not on their physical disability Be familiar with AAC and assistive technology Have a back-up plan when things don’t go as planned Communicate regularly with individual who uses AAC to avoid potential problems Be ready to make adaptations and modifications Model best ways to communicate with the individual who uses AAC for other employees
Recommendations to individuals who use AAC	<ul style="list-style-type: none"> Get adequate education Work part-time, volunteer, do internships to gain work experience Get work experience early in life Network with friends and family to find job opportunities Take responsibility for being prepared and for having back-up plans in case of break-downs Pre-program device with employment vocabulary Become proficient in use of AAC device Be open with employer about challenges/limitations Educate employer and coworkers about AAC Learn how to manage personal care assistants Go to job fairs for people with disabilities Ask for feedback on vita and job search techniques Demonstrate positive attitude
Recommendations to professionals in the fields of employment and/or AAC	<ul style="list-style-type: none"> Create a <i>How to Hire Someone who Uses AAC</i> guide Support a program that offers job training to high school aged individuals who use AAC Create a program that teaches individuals who use AAC job retention skills

Recommendations to Government

Several recommendations were made to government agencies to improve employment experiences for individuals who require AAC. Suggestions included creating AAC and disability awareness campaigns, providing funds for personal care assistant services, improving Medicaid⁶ support for employed people with disabilities, developing reliable accessible transportation, creating a job skills/ work experience program for individuals who use AAC, offering tax

incentives for hiring employees who require AAC, and providing financial support for workplace modifications and the purchase of assistive technology. Employer K provided this perspective on the issue of personal care assistants:

[Government should] recognize that there may be additional expenses. I can see that going into the business world and saying that this person needs personal assistance services [might be hard], but yet, all of us need assistance. You know, there are secre-

taries, well, that's a personal assistant. So, it's really broadening our notion of ... how people are really interdependent.

Employer K also added her hopes for improving Medicaid policies:

I would love to see every state buy into a Medicaid [policy] where it essentially says that if you're a qualified person with a disability and you work and you no longer get your Social Security Income⁷ that you don't lose your Medicaid. That will take a huge barrier away.

Recommendations to Employers

Employers and co-workers had numerous recommendations for employers who employ, or who may be considering employing, an individual who requires AAC. Some suggestions were general in nature, such as "Focus on the person, their expertise, talent and skill, not their physical disability," and "Don't underestimate the capabilities of a person with a disability." Other suggestions dealt with more specific ways to avoid problems, such as communicating regularly with individuals who use AAC in order to identify any potential problems, becoming familiar with AAC and assistive technology, and being ready to make adaptations and modifications. Participants also spoke of the importance of modeling appropriate communication skills and attitudes for co-workers, and demonstrating that individuals who use AAC are valuable members of a the team. Employer E made the following suggestion to employers: "Walk around with the AAC user a couple of times the first few days ... Introduce him and model how to interact with him; for example, pausing, waiting for responses ... the idea should be preemptive and proactive to forestall communication breakdowns."

Recommendations to Individuals who use AAC

Employers and co-workers had a large number of recommendations for individuals who use AAC who are entering the work force. Again, the recommendations ranged from general advice to specific ways to approach particular difficulties.

First and foremost, employers and co-workers felt that it was crucial for young individuals who use AAC to get an adequate education and get as much job training and experience as possible. Three participants (Employers E, K, and L) felt that individuals who use AAC could accomplish this by following the "natural path to employment" and seeking out jobs in the same manner as

their same aged peers without disabilities. The participants suggested that teenagers who use AAC should try part-time work or volunteering to gain knowledge about the work culture at a younger age. Other employers and co-workers advised individuals who use AAC to network with friends and family as a means to find available jobs, and to take advantage of job fairs for individuals with disabilities. They noted that human resources personnel at job fairs might be willing to evaluate resumes and give feedback on effective job search strategies. The importance of first impressions during interviews was emphasized, as was the need to present a professional appearance. Suggestions included "erring on the conservative side" in terms of dress and haircuts.

Participants emphasized the importance of being open with potential employers about physical limitations. Employer E advised individuals who use AAC to anticipate employer concerns and address them head-on in the interview: "I don't know if you were wondering about this, but I hire my own PCA (personal care assistant), and I am only asking you to accept his presence in the workplace. . . ."

Individuals who use AAC were also advised to be prepared to work in a business environment. The following were key recommendations: (a) ensure that their AAC device always has the relevant employment vocabulary pre-stored for rapid retrieval; (b) ensure that they are proficient users of their AAC systems; (c) ensure that, as applicable, employers and co-workers are made aware of the presence and responsibilities of a personal care assistant and to provide feedback on a regular basis; and (d) be ready to deal with breakdowns, whether they are related to technology, personal care assistance, or transportation and to always have a "back-up to the back-up" (Employer K). As Employer K stated:

We know Paratransit is not going to show up, and we know that personal assistants are not going to show up, and we know your device is going to break. So, what's your back-up to that? If someone is going to do a presentation to one of our classes on assistive technology, I don't want the excuse, "Oh gee, the device broke". Have a back-up. These are the realities and they will happen.

Finally, employers and co-workers spoke of the importance of individuals who use AAC to maintain a positive upbeat tone. The workplace presents many challenging communication situations, and individuals who use AAC were encouraged to be sensitive to the "subtle char-

acteristics of communication” (Employer M) and to be ready to use humor, as appropriate, to diffuse “sticky situations” (Employer E).

Recommendations to Professionals in the Field of AAC

Finally, employers and co-workers made recommendations directed towards rehabilitation professionals in the field. Specifically, they recommended that rehabilitation professionals create a *How to Hire Someone Who Uses AAC* guide, that they develop programs that offer job training to individuals who use AAC in public schools, and that they establish programs that teach job retention skills.

DISCUSSION

The 14 participants in this study represented a variety of companies and organizations; however they described similar benefits and challenges in employing individuals who use AAC. The participants in this study also took an active role in creating a positive work environment for these individuals. These topics are discussed in the sections that follow.

Benefits of Hiring an Individual who uses AAC

Like other employers of individuals with disabilities, the employers and co-workers in this study identified many of the same benefits of hiring individuals who use AAC. Dedication to the job, the quality of the work, and the personal satisfaction of providing an individual with a disability with an opportunity to demonstrate their competence were all factors identified in both the current study and in previous research (Nietupski, Hamre-Nietupski, Vanderhart, & Fishyback, 1996). Employers and co-workers in this study also highlighted the positive impact of hiring an individual who uses AAC on morale in the workplace.

Challenges in Hiring an Individual who uses AAC

The employers and co-workers in this study identified many of the same concerns as employers in previous studies. Challenges included restructuring and developing appropriate jobs (Gilbride, Stensrud, & Connolly, 1992) and the need for skill training for individuals with disabilities (Nietupski et al., 1996).

Unique to the employers and co-workers in this study was an extensive discussion of specialized supports associated with more severe

disabilities. Individuals who use AAC may present with needs above and beyond those observed with other individuals with less severe disabilities, including personal care assistance; support in the selection, use, and maintenance of assistive technology; and assistance with transportation. Challenges with communication, especially rate of communication, were a central concern of employers and co-workers in this study. Although participants spoke highly of the positive impact of AAC technology, they also noted that existing devices did not fully meet the demands of the workplace.

One final difference was found in the results of the current research compared to previous studies and this related to advancement within the company. In a survey of employers with little or no experience with individuals with disabilities, Greenwood, Johnson, and Schreiner (1988) reported that potential employers were concerned that individuals with severe communication impairments would not be able to perform essential job tasks or would have little or no ability to advance in the company or organization. In contrast, employers and co-workers in the current study, who actually had experience working with individuals who used AAC, indicated that employees who used AAC displayed a high quality of work performance. Furthermore, many employees in the current study reportedly started in volunteer or entry level positions and gradually moved into more advanced positions over time.

Role of the Employer

The employers and co-workers in the present study were active in creating positive work environments for their employees. Similar results have been reported both with employers of individuals with acquired (McNaughton et al., 2001) and developmental (Ochocka et al., 1994) disabilities. Many employers and co-workers in the present study reportedly “worked alongside” individuals who used AAC when making accommodations, as a means of gaining additional insight into a person’s specific needs. According to previous research, some employers are opposed to specific provisions with the Americans with Disabilities Act⁸ such as the need to provide reasonable accommodations in the workplace (Walters & Baker, 1996). There are, however, other employers who are willing to work to create an employment culture that supports full participation for individuals with severe disabilities.

The fact that 5 out of 8 of the employers who participated in the present study had previous work experience with individuals with disabilities may have contributed to the willingness to

support employment for individuals who use AAC. As reported by Nietupski et al. (1996), such previous experience appears to play an important role in hiring decisions. It is interesting to note, however, that for three of the employers, hiring an individual who used AAC represented their first experience with hiring an individual with a severe disability.

Implications for Practice

The results of this study provide direction for the services needed to support employment success for individuals who use AAC. Positive employment outcomes require the coordinated efforts of educators, communication professionals, and vocational rehabilitation professionals.

Educators

Participants spoke strongly of the need for educational activities that would better prepare individuals who use AAC for the workplace. The use of work placements for individuals who are still in school may be one approach to this challenge. For individuals who use AAC, these early employment experiences can assist learning of important information in three areas: (a) the real life literacy and communication demands of the workplace, including office etiquette and dealing with communication breakdowns; (b) the match between an individual's skills and the demands of a wide variety of jobs; and (c) strategies for successful problem-solving in a work environment. For employers, these school-to-work transition programs provide an opportunity to become familiar with the skills of individuals who use AAC without having to make (at least initially) a long-term hiring decision. For teachers, these placements can help in the identification of curriculum goals in literacy and technology skills, and provide feedback on the supports needed for a student to succeed in the workplace.

Communication Professionals

Individuals who use AAC and communication professionals (e.g., speech-language-pathologists) will need to work together to address the communication challenges identified by the participants in this study. Developing automaticity in the use of pre-programmed workplace vocabulary and phrases may help to address concerns about rate of communication. Individuals who use AAC may also need instruction and practice in making appropriate coordinated use of a variety of AAC techniques (e.g., low tech and high tech AAC systems) to meet the many

communication demands of the workplace, including participating in social interactions, giving instructions, and requesting assistance.

Vocational Rehabilitation Professionals

At present many AAC professionals have only a limited understanding of the role of vocational rehabilitation professionals who work with individuals who use AAC. The results of the present study, however, indicate the need for vocational rehabilitation professionals to play an important role in three main areas: (a) working with students who use AAC and their teachers to help them plan a transition curriculum that will increase the chances of employment after the student leaves school, (b) educating employers about the quality of work provided by individuals who use AAC, and (c) developing models of providing ongoing support for activities of daily living and assistive technology for individuals who use AAC in the workplace.

Limitations

Although the present study provides useful insights into the experiences of employers and co-workers of individuals who use AAC, there are some limitations that should be considered when interpreting the results. First, only the perspectives of employers who had already hired individuals who used AAC were considered; employers unwilling to consider hiring an individual who used AAC were not included. It is reasonable to assume that the perspectives of these two types of employers would differ.

A second limitation was that all employers and co-workers were nominated by literate individuals who were competent in the sophisticated use of AAC technology. It is unclear how the experiences of these individuals and their employers and co-workers might differ from the experiences of individuals who used AAC, but did not have the same level of literacy or technology skills.

Finally, all of the individuals who used AAC (i.e., the employees) had a diagnosis of cerebral palsy. Information is also needed on the perspective of employers and co-workers of individuals with acquired disabilities (e.g., amyotrophic lateral sclerosis, traumatic brain injury).

FUTURE DIRECTIONS

Given the limited research in the area of employment of individuals who use AAC, future research is needed to further define strategies for overcoming barriers in the workplace and improving

employment experiences for employers, co-workers, and employees. First, further investigation of the experiences and perceptions of employers and co-workers is needed, specifically those who do not have prior knowledge of AAC or an affiliation with services for individuals with disabilities.

Second, there is a need to create and evaluate intervention programs that would directly address the concerns of employers and co-workers. Both individuals who use AAC (McNaughton et al., 2002) and the employers and co-workers who participated in the present study believe that individuals who use AAC need additional preparation in order to be ready for the world of work. The use of intensive post-school training projects such as Project ACETS⁹ at Temple University represents an innovative approaches to developing the employment skills of adults who use AAC. Still, additional research is needed to assist in the development of (a) effective school-to-work transition programs; and (b) the establishment of work place support programs that respond to the needs of employers, co-workers, and employees.

Finally, future research is needed in which the perspectives of other individuals (e.g., educators, family members) involved with individuals who use AAC is considered. Their insight into benefits, barriers, challenges, and supports for employment may also provide direction as to how to improve intervention and assure successful employment experiences.

The results of the present study provide evidence of many ways that companies, individuals who use AAC, and society as a whole can benefit from the employment of individuals who use AAC. In order for these benefits to be realized, however, the proper supports and a willingness to collaborate must be in place. There clearly is a need for structural change to address the challenges of educational preparation, technology integration, transportation, and personal care assistance described in this project.

Perhaps more important than any specific legislation or technology, is the belief that hiring an individual who uses AAC can provide tangible benefits in the workplace, and that the extra effort to provide needed accommodations is time well spent. In describing the employment experiences of 15 individuals with disabilities, Ochocka et al. (1994) commented that "the key accommodation (to support successful employment) was an attitude among co-workers and employers that it was important to pay attention to the individuals' needs ... (and to) accept accommodations as a natural part of the work experience" (p. 47). The experiences of the individuals in the present study were very similar: The combined

efforts of the 14 employers and co-workers, as well as the 10 individuals who used AAC, resulted in employment benefits for all.

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Notes

- 1 One individual held two part-time positions.
- 2 A full copy of the questionnaire is available from the authors upon request.
- 3 Paratransit is a generic term for any public or private transportation service for persons with disabilities who cannot independently use the regular bus service.
- 4 Sticky Keys is an accessibility option on a standard personal computer, which allows users to perform two-key functions (e.g., "Shift-f") with one hand.
- 5 Mouse Keys is an accessibility option for a standard personal computer that provides access to mouse functions using the numeric keypad on the keyboard.
- 6 Medicaid is a jointly-funded, Federal-State health insurance program in the United States for certain low-income individuals and individuals with disabilities. The Medicaid program varies from state to state, as well as within each state over time. More information is available at <http://cms.hhs.gov/medicaid/>.
- 7 Supplemental Security Income (SSI) is a federally funded benefit in the United States for individuals who are aged or who have a disability. It provides cash to meet basic needs for food, clothing, and shelter. More information is available at <http://www.ssa.gov/notices/supplemental-security-income/>.
- 8 The Americans with Disabilities Act is federal legislation in the United States that gives civil rights protections to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. More information is available at <http://www.usdoj.gov/crt/ada/adahom1.htm>.
- 9 ACETS is the Augmentative Communication Employment Training and Support program located at the Institute on Disabilities at Temple University, Philadelphia, Pennsylvania, USA. Additional information is available at <http://www.aac-lerc.com/R6.htm>.

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Appendix: Operational Definition of Coding Themes and Sub-themes

1. *Benefits of Employment:*
Positive outcomes resulting from engagement in employment situation, including social, financial, familial, personal, psychological, or physical gains.
2. *Challenges to Employment:*
Any person, organization, situation, action or device that impedes an individual's ability to participate in employment activities adequately or to the individual's fullest potential and results in a negative employment (including social, financial, familial, personal, psychological or physical) situation. Challenges can include policies, practices, attitudes, knowledge, skill, education, preparation, information dissemination, access, and/or physical/medical conditions.
3. *Supports to Employment:*
Any person, organization, situation, action, or device (including educational) that enables or assists an individual to participate in employment activities and contribute to a positive work experience.
4. *Recommendations:*
Suggestions regarding ways of overcoming barriers to employment based on the employers' and co-worker's personal experiences and ideas.
5. *Description of Employment or Employment Activities:*
Comment that provides information about employment, employment activity, or methods used to accomplish activity, but does not include related benefits, negative impact, barriers or supports (e.g., "He types with a head stick.")
6. *Unrelated or Uncodable Statement:*
Comment or question that is unrelated to cerebral palsy or employment of the individual. Also, includes a question or comment made by the interviewer.

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