Chapter 25
Children, Young People and Adults Who Use AAC

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25.1 Introduction

The American Speech-Language-Hearing Association (2019) states that "augmentative and alternative communication (AAC) is an area of clinical practice that addresses the needs of individuals with significant and complex communication disorders characterized by impairments in speech-language production and/or comprehension, including spoken and written modes of communication." AAC can be *augmentative* when it enhances or supplements residual natural speech or *alternative* when it replaces natural speech. AAC approaches often aid in language production (i.e. expressive communication) as well as in comprehension (i.e. understanding language).

Beukelman and Mirenda (2013) remark that "there is no typical person who relies on AAC. They come from all age groups, socioeconomic groups, and ethnic and racial backgrounds. Their only unifying characteristic is the fact that they require adaptive assistance" for communicating (p. 4). According to the National Joint Committee for the Communication Needs of Persons with Severe Disabilities (2019), recent estimates suggest that there are over 2 million individuals using AAC in the United States. A variety of developmental and acquired conditions can result in severe communication impairments in both adults and children. Many of these disorders include, but are not limited to, those covered in this volume such as autism spectrum disorder, Down syndrome, Fragile X syndrome, Parkinson's disease, amyotrophic lateral sclerosis, and traumatic brain injury.

The need for AAC services may be temporary, such as in cases of young children who may improve speech and language skills with development or in individuals recovering from an accident, an illness, a stroke, or who are intubated and unable to talk. Most individuals who use AAC, however, do so throughout their lifetimes.

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L. Cummings (ed.), *Handbook of Pragmatic Language Disorders*,
https://doi.org/10.1007/978-3-030-74985-9_25

This includes individuals with chronic communication impairments, resulting from developmental or acquired disorders, as well as those with degenerative disorders that preclude their use of natural speech. AAC systems and strategies can vary widely and depend on the needs of the individual over time. A person's AAC system often involves the use of the body, such as gestures and sign language (i.e. unaided AAC), as well as using aids external to the body (i.e. aided AAC) which include simple picture boards and books as well as sophisticated speech-generating devices (SGDs) and mainstream technologies. Individuals using AAC often employ multiple modes of communication such as vocalizations, facial expression, and body language as well as a range of aided AAC systems to convey messages (Blackstone & Berg, 2012). People who use AAC systems may choose to use different communication modes and methods in different settings and with different communication partners (Warrick, 1988).

The ability to use AAC approaches effectively requires a growing understanding of pragmatics. The following sections will summarize the importance of pragmatic skills, variables affecting pragmatic skills, and characteristics of pragmatic skills in individuals who use AAC. They will also introduce assessment strategies and discuss appropriate interventions.

25.2 The Importance of Pragmatic Skills in Individuals Using AAC

To achieve communicative competence (i.e. communicate effectively), individuals using AAC must have knowledge and skills in (1) operating a communication system; (2) using the language of a system; (3) understanding ways to compensate for the limitations of a system; and (4) using the social rules of communication, also known as *social competence* (Light, 1989). Light (1989) suggests that social competence includes both sociolinguistic and sociorelational aspects of interaction. Included in sociolinguistic skills is an understanding of discourse strategies such as initiating, maintaining, and terminating interactions, turn taking, and the cohesion and coherence of conversation. Sociolinguistic skills also include interaction functions (e.g. expression of wants and needs, social closeness, information transfer) and specific communicative functions such as requests for information, protest, and self-expression. Each of these skills is context dependent, that is, depends on partner, setting, and task demands, and is evaluated in terms of how appropriate and effective they are (Light, 1989). Effective interpersonal communication skills, otherwise known as sociorelational skills (Light et al., 2007), include having a positive self-image, showing an interest in others and a desire to communicate, being an active participant in conversations, being responsive to communication partners, and putting others at ease (Light, 1989).

It has been suggested that regularly interacting and developing friendships with peers is necessary for learning social competence (Lilienfeld & Alant, 2005a).

Cooper et al. (2009) remark that "friendships are the building blocks of strong social networks" (p. 154). Young adults interviewed attributed some difficulties with loneliness and friendship formation to poor communication. Young children learn to perceive themselves through their interactions with communication partners. However, children with disabilities may experience rejection and isolation. The impact of negative social relationships experienced by many children with disabilities may be exaggerated for children with complex communication needs due to their communicative disadvantages in interacting with peers (Clarke & Kirton, 2003). Individuals who require AAC often have particularly limited social networks (Lilienfeld & Alant, 2005a), often consisting only of close family members and paid professionals. Social networks, including family and friends, have been found to be important in decreasing feelings of loneliness in young adults with cerebral palsy using AAC (Cooper et al., 2009) and in aiding adults who use AAC to find and maintain employment (Bryen, 2006).

25.3 Factors Affecting Pragmatic Skills in Individuals Using AAC

There are several variables that may interact with one another to affect social competence in children and adults using AAC (Calculator, 1999). These variables are summarized in Table 25.1 and explained further here.

(1) *Characteristics of the individual using AAC*. Individuals using AAC may differ in their language skills, cognitive abilities, motor skills, motivation to communicate, personality, and social experiences. Each of these characteristics can influence pragmatic skills. This point will be expanded in Sect. 25.4.
(2) *AAC system characteristics*. Each AAC system has its own unique features such as language organization, access methods, and type of output which can affect social skills. For example, poor quality voice output on a speech-generating device may be a barrier to successful use of the device (Crisp et al., 2014) and result in communication breakdowns (Clarke & Wilkinson, 2007). Language organization and access methods can affect rate of message production and pre-utterance pause length which may affect partner perceptions of competence. Also, an idiosyncratic gesture will not be useful unless communication partners understand what it means.
(3) *Communication partner characteristics*. Communication partners may have differing expectations of and attitudes towards the individual using AAC, thus affecting social interactions. For example, communication partners with previous experience with individuals with disabilities may have more positive attitudes about individuals using AAC (McCarthy & Light, 2005) and confidence in initiating interactions with people who use AAC (Ostvik et al., 2018). This point will be expanded in Sect. 25.5.

Table 25.1 Variables affecting interaction

1. Characteristics of individuals using AAC
    a. Personality
    b. Language abilities
        i. Message Length (Hoag et al., 1994)
    c. Cognitive abilities
    d. Motor skills
        i. Rate of Message Production (Farrier et al., 1985)
    e. Social skills
    f. Motivation
    g. Socialization (Lilienfeld & Alant, 2005b)
2. AAC system characteristics
    a. Access method
        i. Rate of Message Production (Farrier et al., 1985)
    b. Language organization
        i. Message Length (Hoag et al., 1994)
        ii. Rate of Message Production (Farrier et al., 1985)
        iii. Pauses Preceding Utterances (Todman & Rzepecka, 2003)
    c. Quality of Speech Output (Clarke & Wilkinson, 2007; Crisp et al., 2014)
3. Communication partner characteristics
    a. Attitudes & Expectations (McCarthy & Light, 2005; Ostvik et al., 2018)
    b. Confidence (Ostvik et al., 2018)
4. AAC instruction
    a. Direct Instruction (Glennen & Calculator, 1985)
    b. Communication Partner Instruction (Kent-Walsh & McNaughton, 2005; Light et al., 2002)
5. Other variables
    a. Communicative Opportunities (Andzik et al., 2016)
    b. Communicative Purposes (Light, 1988; Light, 1996)

(4) *AAC instruction*. Direct instruction in the use of a device can affect the communicative functions used by the individual using AAC. However, communication partner knowledge and skills regarding AAC can also heavily influence interactions. For example, caregivers of pre-symbolic children with severe disabilities may misinterpret atypical attempts to initiate social closeness and benefit from instruction to recognize subtle cues (Light et al., 2002). This point will be expanded in Sect. 25.7.

(5) *Other variables*. Other variables such as the frequency with which one has opportunities to communicate and the purpose of communication can also affect interactions. Light (1988) suggests that there are four purposes of communicative interactions including communicating wants and needs, information transfer, social closeness, and social etiquette. The goal of social closeness communications is to establish, maintain, and develop relationships with others. In social closeness interactions, the focus is simply on being together. Thus, unaided forms of communication may predominate, whereas communication to express wants and needs requires different types of interactions (Light, 1997).

Given the complex nature of interactions between these variables, it is difficult to draw generalizations about characteristics of pragmatic skills in individuals using AAC. However, the following sections summarize the available evidence.

25.4 Characteristics of Pragmatic Skills in Individuals Using AAC

Despite the importance of social competence in effective communication, relatively little is known about pragmatic skills in individuals who use AAC. In children with severe speech and physical impairments without any accompanying cognitive deficits, general patterns have been observed when communicating with caregivers. These include (1) taking fewer conversational turns; (2) responding more frequently than initiating communication; and (3) exhibiting a restricted range of communicative functions (Light et al., 1985). Partner-dominated interactions are also seen between school-aged children in academic environments (Andzik et al., 2016; Clarke & Wilkinson, 2007), with children using AAC serving as respondents in as high as 91% of communicative opportunities. These asymmetries in initiation have been reported in instructor interactions (Andzik et al., 2016), in experimentally arranged peer interactions (Clarke & Wilkinson, 2007), with speaking peers with disabilities at school (Clarke & Kirton, 2003), and in naturally occurring interactions with peers in inclusive classrooms (Chung et al., 2012). Furthermore, during naturally occurring events at school, students tend to interact primarily with adults rather than peers in greater than 90% of communicative opportunities (Andzik et al., 2016; Chung et al., 2012). Even in inclusive classrooms where peers were in frequent proximity, students using AAC interacted primarily with an assigned staff member, most frequently instructional assistants or special educators (Chung et al., 2012; Ostvik et al., 2018).

Senner (2011) interviewed 21 parents of teens and young adults with developmental disabilities who use AAC. These parents indicated deficits in multiple skill areas in their children on the Pragmatics Profile from the *Clinical Evaluation of Language Fundamentals* (Wiig et al., 2013). Many parents indicated their children exhibited difficulty using specific pragmatic functions such as introducing appropriate topics of conversation and maintaining conversations. However, considerable individual differences were found. Many parents identified the need for direct social skills instruction for their children. However, only a third of parents reported their children having participated in pragmatic intervention. Parent comments from this study also suggested that educating communication partners may also be beneficial in supporting pragmatic skills in teens and young adults using AAC. Finally, parents highlighted that AAC systems must provide adequate vocabulary for social participation (Senner, 2011).

The employment rate of adults using AAC has been estimated at around 15%, about half the rate of employment for persons with disabilities without complex communication needs (Bryen et al., 2007). In a survey of employers, 91% indicated that an understandable, standard voice was a job requirement, and 61% indicated that intermediate or advanced communication skills were necessary (Bryen et al., 2007). The vast majority of employers required in-person or telephone interviews. Access to and use of generic communication technologies allowing remote communication such as email or phone have been listed as a means to expand social networks in individuals using AAC (Bryen, 2006) and are also required for many occupations (Bryen et al., 2007). However, access to these technologies may be challenging for some individuals using AAC and thus limit opportunities for friendships and employment (Bryen, 2006; Bryen et al., 2007; Cooper et al., 2009). Overall, adult focus group participants who use AAC have rated making and keeping new friends, dating, and finding jobs as research priorities (O'Keefe et al., 2007). Beginning and maintaining friendships, dating, and seeking and maintaining employment all require social competence.

The factors that affect use of AAC by adults are numerous and complex. Conversational control, "the manner and extent to which an individual directs and restrains communicative interaction" (Farrier et al., 1985, p. 65), was found to be markedly lower in an experiment in which neurotypical subjects used an AAC system as compared to their communication using speech. The slower rate of message production seen in individuals using AAC is one factor thought to be responsible for reduced conversational control (Farrier et al., 1985). Reduced message length also affects perceptions of participation, management of partner attention, and degree of social ease (Hoag et al., 1994) in neurotypical subjects using AAC to communicate. Finally, equality in conversational turns can affect perceptions of communicative competence. In one study, greater equality was accomplished by teaching individuals using AAC to fulfill non-obligatory in addition to obligatory turns (Light & Binger, 1998). Obligatory turns are those that typically require an answer (e.g. those that follow a partner's question such as "How are you?"). However, non-obligatory turns are those that follow a partner's comment or statement (e.g. commenting "too bad" after a partner indicates failing a test). Increased use of non-obligatory turns by an efficient communicator resulted in observers' judgments of increased communicative competency. However, increasing the frequency of non-obligatory turns was not effective in improving judgments about slower communicators' competency.

Communication breakdowns are also frequently documented in individuals using AAC. Adults with developmental disabilities and intellectual impairment have been observed to attempt to respond to partner's requests for clarification by simply repeating the message instead of revising the message to make it more easily understood (Calculator & Delaney, 1986). Effective repair of communication breakdowns typically involves a hierarchical approach, moving from less to more complex resolution strategies. For example, the first strategy an individual might use could involve repeating the message. However, if that fails, the individual should include additional information by adding gestures, cuing the communication

partner to the topic (Dowden, 1997; Hustad et al., 2002), or adding more words to the message.

25.5 Communication Partner Skills and Attitudes

The development of communicative competence "is inseparable from socialization and partner interaction" (Lilienfeld & Alant, 2005b). Success of a communication interaction between a person using AAC and a communication partner depends heavily on the skills of the communication partner (Kent-Walsh & McNaughton, 2005). Blackstone (2006) remarks that "being an effective communication partner or AAC facilitator is not intuitive. It often requires one to change long-established, unconscious ways of communicating" (p. 12). Interaction patterns of communication observed in parents of children using AAC often include controlling the topic, dominating conversational turns, and being more directive by requiring specific responses (Light et al., 1985; Pennington & McConachie, 1999). These behaviors may negatively affect communication development in children with complex communication needs (Yoder & Warren, 1998).

Communication partners range from more to less familiar and can include (a) life partners (such as a spouse for an adult or parents and siblings for young children); (b) good friends; (c) acquaintances (e.g. neighbors, classmates, co-workers); (d) paid professionals (e.g. personal care attendants, therapists, teachers); and (e) unfamiliar partners such as servers in a restaurant, store clerks, and other people with whom an individual using AAC might interact within the community (Blackstone & Berg, 2012). Over time and across a person's lifespan, communication partners may change circles (e.g. a relationship with a friend may evolve into a marriage). As a person's communication partners evolve, so will their communication needs. Often, an individual who uses AAC may have a restricted range of communication partners, consisting primarily of close family members and paid professionals (Lilienfeld & Alant, 2005a).

Communication partner attitudes can also affect social interactions with individuals using AAC. In school-aged children, positive peer attitudes have been viewed as facilitators of relationships with students who use AAC (Ostvik et al., 2018). Gender has been found to correlate with attitudes, with girls demonstrating more positive attitudes towards peers using AAC than boys. In addition, children exposed to individuals using AAC (e.g. those who attended integrated schools) had more positive attitudes than those with little experience of children with disabilities (Beck & Dennis, 1996). In general, factors that affect attitudes towards individuals using AAC are consistent with those in the general disability literature. For example, McCarthy and Light (2005) found that males generally had more negative attitudes towards individuals using AAC than females and that those who had previous experience with individuals with disabilities generally had more positive attitudes about people who used AAC.

25.6 Assessment

Given the wide range of ages, diagnoses, and types of AAC used by individuals with complex communication needs, individuals who use AAC are a heterogenous group. Accordingly, each individual's strengths and areas of need must be assessed to determine appropriate intervention targets and strategies. Language sample analysis, writing down and analyzing what an individual who uses AAC says, can provide rich information about pragmatic language use in children and adults who use AAC (Van Tatenhove, 2014). Many devices have built-in keystroke recording to help with the process. However, videotaping is still highly recommended because built-in logging does not record an individual's use of unaided modes of communication or the communication partner's responses, which are critical to interpreting the function of each utterance. A number of commercially available language sample analysis tools are available to make interpretation faster and easier.

The Pragmatics Profile in the *Clinical Evaluation of Language Fundamentals—5th Edition* (CELF-5; Wiig et al., 2013) is a 50-item checklist that provides normed scores on verbal and nonverbal social communication skills. The profile is completed by an informant familiar with the student such as a teacher or parent and each item on the questionnaire is rated on a 4-point Likert-type scale. The number checked is related to the frequency of occurrence of each skill: *Never or Almost Never* (1)*, Sometimes* (2)*, Often* (3), and *Always or Almost Always* (4). Despite the fact that the Pragmatics Profile was not specifically designed for individuals who use AAC, as per the CELF-5 Examiner's Manual, an item analysis can be done to identify student strengths and needs. For example, an item receiving 4-point rating indicates appropriate development and use of the specified skill, an item receiving a 3-point rating might only require monitoring, and a 1 or 2-point rating could indicate that the skill requires direct or indirect intervention. The descriptive information obtained from using the ratings on the Pragmatics Profile has been used to evaluate social skills in teens and young adults who use AAC (Senner, 2011).

One instrument that was specifically developed for use with individuals with complex communication needs is *Social Networks* (Blackstone & Berg, 2012). This instrument is unique in that not only does it document current communication behaviors of an individual using AAC, but it also helps to identify family members and others who might benefit from communication partner training. Parents, peers, and caregivers can improve the quality and quantity of their interactions with adults and children who rely on AAC following communication partner instruction. Furthermore, this instrument captures the multi-modal nature of communication by cataloging an individual's modes of expression.

25.7 Intervention

Historically, AAC intervention has emphasized communication for basic needs such as requesting. Even a more recent survey of speech-language pathologists (SLPs) revealed that 95% of respondents ranked communicating wants and needs as the most important communicative purpose for young children using AAC (Finke & Quinn, 2012). Although expressing wants and needs is important, "individuals must concurrently be taught skills that allow them to fulfill their need to be socially connected with others" (Chung et al., 2012, p. 363). Fortunately, there are a number of strategies that are effective in improving social skills in individuals who use AAC and in increasing communicative participation of AAC users (Thomas-Stonell et al., 2015).

25.7.1 Vocabulary

Light and Binger (1998) remark that "providing access to the right vocabulary is critical to ensuring the success of communication" (p. 13). Some AAC systems may not include adequate vocabulary to allow an individual to perform a specific pragmatic function such as maintaining a conversation. If this is the case, customization of messages may be appropriate. For example, inclusion of control or regulatory phrases on an AAC system (e.g. "Wait, I have something to tell you." "That's not what I meant.") and teaching the individual using AAC to use these phrases may be appropriate in helping an individual to gain conversational control (Buzolich & Lunger, 1995; Farrier et al., 1985) or repair a communication breakdown. These may be stored as whole sentences or phrases (rather than generated word by word or letter by letter) to improve efficiency due to the time-dependent nature of many social interactions. A sample communication display for repairing a communication breakdown can be found in Fig. 25.1.

25.7.2 Modeling

Partner-augmented input (PAI), also referred to as natural aided language, aided language modeling, or aided language stimulation, is a modeling strategy whereby communication partners use the child's AAC system themselves by pointing to the symbols on the child's speech-generating device while simultaneously talking. PAI can and should be provided in the natural environment to model when and how to use targeted pragmatic skills such as greeting or maintaining a conversation. Use of this strategy has been associated with gains in pragmatics, semantics, syntax, and morphology and is effective in individuals of varying ages, disabilities, and language skills (Biggs et al., 2018; O'Neill et al., 2018; Sennott et al., 2016).

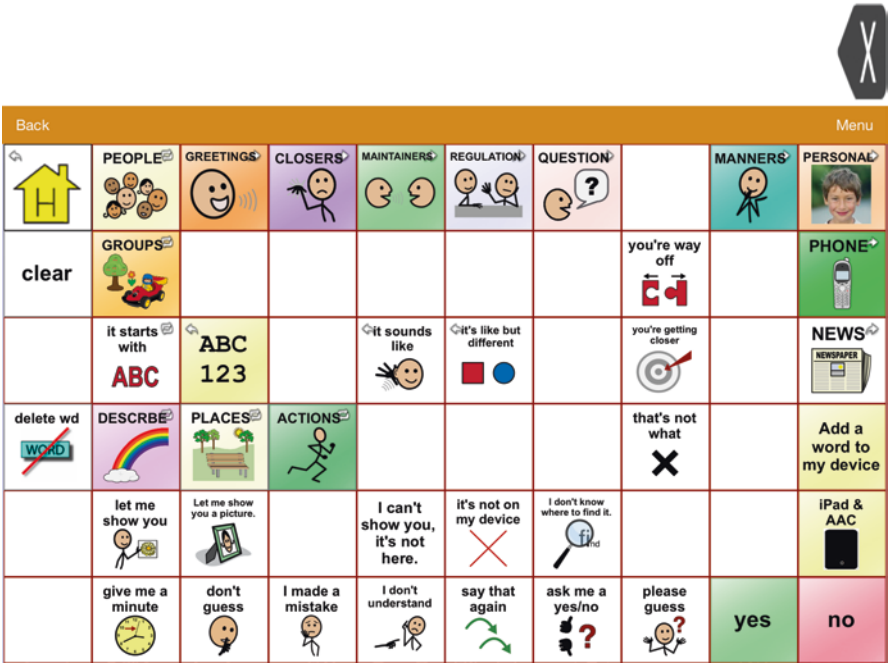

Fig. 25.1 This is the Repairs (i.e. Repair Strategy page) from the Baud and Senner (2013) Add-On Social Pages for use with Core Vocabularies. Note the use of regulatory phrases such as "That's not what I meant." These pages can be downloaded for free from talcaac.com

25.7.3 Direct Interventions

Direct interventions have been effective in teaching children and adults who use AAC to perform a variety of communicative functions including requesting (Glennen & Calculator, 1985), increasing turn-taking, and asking partner-focused questions (Light & Binger, 1998; Light et al., 1999). Training techniques have included: (1) Explanation of the goal and importance of the strategy being taught (using appropriate language); (2) Modeling appropriate use of the strategy by an instructor or individual using AAC; (3) Providing multiple opportunities for the individual to practice the target skill, in either role playing scenarios with an instructor or in functional contexts with coaching from an instructor; (4) The use of appropriate prompts such as an expectant pause, direct imitation or pointing cue; and (5) Performance feedback (Buzolich & Lunger, 1995; Calculator, 1999; Glennen & Calculator, 1985; Light & Binger, 1998; Light et al., 1999; Lilienfeld & Alant, 2005a).

Despite the effectiveness of these interventions, data suggest some individuals with disabilities may not generalize AAC use for communicative functions beyond those for which they received direct instruction. For example, in a study in which two children with quadriplegia and age-level receptive language skills were taught to request objects, no generalization to other communicative initiation skills was

observed (Calculator, 1999; Glennen & Calculator, 1985). It has been suggested that interventions that occur in natural settings and in the context of meaningful activities are associated with greater communicative competence (Lilienfeld & Alant, 2005a; Warrick, 1988).

Finke and Quinn (2012) surveyed SLPs about strategies they used to promote or maintain more active communication in young children (under the age of 5) who use AAC. They noted the importance of including appropriate vocabulary for initiating on an AAC system as well as modeling initiation using the child's system (i.e. providing PAI). However, additional strategies utilized included acknowledging all communication attempts from the child, using activities that are meaningful and motivating, and creating communicative temptations (i.e. structuring the environment to entice a child to communicate).

The use of social stories, video models, and scripts have also shown promising results in teens and young adults who use AAC. Social stories are individualized short stories written from an individual's perspective that explain difficult social situations through visual supports and text (Gray & Garand, 1993). Video modeling interventions involve an individual watching videotapes of positive examples of adults, peers, or him- or herself engaging in a pragmatic skill (Delano, 2007). Script training may be used to teach a variety of social interactions (Terpstra et al., 2002). Scripts are visual or auditory supports that include roles for all who participate, and statements or questions related to a specific communicative purpose such as social closeness. Scripts can be pictures, audio files, written words, phrases, or sentences that enable the individual to perform a targeted skill such as starting or continuing conversations (Krantz & McClannahan, 1998; Stevenson et al., 2000).

In research reported by Senner and Baud (2017a), nine participants (four males and five females) ranging in age from 15 years 3 months to 22 years 1 month ($M = 19.44$, $SD = 1.95$) participated in a four-week online social skills class involving reading social stories, watching video models, and using scripts (Fig. 25.2). All nine participants used dynamic display speech-generating devices. Participants were taught how to interrupt appropriately, such as waiting patiently in proximity of others, tapping the communication partner on the shoulder and/or saying, "excuse me" if the message was urgent. Eight participants had higher interrupting post-intervention test scores than pre-intervention test scores. One participant showed no improvement. Results were statistically significant ($Z = -2.588$, $P = 0.010$) using a Wilcoxon Signed Ranks test. On the Pragmatics Profile (Wiig et al., 2013) question pertaining to interrupting, five participants showed improvement and four remained the same. The difference was also statistically significant ($Z = -2.121$, $P = 0.034$).

Another packaged intervention combining video models and scripted conversation in conjunction with least-to-most prompting was investigated with adolescents with autism who used AAC (Thirumanickam et al., 2018). A least-to-most prompting hierarchy (also known as system of least prompts) is a prompting hierarchy in which the least amount of prompting is provided at the beginning with additional cues provided within a specified interval and order as needed (i.e. with increasing assistance). After up to nine intervention sessions, three of the four study

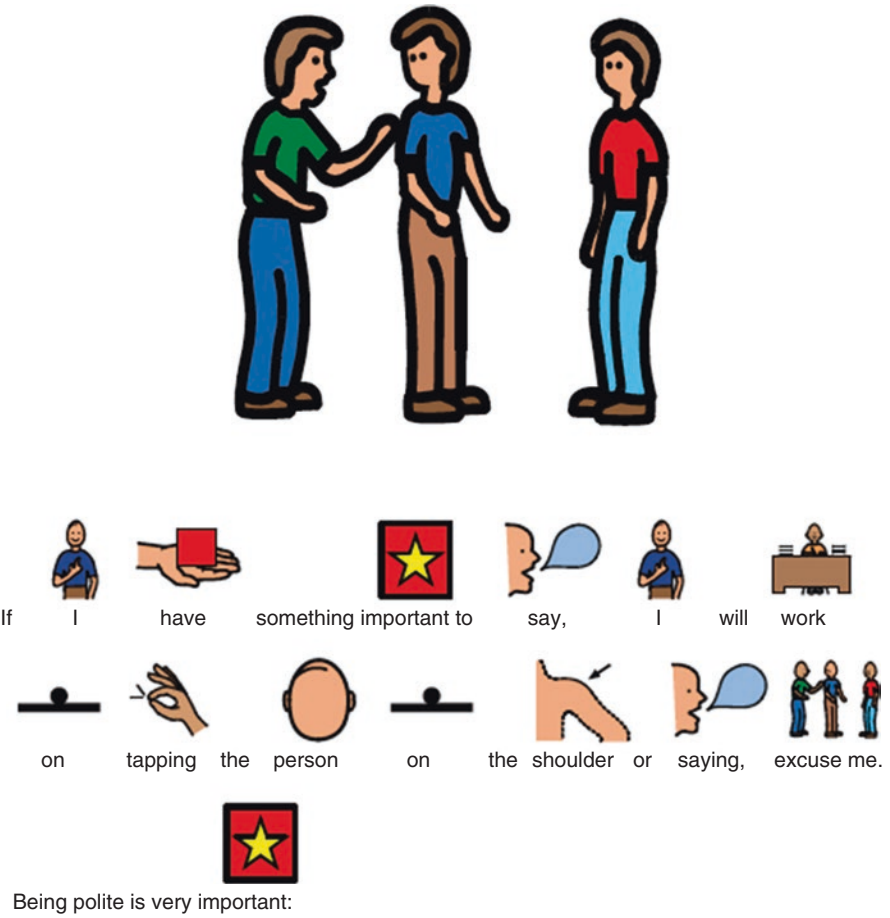

Fig. 25.2 Sample page from a social story about interrupting. Note the inclusion of a directive sentence, one designed to suggest a response and gently direct behavior

participants demonstrated improved performance in conversational turn taking (e.g. responding to a communication partner's question and asking a follow-up question).

The use of mentors, older, more experienced adults who use AAC, has also demonstrated promising results. Adolescents and young adults who used AAC reported enjoying the social support of interacting with an older, successful communicator who also used AAC (Light et al., 2007). Many of the participants also felt they benefitted from talking to someone who could help them set goals and problem-solve.

Adults with cerebral palsy who demonstrated good communication skills, literacy skills, and leadership potential were taught to improve sociorelational skills via an online training program in an effort to become mentors. One targeted skill, being

other-oriented, defined as demonstrating respect for and interest in a communication partner, was taught using the acronym LAF: (a) L = Listen to the partner and communicate respect; (b) A = Ask the partner questions to find out more about his or her interests and concerns; and (c) F = Focus on what the partner is saying (Light et al., 2007). The participants were also taught behaviors to avoid such as criticizing, reacting hastily, and talking too much about oneself. All the participants learned to become more other-oriented as a result of the training and felt satisfied with the training received.

25.7.4 Communication Partner Instruction

Live and online parent training in AAC has been linked to positive changes in children's communication (Bruno & Dribbon, 1998; Douglas et al., 2017; Romski et al., 2010). Parent-implemented naturalistic behavioral interventions such as Joint Attention Symbolic Play Engagement and Regulation (JASPER), combined with use of a speech-generating device, resulted in improvements in joint attention, spontaneous communicative utterances, novel words, and comments in children with autism (Kasari et al., 2014). Parent training in AAC has also been shown to increase parent provided communication opportunities, child communication, and parent responses to child communication (Douglas et al., 2017).

Shared experiences and proximity are important for the development of social relationships between students using AAC and their peers. Children must have opportunities to interact with each other around common interests and activities. In addition, teaching peers strategies and skills to promote interaction have been linked to positive effects on interactions with individuals using AAC (Chung & Douglas, 2015; Lilienfeld & Alant, 2005b; Therrien et al., 2016). A recent systematic review of interventions found that frequency of interactions between children who use AAC and their peers could increase throughout the school day with appropriate supports (Therrien et al., 2016). Interventions may or may not also involve the individual using AAC. However, interventions that included multiple training elements were more effective than single-component interventions. Instruction of group home and adult day program staff has also been found to increase communication opportunities and active communication in an adult using AAC (McNaughton & Light, 1989).

Effective communication partner traning programs should include the following elements: (1) Theory/strategy description; (2) Demonstration and modeling; (3) Practice; (4) Feedback; and (5) Coaching (Joyce & Showers, 1980; Senner & Baud, 2017b). In *theory/strategy description*, instructors provide a verbal description as well as information regarding the theoretical base for the strategy being taught. *Demonstration and modeling* may include live or videotaped use of the target strategy. Participants should then *practice* the target skill or strategy in a controlled environment. *Feedback* can be provided by peers, coaches, or self-administered and involves observation and reflection on use of the target strategy or skill. Finally,

coaching involves a live observation and feedback cycle in the natural environment. The Kent-Walsh and McNaughton (2005) eight-step instruction model for use with communication partners of people who use AAC contains all these training elements and can be used to teach communication partners to use a variety of targeted strategies that encourage rather than inhibit communication.

Partner attitudes can also be influenced by intervention. For example, providing additional information regarding the individual using AAC has been associated with formation of more favorable attitudes (Gorenflo & Gorenflo, 1991). Some classroom-based strategies for increasing peers' understanding of AAC include reading and discussing books about people who use AAC (e.g. Sarah's Surprise by Nan Holcomb (1990)), providing hands-on experiences with a variety of AAC systems, and having students engage in role-playing activities in which they are not able to use natural speech and/or need to use a communication board or device (King & Fahsl, 2012).

25.8 Case Study

Amelia Brown is a 20-year-old female with diagnoses of spastic quadriplegic cerebral palsy and dysarthria of speech. Amelia uses direct selection to access an Accent 1000 speech-generating device. Direct selection is the ability to physically touch an item, point to, or press a button. She uses her right index or middle finger to access devices and requires a keyguard to improve accuracy. A keyguard is a shield with a set of holes that fits over the display to prevent her fingers from touching unintended words. Results from the Receptive One-Word Picture Vocabulary Test, 4th Edition (ROWVT-4; Martin & Brownell, 2011) place her approximate language age around 6 ½ years. Her hearing and vision are functional for her needs.

Results of the Social Networks Assessment revealed that Amelia produces three sign approximations including holding her fist near her chin for "mom," holding her fist near her forehead for "dad," and placing her right fist to her right ear for "sleep" or "loud." Generally understood gestures included nodding/shaking her head for yes and no and pointing towards desired objects with an open hand. She intentionally vocalized to gain attention (e.g. when a caregiver is in another room), laughed to express humor or pleasure, and cried when upset. Amelia's signs and gestures are best understood by familiar communication partners who know her well. Most of Amelia's communication partners are family members and paid professionals.

Amelia's communication was efficient, however, results of the Pragmatics Profile indicated particular difficulty initiating and maintaining conversational topics. Her mother rated Rituals and Conversational Skills item #5 "introducing appropriate topics of conversation" as *Never or Almost Never* and item #6 "maintaining topics using typical responses" as *Sometimes*. Language sampling revealed the ability to navigate her speech-generating device well and to generate a number of multi-word utterances (e.g. "I watch TV with Mom", "I listen to music Christmas"), with occasional errors in word order and verb tense noted. She took approximately 80% of

obligatory turns in conversation, however, she only took 15% of non-obligatory turns. No partner-focused questions were observed during the language sample.

Following assessment, the following pragmatic goals were included in Amelia's implementation plan: (1) Amelia will take non-obligatory turns during conversation in four of five charted opportunities when provided with an expectant pause; and (2) Amelia will ask partner-focused questions during conversation in four of five charted opportunities when provided with an expectant pause. She attended once-weekly therapy sessions and direct intervention included the use of social stories, video models, and script training from the Chat with Me series (Technology & Language Center, Inc, 2017a, 2017b) for each of the skills above. She was also coached in using these strategies during conversation with a familiar communication partner (her mother). Within three months, Amelia had met criterion for both of the goals listed above. At about the same time, Amelia had attended a family wedding and as per parent report, several friends and distant family members had remarked about Amelia's "improved communication."

25.9 Conclusion

Given the diversity of individuals who use AAC, it is difficult to draw generalizations about pragmatic skills in this population. However, one thing is clear. Individuals who use AAC have tendencies to be more passive communicators. This may affect their ability to form friendships and in turn impact their quality of life. Pragmatic skills should not be sacrificed while working on expression of wants and needs, learning how to operate a device, or select symbols. Rather, pragmatic skills can and should be taught concurrently with other communicative competencies beginning in childhood. Furthermore, partner training in strategies to support communication are as important as direct intervention with individuals using AAC.

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