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## **Culturally and Linguistically Diverse Student and Family Perspectives on Using Augmentative and Alternative Communication Devices**

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### Abstract

Augmentative and alternative communication (AAC) devices are important for nonverbal students with disabilities to communicate with the verbal world. AAC devices provide access to academic and social opportunities for students with disabilities. With the changing demographics of public schools in the United States and the emphasis on meaningful, culturally relevant instruction for *all* students, it is important to consider how AAC devices are utilized and perceived by individuals from culturally and linguistically diverse (CLD) backgrounds. This paper reviewed empirical studies that addressed the perspectives and use of AAC devices by CLD students with disabilities and their families. A total of  $N=10$  studies were selected spanning almost two decades of research related to AAC users and culturally and linguistically diverse populations internationally. Discussions and implications highlight the need for a deeper understanding of culture and race as they inform instruction for AAC users with disabilities and additional current studies related to this critical topic within special education.

*Keywords:* Multicultural; Augmentative and alternative communication; Disability; Special education; Language

## Culturally and Linguistically Diverse Student and Family Perspectives on Using Augmentative and Alternative Communication (AAC) Devices

Augmentative and alternative communication (AAC) devices support the communication needs of students with a variety of disabilities. These devices connect students with disabilities to opportunities to interact with peers and support providers (Chung & Stoner, 2016). While the fields of communication disorders and special education have provided support and research for students with disabilities who use AAC devices, less is known about how such devices support the communication needs of students from culturally and linguistically diverse backgrounds.

Multicultural research with augmentative and alternative communication began prior the early 2000s (Bridges, 2004). As recent census data shows, students from culturally and linguistically diverse populations—the numerical minority—are becoming the majority across the United States (Kena et al., 2016). This demographic trend highlights the importance of understanding the needs of students from culturally and linguistically diverse populations who utilize AAC devices and their families. As Bridges (2004) explained, an absence of articles addressing these populations has allowed schools to maintain Eurocentric ideals. Thus, although AAC devices are utilized individually, they are part of a larger sociocultural context under which the U.S. public school system operates (Artiles, Rueda, Salazar, & Higuera, 2005; Ripat & Woodgate, 2010).

This paper details some of these issues facing culturally and linguistically diverse families and students who use AAC devices through a systematic review of the existing literature. Specifically, we look at the literature from 2000 until the present to identify the trends in empirical and descriptive studies with respect to multicultural and multilingual students, their families, AAC device utilization, and perspectives. Therefore, our paper was informed by the

research question: How do K–12, culturally and linguistically diverse students with disabilities and their families perceive and/or utilize AAC devices?

Several issues are important to the understanding of AAC device use for individuals with disabilities and their families. One such issue is the intersection of disability with culture and AAC devices. Ripat and Woodgate (2010) explained that assistive technology devices carry with them the visibility of disability. Therefore, students may be doubly stigmatized in schools and communities by being at the intersections of non-dominant cultural backgrounds and disability. Issues of over representation and lack of culturally meaningful curriculum and instruction are the products of such stigma (Connor, 2007). Students with disabilities from culturally and linguistically diverse background deserve access to instruction that meaningfully highlights and values their experiences. Furthermore, there is also an issue of independence and choice associated with the use of AAC devices; families and professionals play a critical role in the decisions about use and access, rather than the students themselves (Cook & Hussey, 2002). These relationships indicate the importance of research regarding student self-determination and advocacy and how these attributes may play a role in utilizing and valuing AAC devices.

Soto and Yu (2014) also identify the challenges of working with multicultural and multilingual students with disabilities who are bilingual. Many families and professionals are still fearful of encouraging students with communication needs to utilize and access a second language (Soto & Yu, 2014). Often, the school system presents bilingualism as a deficit rather than an asset, with English language learners (ELLs) being placed in remedial courses and/or segregated from English-speaking peers (Kohnert, 2013). Extensive research has found, however, that students who do speak more than one language have similar, or sometimes better, learning outcomes such as test scores, school performance, and standardized test scores (Paradis,

Genesee, & Crago, 2010; Thordardottir, 2010). Furthermore, bilingual students with communication needs, similar to those without communication needs, can use first language skills to help develop a second language (Perozzi & Chavez-Sanchez, 1992).

The identification and successful supports for multicultural and multilingual students with communication needs require a combination of collaboration among families, professionals, and the student themselves as well as appropriate and comprehensive assessments, especially if the student is a non-native speaker of English (Soto & Yu, 2014). Professionals need to understand that families and students with communication needs may already have “established patterns of communication” (Soto & Yu, 2014, p. 87) and should use these patterns to leverage support.

### **Methodology**

This review of the literature included qualitative, single-subject and quantitative studies. The specific selection criteria and search procedures for the review are described in the following sections.

#### **Inclusion and Exclusion Criteria**

The inclusion and exclusion criteria for this study were continuously modified to accommodate as many articles that fit the stated purpose and research question (see Figure 1). Initially, studies were included if they were: (a) peer-reviewed; (b) published between 2015 and 2017; (c) included the key terms “AAC,” “culture,” and “family”; (d) involved K–12 students with disabilities and/or their families; and (e) were empirical articles. After this initial search, inclusion criteria was expanded by years (2000–2017) and key terms “AAC” and “CLD” or “multicultural” and “perspectives” or “attitudes” and “family” and “student” and “communication disorders” or “disability.” We also specified that articles had to specifically state research with

populations that were culturally and/or linguistically diverse. We agreed to include articles only if they specifically addressed culturally and linguistically diverse groups when describing participants. Further, we decided to include international studies that met the above criteria. For international studies to fit the definition of culturally and linguistically diverse, we included studies that had either mentioned culturally and linguistically diverse student or family participants from Western nations or any participants from non-Western nations.

Any other reviews of research and practitioner papers were used as background for the introduction of the paper, but were not included as selected studies. We also decided to eliminate descriptive or conceptual articles, those discussing preschool-aged children, and those that did not specifically mention work with culturally and linguistically diverse participants in using both national and international criteria as defined above. In summary, all articles included in this review were (a) peer-reviewed; (b) empirical studies; (c) published between 2000 and 2017; (d) involved students with any disabilities grades K–12<sup>1</sup> and/or their families; (e) specifically involved culturally and linguistically diverse participants as nationally and internationally defined; and (f) discussed perspectives and utilization of AAC devices by students with disabilities and/or their families.

### **Search Procedure**

For all search procedures both researchers used PSYCHInfo, EBSCO host, ERIC, and Google Scholar (see Figure 1). Initial database searches using combinations of the key terms “AAC” and “culture” and “family” generated approximately 50 articles, which were reviewed and included or excluded based on the criteria outlined above. First, article titles and abstracts were reviewed for overall content and studies were included or excluded based on those that did

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<sup>1</sup> In international contexts, studies were included if students were between ages of 3 to 21 which is the U.S.-based definition of a free and appropriate education for students with disabilities (Smith, 2005).

not match initial criteria. This procedure yielded a small set of articles that specifically dealt with culturally and linguistically diverse populations and were published between 2015 and 2017 ( $N=5$ ). Given the small number of articles generated from this search, we decided to expand the search years to 2000 to 2017 to locate additional articles. We also added more inclusive key term combinations of "AAC" and "CLD" or "multicultural" and "perspectives" or "attitudes" and "family" and "student" and "communication disorders" or "disability." This generated a large set of articles ( $N= 80,000$ ) using all terms and databases. Using the same procedure of reviewing titles and abstracts, most articles were eliminated leaving  $N=14$  studies. An additional 8 of these articles were descriptive instead of empirical leaving  $N=6$  articles.

The international articles were then added using combinations of the key terms AAC" and "international" and "perspectives" or "attitudes" and "family" or "student" and "communication disorders" or "disability." This added 12 studies to the total ( $N=18$ ). Finally, these articles were reviewed looking at abstracts, participant descriptions, and reference lists. An additional 8 articles were limited due to either addressing practitioner perspectives, individuals without a disability, and/or not specifying culturally and linguistically diverse populations. Finally, a total of  $N= 10$  articles were included spanning two decades of research internationally.

### **Interrater Agreement**

Interrater agreement is a procedure for enhancing the reliability of the data. It involves taking the number of agreements and dividing by the sum of the number of agreements and disagreements (Uebersax, 1987). The process of interrater agreement and intercoding agreement was used throughout the reading and reporting study results. We hoped for a high level of agreement and set our criteria for acceptance at 80%. If this level of agreement was not met, we agreed to review all studies again until agreement was achieved. First, we began by reviewing

the inclusion and exclusion criteria, particularly after the limited results from more recent studies. After establishing criteria, we separately went through the 18 national and international articles to decide on which to include or exclude. We calculated interrater agreement using the formula:  $\text{agreements} / (\text{agreements} + \text{disagreements}) \times 100$ . The interrater agreement for the inclusion and exclusion criteria was 100%. Using the same formula, we also found a high level of agreement (85.7%) when we reviewed the findings from each selected study and summaries to include in the final tables of results (see Tables 1 and 2).

### **Analytic Strategies**

In addition to high levels of interrater agreement with respect to the inclusion of articles and overall findings, we also qualitatively reviewed study findings and coded for recurring themes in the findings through the creation of (a) an annotated bibliography of included studies and (b) the tables of included studies, characteristics, and results (see Tables 1 and 2). Through the annotated bibliography and table, codes were created for recurring themes across articles. Each researcher proceeded by (a) reading through each of the 10 selected articles, (b) noting any points that related to the research question about perspectives/use of AAC devices by students with disabilities and/or families, and (c) noting how the culturally and linguistically diverse population diversity was addressed in each study. Each researcher then came up with a small set of overlapping themes—between three and five—to discuss for agreement. Researchers discussed each derived theme until a point of agreement was reached for the final paper. As noted above, both researchers agreed to a level of 85.7% when discussing the recurring themes from the 10 studies. Each theme is discussed in the results section.



## Results

The analysis of the 10 empirical studies selected for this review revealed several recurring themes that directly related to AAC, disability, culture and cultural differences. Specifically, the following themes emerged: (a) device limitations and lack of support, (b) family-professional partnerships, (c) cultural perceptions of disability and healthcare, (d) family dynamics, (e) communication styles, and (f) home-based communication supports and interventions.

### Device Limitations and Lack of Support

In a study on perceptions, parents expressed frustration with several components of AAC devices: device malfunctions, beliefs that device vocabulary was impractical at home, and lack of skills to program or support the device for the next step in their child's communication development (McCord & Soto, 2004). McCord and Soto (2004) concluded that having families rely on information manuals or school-based trainings was not enough; even English-speaking participants found that the AAC assessment process and trainings were difficult. In one intervention program that trained Latino parents and demonstrated some key components to helping families use AAC, organizers conveyed that although trainings can be difficult, parents must support their children who use AAC devices (Binger, Kent-Walsh, Berens, Del Campo, & Rivera, 2008).

Other authors discussed similar findings on family perspectives and use of AAC devices. According to Parette, Brotherson, and Huer (2000), families also believe that the AAC device is more practical in school, but conceded that training on how to use the device in their primary language might encourage them to use it more (Parette et al., 2000). Additionally, there were situations in which the families did not know how to use the device, yet they spent enormous

efforts in trying to get their child to use it. The result was frustration and eventual abandonment (Stuart & Parette, 2002). Families from the study by Stuart and Parette (2002) wished professionals had shown more sensitivity to their need for more training sessions, a sentiment that was replicated within several of the studies of culturally and linguistically diverse families and AAC device use. Thus, an ongoing collaborative, supportive effort between professionals and families is both necessary and involves fully understanding one another's diverse needs (Soto, 2012).

### **Family and Professional Partnerships**

Issues of family-school partnerships were shown to be important nationally and internationally with a variety of participants from racial, cultural and/or linguistic backgrounds. Pickl (2011) discussed the importance of high quality parent-teacher interactions as the cornerstone to building effective communication interventions. Both articles by Gona, Netwon, Hartley, and Bunning (2014) and Bunning, Gona, Newton, and Hartley (2014) also expressed the importance of home-based and professional partnerships. When family members are not involved, AAC device decision and administration is based on what professionals perceive as important and valuable. The result is that families may find that their individual values are not being addressed, and this leads to an inability or unwillingness to successfully support the AAC device or intervention for their child (Parette et al., 2000). Literature suggests that increasing family involvement and fostering professional partnerships can prevent AAC abandonment. There are several recurring barriers mentioned in the literature with respect to family and professional partnerships. These include cultural perceptions of disability and healthcare; internal family dynamics; communication styles; and trust, value, and rapport. Each of these barriers is discussed in the next section.

### **Cultural Perceptions of Disability and Healthcare**

How a family perceives and views their child with a disability can affect how they communicate with professionals. In European American dominant culture, it is common for families to see the disability as having multiple medical and/or social causes such as genetics, the environment, or health complications (Parette & Huer, 2002). As such, a dominant medical view of disability tends to feature recommended treatment or intervention and adheres to the professional recommendations of educators and service providers who can assist. However, since not all cultural views of disability endorse this dominant medical positioning, differences arise in how to deal with the effects of disability.

For instance, literature from the early 2000s suggested that Asian Americans might perceive disability as a reflection of past sins, a function of fate, or an object of shame (Parette & Huer, 2002). This was seen to cause Asian Americans to withdraw from collaboration with professionals and minimize the attention to the disability. Similarly, during this same time period, research about Native Americans as a cultural group suggested that members held similar spiritual beliefs and perceptions about disability—that it was the result of a tribal member's sins, the child's choice before birth, or God's choice (Stuart & Parette, 2002). The authors suggested that the Native American cultural perspective viewed intervention and treatment of a disability as a lack of acceptance of what God has chosen, and in turn there was a tendency to withdraw from participating in decision-making (Stuart & Parette, 2002). Internationally, Gona et al. (2014) also found that a supernatural explanation for communication difficulties was expressed by many rural Kenyan families prior to home-based intervention supports.

While essentialist about the nature of cultural differences among and within multicultural and multilingual groups, early cultural considerations were crucial in understanding belief

systems as culturally significant (Fahim, Nedwick, & Harjusola-Webb, 2014). They also set the stage for how to gather family input in conversations about disability and AAC. Soto (2012) states that the process should begin with cultural awareness, but include professional reflection as well. She suggests that professional beliefs and values are a function of culture; there is no inherently right or wrong way to view the world (Soto, 2012). Identifying the family's perceptions of disability and care is a step towards responding to their needs (Soto & Yu, 2014).

### **Family Dynamics**

Early research on AAC devices and use for students and families from dominant Western culture emphasized the values of autonomy, independence, and self-reliance. The expectation was that children leave home at the completion of high school and primarily emphasize the nuclear family unit (Parette & Huer, 2002). The authors reported, however, that the family unit was a dominant part of most diverse cultures, including Hispanic, African American, Native American, and Asian American cultures. Across many of these cultures, mutual cooperation, interdependence, loyalty, and obligation were reported as key traits of family members and expected of children (Parette & Huer, 2002).

For example, early research about Mexican American families indicated the importance of commitment and advocating for dependency on the family unit (Huer, Parette, & Saenz, 2001). Similarly, Parette and Huer (2002) found that decisions in Asian American families usually relied on the consensus of the extended family. Early studies of African American and Native American families also emphasized the extended family network and tribal unit, respectively, as well as group decision-making. Gona et al. (2014) and Bunning et al. (2014) both also highlighted the expectation that rural Kenyan families would support and care for children with disabilities beyond the completion of schooling. Thus, literature on multicultural

and multilingual groups emphasized the importance of family unit and group decision-making. This is important in educational decisions because an AAC device may be used by a child with a disability as well as family members. Therefore, professionals need to know that key partners may not be part of the nuclear family, but of the larger community (Parette, Huer, & Wyatt, 2002).

Parette and Huer (2002) also described the well-established family systems theory as significant for professionals who must reach out to families to discern three things: (a) which members of a family should be involved in decision making, (b) how every family member feels about AAC, and (c) what the total impact of assessment and services may have on the family unit as a whole.

### **Communication Styles**

McCord and Soto (2004) emphasized the importance for professionals to avoid stereotyping family interactions based on a few conversations. They highlighted the need to fully understand the dynamics of how families communicate and gather input about the communication needs, language needs, and styles of students with disabilities.

Early research also described differences among European American culture—the predominant culture in education—and the use of direct eye contact, taking conversational turns, individuality, and personal achievement (Parette, Blake, & Hourcade, 2003; Parette & Huer, 2002). This contrasts some multicultural and multilingual groups who utilize communication cues that are dependent on context, nonverbal behavior, and internalized cultural values (Huer et al., 2001). Members of these groups understand one another through shared histories, experiences, and place importance on the group dynamic. For instance, the authors reported that in both African American and Asian American cultures, direct eye contact with a professional

can be seen as a sign of disrespect (Parette & Huer, 2002; Parette et al., 2002) while in European American culture the lack of eye contact means that the family is nervous or hiding something (Parette & Huer, 2002).

Again, these early research findings segue to more recent findings on cultural background and behavior, which suggest that individualist and collectivist descriptions between European American and culturally and linguistically diverse populations are reductionist and limited in scope (Oyserman, Coon, & Kemmelmeier, 2002). Furthermore, it limits the within-group differences of cultural groups. For Latino/as, for example, González and Artiles (2016) explain that they are a “complex population with considerable within-group variability linked to race, social class, gender, national origin, generation in the U.S., and perhaps most prominently, language differences, often operationalized in terms of language proficiency or type of language” (p. 9).

Intervention and AAC decision-making does not become personally relevant to families unless their input and perceptions are actively included (Soto & Yu, 2014). In a study involving Mexican Americans, family members revealed that they did not work well with professionals at all because they were not being given the necessary opportunities—they were not invited to AAC assessment meetings, all of which were held in English (McCord & Soto, 2004). Family members stated that they would be more willing to participate if the meetings were more accommodating to Spanish speakers so that they may give insight on their needs or discuss concerns and trainings related to AAC technology (McCord & Soto, 2004).

Additionally, Huer et al. (2001) found that many Mexican American families respected professionals’ opinions and wanted to build collaborative relationships with them. Because many Mexican American families indicated taking responsibility for their own family, they felt

the need not to impede upon a professional's time and efforts (Huer, Parette, & Saenz, 2001). As Soto (2012) suggested, it is important to generate a level of trust and rapport that enables such a family to feel they are not imposing, but rather that they are valuable team members.

Making the *effort* to provide equal, comfortable avenues to communicate and participate set the stage for trust, rapport, and an understanding of value systems to occur. For instance, families that do not speak English convey that simply having a translator is not enough. Many families prefer access to a bicultural translator who can understand and appreciate the subtle differences in culture that can become lost in translations (Parette & Huer, 2002). Additional efforts such as meeting after typical work hours, minimizing professional jargon, and being clear and straightforward were shown to be important in building family relationships (Parette et al., 2000; Stuart & Parette, 2002). Research shows that the process of these actions helps families feel valued and equal (Soto, 2014).

Soto and Yu (2014) assert that it is also important for professionals to reflect on their personal backgrounds and how they make decisions. For instance, professionals might think about why they recommend an AAC device for a child or insist on fostering independence. Understanding personal values and beliefs can help determine how particular values are different from family perspectives. Soto and Yu (2014) highlighted the importance of engaging in conversation with families, and understanding that they may hold different—and often competing—assumptions and values. Therefore, professionals must create open, respectful, and trusting dialogues that support learning and an exchange of ideas with respect to utilizing AAC devices (Soto, 2012).

### **Home-Based Communication Support and Interventions**

Additionally, several of the reviewed studies pointed to the importance of home-based communication and intervention support for students with disabilities. This was true both nationally and internationally. Binger et al. (2008) and McCord and Soto (2004) both indicated the importance of increasing home knowledge as a means of recognizing and appreciating cultural and language differences. Binger et al. (2008) reported that families of Latino/a students with disabilities were more likely to use AAC devices in the home if these devices were seen as helpful.

Similarly, in their respective studies of rural Kenyan families of children with communication needs, Bunning et al. (2014) and Gona et al. (2014) indicated that home-based interventions had positive effects on communication connections between parents and children and shifted attitudes regarding the disability respectively. Gona et al. (2014) also reported that parents shifted expectations of their children's abilities such that they were more based in reality and that they tended to experience more positive feelings after interventions. Both of these articles also emphasized the fact that a home-based intervention was rooted in culturally relevant, contextual intervention and support.

Rosa Lugo and Kent Walsh (2008) also emphasized the importance of supports which increased home communication between parent and child. Along with Binger et al. (2008), both of these studies found that when professionals provide instruction in turn-taking and partner-based instruction in storybook contexts, family-child home interactions would increase. Therefore, professionals are also a critical part of building home relationships between students and parents.

Overall, the importance of home-based interventions and supports cannot be emphasized enough. Interventions that are either based in the home or increase home interactions are



culturally relevant in that they focus on aspects of communication that are valued and are seen as meaningful for families of different cultural and/or linguistic backgrounds. Such interventions are also important in helping to shape the perceptions of both professionals and families. In particular, home-based interventions for culturally and linguistically diverse families have the added benefit of helping parents to form more positive associations with their children with disabilities and gain a sense of support and understanding about the communication needs.

### **Discussion**

Research related to specific cultural groups highlights how European American culture influences every aspect of education (Parette et al., 2003). This means that the expertise of professionals from European American backgrounds, with their own set of values and belief systems, also dominate decision making (Parette et al., 2003). As culturally and linguistically diverse families and their children who use Augmentative and Alternative Communication (AAC) devices are not getting their needs met, the result is a high rate of misuse and abandonment of such devices (Parette et al., 2003). This is a concern for students with complex-communication needs who may be missing out on the ability to communicate their needs or to fully participate academically and socially. Implicit within culture are perceptions of disability, the dynamics of family, differences in language/communication, and a means to forming trusting, open relationships.

This study highlighted the importance of understanding student and family perspectives and use of AAC devices. While studies from 2000 to 2017 emphasized the importance of family/school partnerships (Parette et al., 2000; Soto & Yu, 2014; Stuart & Parette, 2002), and the unique perspectives on disability held by cultural groups (Parette & Huer, 2002; Soto, 2012; Stuart & Parette, 2002), the perspectives of students with disabilities themselves were largely

absent. In fact, very few studies of students with disabilities include their perspectives, their voices, and their experiences (McCord & Soto, 2004; Rashid & Nonis, 2015).

Rashid and Nonis (2015), in particular, highlighted how adolescents wished to be trained early in technology and communication use as well as any issues of self-disclosure of disability online. Light and McNaughton (2012) have also emphasized the importance of recognizing how prevalent online media and mobile technologies can be for users of AAC. As technology continues to shift at a rapid rate, it becomes an important tool for individuals with communication disorders both in terms of social connections and advocacy.

Additionally, early studies of AAC devices and multicultural and multilingual family perspectives negate the role of individual differences within these studies (Artiles et al., 2005). Most early studies of multicultural and multilingual perspectives on AAC focused on narrow definitions of cultural groups such as Mexican Americans, Asian Americans, African Americans, and Native Americans. Such groupings tend to erase within-group differences and rich, complex, and varied representations of culture. This may be in part because all comparisons have positioned multicultural and multilingual groups vis-à-vis European Americans. Indeed, the various research on AAC device use and family and student perspectives of European Americans has been far more prevalent in the field (McCord & Soto, 2004). It is important, therefore, that future research highlight both more complex understandings of culture and within-group differences among cultural groups. Such understanding would do more to further culturally relevant and responsive instruction for students with disabilities who utilize AAC devices and foster more meaningful relationships among families and school professionals.

Further, because inclusion criteria for articles in this review wanted to emphasize participants who were specifically identified as culturally and linguistically diverse, it is

important to note the erasure of racial, cultural, and language information from a large number of studies of students/families perspectives of AAC devices. A large number of studies reviewed were omitted because they failed to mention any of these demographic markers. This leads to significant questions about what the assumption should be in literature that did not mention these markers. Should the reader assume that students and families described in these studies were White and/or speakers of English or dominant languages? Additionally, why might these studies not consider race, culture, and language as important to the understanding of how participants perceived and/or used AAC devices? Previous research has indeed suggested that cultural components are important (McCord & Soto, 2004; Parette & Huer, 2002), and new research has called specifically for including the role of culture in intervention research (Bal & Trainor, 2016).

More recent research has also suggested the importance of considering language differences in the assessment and implementation of AAC devices for students who are bilingual. It also suggested that the role of language needed to be considered when bridging family-school partnerships. While early research tended to frame English language learners from a deficit perspective, recent research suggests that students who use AAC devices in multiple languages see similar if not greater gains in academic achievement and language retention (Paradis, Genesee, & Crago, 2010; Soto & Yu, 2014; Thordardottir, 2010). Consistent with general findings that language learning is an asset rather than a detriment in student achievement, it is important to consider how various language differences can be embraced and highlighted among professionals and families who support AAC users.

Finally, our definition of international culturally and linguistically diverse research on student/family perspectives was revealing in that one of these studies was specifically conducted

with adolescents with disabilities (Rashid & Nonis, 2015) and that these studies specifically highlighted the importance of home-based interventions and supports to support culturally relevant practices (Gona, et al., 2014). These perspectives and practices hold value for U.S.-based settings. As Gona et al. (2014) found, perspectives of families and family partnerships began to shift once professionals began spending more time with families and conducting interventions in the home, including those perspectives that consider supernatural explanations for disability itself.

### **Limitations**

In searching the literature, the original aim of this review was to find current empirical articles, which highlighted the perspectives of students with disabilities who use AAC devices and their families. In reviewing the literature, however, it was apparent that only 5 articles (spanning 2012–2014) met these criteria. This created the issue of having to go back further into the literature to see what studies existed and broadening the initial search terms. Therefore, in this review, article publication date may be seen as a limitation since many of the studies that specifically mentioned culturally and linguistically diverse groups were older.

Additionally, while authors were contacted directly for any recent publications we may have missed, not all authors responded to this request. Therefore, we did not include very recent publications that were not available through our database searches for authors who did not respond to requests for any additional articles. This may have meant that just one or two very recent articles from 2015 to 2017 were omitted from the overall review if they were not available through our extensive database searches.

Furthermore, our search was limited to students with disabilities from K–12 settings, AAC users, and family members. Further work should examine how perspectives may be

different for families and students in settings outside of K–12 such as transition-based programs and early childhood settings. Further, we did not include perspectives of community members and other professionals who work with students with disabilities who use AAC devices such as regional centers, therapists, and other supporting individuals. All of these issues are important considerations for future studies of multicultural and multilingual families and students who require AAC devices.

Lastly, our definition for culturally and linguistically diverse shifted with the international articles that were added to the review. Different definitions of CLD may have shifted the kinds of articles available, though many did not mention race, culture, or language background information for participants. It is possible that some international articles included culturally and linguistically diverse participants, but that they did not represent the majority of participants included and were therefore eliminated.

### **Implications**

Several implications for research and practice from this review are important for consideration. First, it is critical that future research consider the varied nature of culture and that studies begin to utilize the rubric for culturally responsive intervention studies developed by Bal and Trainor (2016). Few studies that were reviewed included a more dynamic definition of culture that highlighted (a) racial, cultural, and language differences, (b) perspectives of individuals with disabilities, and (c) within-group differences. While it was particularly true that older studies had more limited definitions, new studies did not completely address the dynamic nature of culture or the ways in which culture, language, and racial backgrounds intersect. Therefore, future research should include the voices and perspectives of individuals from

culturally and linguistically diverse backgrounds and emphasize their differences as well as similarities.

Additionally, it is essential that future research highlight the perspectives of families and students in terms of AAC device utilization (McCord & Soto, 2004). It is important to consider how changes in technology impact the way AAC devices are introduced into schools, utilized by students with disabilities, and employed in out-of-school settings. Given that much of the hardware for AAC devices was built in the 1980s and 1990s, an essential area to consider in both research and practice is the implications of such incompatibility. With the increase in low-tech devices in schools and access to mobile devices, it will be critical for teacher education programs and schools to include trainings for apps, which support students with disabilities who use AAC devices. Such devices provide a low-cost option and provide the opportunity for companies to work collaboratively with educators to integrate culturally inclusive ideas such as multiple language options.

### **Conclusion**

This study provided a synthesis of the existing studies from 2000–2017 that included diverse family and student perspectives of AAC devices. Initial search results yielded a total of 50 articles using a combination of search terms and a variety of databases. These articles were then narrowed down to exclude those that did not specifically address culturally and linguistically diverse populations of families and students with disabilities who use AAC devices. Our total number of articles (14) included a combination of descriptive, qualitative, and single-case design articles addressing a variety of populations. The majority of these articles focused on family perspectives and how families and professionals interacted to address the needs of students with disabilities who use AAC devices.

Garcia and Ortiz (2013) suggest that, as a field that supports multilingual and multicultural learners, special education needs to utilize an intersectionality framework as a starting point. An intersectional framework provides a way to understand the complex and multifaceted needs of students with disabilities who may also be students from culturally and linguistically diverse backgrounds. Recognizing these differences among different groups of students with disabilities and families who support students with disabilities is critical to the field as a whole.

The understanding of the role of culture is just as critical for users of AAC and their families. Especially as bilingual students and families continue to represent a large percentage of the population of students served in U.S. schools (Artiles et al., 2005), it becomes essential that the needs of these students are included in instructional planning and implementation. Students who use AAC devices and are bilingual have optimal educational opportunities if given appropriate support (Soto & Yu, 2014). Therefore, we conclude with the need for research on multilingual and multicultural learners to include explicit descriptions of the racial, cultural, and language backgrounds of participants to mediate the assumption that participants of AAC research come from dominant backgrounds. We also call for future research to provide opportunities complicating differences, opting to understand intersectional identities, and present the perspectives and ideas of individuals with disabilities as key areas for future research.

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