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COMMENTARY

Understanding the Linguistic Needs of Diverse Individuals with Autism Spectrum Disorder: Some Comments on the Research Literature and Suggestions for Clinicians

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Abstract
The practice of advising bilingual parents of children with autism spectrum disorder (ASD) to speak in a single language, often the majority language of the region, with their child with ASD seems to be common. Such advice, however, is not grounded on empirical evidence but appears to be based more on logical arguments and assumptions. In this commentary, fears surrounding dual language exposure and empirical evidence supporting bilingualism in children with ASD are discussed. Suggestions for future research and three key steps that clinicians can consider taking to better address the needs of diverse learners are provided.

Keywords Autism spectrum disorder · Bilingualism · Best practices · Diversity

According to the National Institutes of Health (NIH 2017), cultural respect, which involves being responsive and respectful towards the language, traditions, and beliefs of different ethnic and racial groups, is essential to providing high-quality care. Autism spectrum disorder (ASD) is a developmental disorder characterized by impairments in verbal and nonverbal social communication, as well as restricted and repetitive patterns of behaviors and interests (American Psychiatric Association 2013). ASD appears to occur in all racial, ethnic, and socioeconomic groups (Wingate et al. 2014). Yet more than 80% of the published research in the ASD field has been conducted in Western [high-income] countries (Happé 2015) with mainly Caucasian participants (Pierce et al. 2014). This represents a potential limitation on our understanding of how the needs and supports required may differ for children with ASD who come from developing countries and/or different ethnic, linguistic, and cultural backgrounds.

For example, the main body of research has not addressed the question of whether children with ASD from diverse linguistic backgrounds should be approached differently. There appears to be a belief that exposure to more than one language could overload and confuse a child with ASD and negatively impact his or her overall language development (Hampton et al. 2017; Kay-Raining Bird et al. 2012; Ohashi et al. 2012). Some, in North America, have recommended that bilingual parents speak exclusively in English with their child with ASD (Jegatheesan 2011; Kay-Raining Bird et al. 2012). Such recommendations are often supported by a logically sounding rationale that centers on the following assumptions. Firstly, bilingual individuals have to recognize that a single concept can be represented by two or more word labels across languages (Traxler 2012). Secondly, children with ASD have impaired joint attention that help map word labels to the proper stimulus (Parish-Morris et al. 2007). Therefore, bilingualism could lead to delays in acquisition of receptive and expressive vocabulary in both languages (Hambly and Fombonne 2012). The argument has also been made that because many languages have very different grammatical systems and structural orders, these inconsistencies could aggravate grammatical delays in children with ASD (Hambly and Fombonne 2012).

However, recommendations that bilingual families speak in a single language appear to be based more on logical arguments than empirical evidence. There are equally compelling arguments for why following this advice could possibly be detrimental to the child with ASD and his/her family. First,

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bilingualism is important in the daily lives of individuals who live in multilingual communities (Kremer-Sadlik 2005). Indeed, with over 50% of the world speaking more than one language, bilingualism is not only more prevalent, but is becoming increasingly more prevalent than monolingualism (Marian and Shook 2012). In the United States, for example, the 2011 Census Bureau reported that the percentage of individuals who spoke a language other than English at home had increased by 158.2% between 1980 and 2010 (Ryan 2013). In addition, as of 2016, more than 20% of the Australian population spoke a language other than English in the home (Australian Bureau of Statistics 2016), and approximately two-thirds of adults in the European Union (EU) knew at least one foreign language (Eurostat 2015). In this increasingly multilingual world, restricting an individual with ASD to only one language may inadvertently isolate him or her from family and community.

Because individuals with ASD have impaired social interactions skills (American Psychiatric Association 2013), the inability to speak and comprehend the speech of others in their home and community may exacerbate their existing social isolation and social challenges. Moreover, if parents are not as fluent in the majority language of the region they are living in as in their heritage language, then the quality of parent–child relationship and family dynamics could be negatively affected (Kremer-Sadlik 2005). That is, parents might not be able to communicate as effectively with their child and this could lead to increased emotional distance (Hampton et al. 2017). Although an empirical study found that language usage during parent–child interactions in English, their non-native language, by bilingual parents of children with ASD did not differ significantly from monolingual parents, participants in this study were highly-educated and may have received more education and exposure to English than those of a lower socio-economic class (Hudry et al. 2017). Despite there being no significant difference in language usage, bilingual parents in this study still indicated that they were more comfortable interacting with their child in their native language, a preference that should be taken into consideration. Last but not least, because heritage languages have been demonstrated to not only function as modes of communication between family members, but also help develop and maintain cultural identity (Yu 2013), not using heritage language with the child could lead to a loss of his or her cultural connectivity or identity.

Teaching multiple modes of communication to individuals with ASD is somewhat controversial due to the fear of exacerbating existing language deficits. Many of the arguments against dual language learning are similar to the ones used in the controversy surrounding the use of augmentative and alternative communication (AAC). AAC interventions teach individuals to communicate through modalities other than, or in addition to, the use of natural speech. Examples of AAC modalities include sign language, the Picture Exchange Communication system (PECS), and speech-generating devices (SGD). Some parents and professionals are reluctant to implement an AAC intervention with a child with ASD due to fears that AAC might impede the child's natural speech development (Reber 2012; Schlosser and Wendt 2008; Sigafoos et al. 2003; Turner and Spears 2011). However, research has suggested the opposite. Specifically, AAC interventions have been associated with increases in children's natural speech production (Ganz et al. 2012; Gevarter et al. 2016; Greenberg et al. 2014), as well as improved joint attention and play skills (Charlop-Christy et al. 2002; Lerna et al. 2014, 2012). Today, AAC systems are commonly used and there are a number of evidenced-based interventions for teaching AAC use to children with ASD (Ganz et al. 2011; Trottier et al. 2011; van der Meer and Rispoli 2010).

The fear of hindering language development by teaching individuals with ASD multiple modes of communication can also be seen in decisions regarding dual language usage. The emerging research literature, though scarce, does not seem to support this fear. Specifically, studies comparing language outcomes of young monolingual and bilingual children with ASD have not found any significant differences (Hambly and Fombonne 2012; Ohashi et al. 2012; Petersen et al. 2012; Reetzke et al. 2015; Valicenti-McDermott et al. 2013). Youth with ASD, between the ages of 6 and 16, exposed to a second language did not differ on measures of executive function (EF) and functional communication (FC) when compared to those who were not exposed to a second language (Larocci et al. 2017). Furthermore, research on heritage language usage during intervention for children with ASD has demonstrated that using the child's heritage language during instruction is at least as effective as using English (Dalmau et al. 2011; Vaughn 2013). In fact, incorporating heritage language into intervention may even facilitate English language learning (Seung et al. 2006) as well as decrease challenging behavior and increase accuracy of responding (Lang et al. 2011). Preference assessments have also indicated that nonverbal children with ASD whose primary home language differ from the majority language may prefer to receive instruction and praise in their home language (Aguilar et al. 2016), especially when task difficulty levels increase (Aguilar et al. 2017).

Although such results are promising, caution in interpretation and generalization is warranted. Overall limitations in studies comparing language outcomes of monolingual and bilingual children with ASD include: small sample sizes, homogeneity in age of participants (only preschool to kindergarten aged children were studied), variations in the definition of bilingualism, and lack of assessment of long-term outcomes. Though Larocci et al. (2017) used a larger sample size (N = 174) and included school-aged participants, measures of EF and FC were based on parent reports, which may contain

biases. Limitations in studies that investigated heritage language usage during intervention include lack of experimental control (Seung et al. 2006), and absence of treatment fidelity reports (Dalmau et al. 2011; Vaughn 2013).

While a more extensive evaluation of the quality of research and strength of evidence for and against bilingualism is outside the scope of this paper, systematic reviews that do include such evaluations should be conducted. Although two systematic reviews have summarized included studies (Drysdale et al. 2015; Lund et al. 2017), none have evaluated the strength of evidence using meta analytic protocols. Another gap in the current literature is large-scaled studies investigating long-term outcomes in language, functional communication and executive functioning of bilingual and monolingual individuals with ASD. With the rise in globalization and immigration, there is also an ever-increasing need for research that addresses challenges in diagnosing and providing treatment to children from foreign cultures. Specifically, how can a monolingual diagnostician accurately diagnose a child from a foreign culture who speaks a minority language? How do monolingual therapists overcome language barriers when working with a child/family who does not speak the same language? Given the increase in globalization and immigration, there is an urgent need for research tackling such questions.

Although evidence-based practices for working with linguistically diverse individuals have not yet been established and much research on this topic is needed, current empirical evidence does indicate an absence of negative side effects resulting from dual language exposure. Furthermore, special education policies indicate that individuals with disabilities should be allowed the same opportunities for bilingualism as their typically developing peers (Pesco et al. 2016). Given that discouraging bilingualism could potentially isolate an individual with ASD from his/her community, negatively impact parent–child interactions, and lead to a loss of cultural identity, the practice of advising bilingual parents to speak one language exclusively to their child with ASD should probably be discontinued. Instead, clinicians should seek to alleviate parental fears of dual language usage, and support them in their use of heritage language in the household. The advice for parents to use a singular language often stems from clinicians feeling unprepared to provide guidance to diverse families (Drysdale et al. 2015). In light of the above, the next section will highlight a few key steps that clinicians can consider taking to better address the needs of diverse learners.

Considerations for Clinicians

Inquire About Language Usage

With the increase in globalization and immigration, it is imperative for clinicians to take language and culture into account to ensure high-quality health care (NIH 2017). We believe a critical aspect of being culturally respectful is to inquire about language usage, regardless of the child's diagnosis or outward appearances. Besides assessing a child's adaptive behavior (including communication and social skills), the intake process should also seek to clarify what language(s) is(are) used with the child in family and community environments. Examples of questions that clinicians might ask to gather such information include: *What language are you (*i.e. *the parent) most comfortable speaking in?, What language/languages do you speak in within your family unit?, If you have other children, what languages do they speak?, and At what age was your child first exposed to [language X] and [language Y]?* Information on family members' language abilities is important because it may affect language usage choices (Drysdale et al. 2015). For instance, if the child's parents are fluent in English but his grandmother, who is his main caregiver, only speaks Mandarin, being able to communicate in Mandarin may be a necessity for this child. Information should also be gathered on language usage within the wider family network. For example, clinicians can inquire into whether extended family members speak a language different than that of the primary caregivers. Such information on exposure and input of each language can be easily gathered using free questionnaires available online like the Alberta Language Environment Questionnaire (ALEQ; Paradis 2011), Language Experience and Proficiency Questionnaire (LEAP-Q; Marian et al. 2007), and Bilingual Language Profile (BLP; Birdsong et al. 2012). Information about whether the family belongs to a specific ethnic or religious community might also be relevant, but it is important to approach such topics with caution and tact. When obtained with consent, respect, and sensitivity, information on the family's linguistic background and preferences may enable clinicians to increase the social and ecological validity of their interventions. Of course, ultimately it is the parent's decision as to what language(s) are used during intervention.

Address Fears of Dual Language Exposure

While gathering information about families' linguistic backgrounds and preferences, clinicians might also be able to address any fears that parents may have regarding dual language exposure. To be responsive and sensitive to such fears, understanding factors that may contribute to a parent's hesitancy regarding dual language exposure, and presenting objective data on the effects of bilingualism on children with ASD are key. Specifically, clinicians can address fears of exacerbating their child's language delay by informing parents of the results of studies that have compared language abilities of monolingual and bilingual children with ASD (Hambly and Fombonne 2012; Ohashi et al. 2012; Petersen

et al. 2012; Reetzke et al. 2015; Valicenti-McDermott et al. 2013). If parents are concerned about their child's ability to respond to more than one language due to having cognitive impairments, clinicians can also assure parents that research has demonstrated that cognitive impairments do not appear to prevent a child with ASD from being bilingual (Hambly and Fombonne 2014). However, clinicians should be cautious of making conclusive statements on the effects of bilingualism on children with ASD. While current published studies do not indicate negative effects of bilingualism, research in this field is scarce and the population studied, limited. Furthermore, individual differences may cause variations in the effects of bilingualism on children with ASD. These are also important points for clinicians to communicate when addressing parental fears and making recommendations regarding language usage.

Support Parents in Their Use of Heritage Language in the Home

Although a clinician may not be able to speak in a family's heritage language, they can still be culturally respectful and responsive by supporting parents in their use of heritage language with their child. One method to do this is through parent training. Clinicians can conduct parent training sessions in the majority language, but allow parents to practice with their child using heritage language. Although the clinician might not be able to understand what is being said, he/she can watch for the parent and child's behaviors and give feedback based on behaviors observed. For example, if a child is working on functional play skills, the clinician can model how to prompt the child to imitate a play action in the majority language and have the parent practice in his/her heritage language. In this scenario, the clinician can still provide feedback on the parent's use of the prompting procedures without understanding the parent's heritage language. Another way for clinicians to support and respect a family's heritage language is to learn common words that the family uses and incorporate those words into interactions with the child. Clinicians can also consider training family members on specific intervention techniques like pivotal response training (Koegel and Koegel 2006) and the natural language paradigm (Laski et al. 1988), that can be used to facilitate language development in their heritage language (Drysdale et al. 2015).

In summary, clinicians can better address and support the needs of diverse learners with ASD by learning about language usage within families and their communities, alleviating parental fears of confusing their child by providing objective data on dual language usage, as well as incorporating the family's preferred and/or heritage languages into treatment. Raising a child with ASD can be challenging and stressful for parents (Giovagnoli et al. 2015). As clinicians, it is our responsibility to provide the highest quality of care possible. Given that empirical evidence is scarce and evidence-based practices regarding language choices for children with ASD are not yet available, recommendations on language usage should be framed and informed by individual abilities and interests, as well as familial and environmental contexts—minority language parents who want or need to raise their children with ASD as a bilingual should be supported in their decision.

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Compliance with Ethical Standards

Conflict of interest Nataly Lim, Mark F. O'Reilly, Jeff Sigafoos and Giulio E. Lancioni declares that they have no conflict of interest.

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