

Why study bilingualism in autistic people?

Autism
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Language proficiency and use are highly heterogeneous between autistic people. While some develop language skills within a typical range and timeframe (Brignell et al., 2018), others experience significant difficulties (Kjelgaard & Tager-Flusberg, 2001) and language delay is the most common cause of initial referral to specialist services in children (Dover & Le Couteur, 2007). Difficulties with pragmatic language, such as metaphor, are often present even for those who are otherwise fluent communicators (Paul et al., 2014; Tager-Flusberg et al., 2009). Other challenges include following communication norms, such as turn taking during conversation, structuring narratives, and repairing communicative breakdown (Geller, 1998; Paul et al., 2014; Surian et al., 1996) – these are not impairments per se, but the mismatch between autistic communication and other’s expectations can result in problems. At the same time, there is plenty of evidence for enhanced linguistic skills among autistic people, including hyperlexia (Craig & Telfer, 2005), and an oft-reported capacity for self-taught acquisition of multiple languages (Digard et al., 2020).

Bilingualism is a widespread phenomenon, with estimates suggesting that more than half of the world’s population are bilingual (Grosjean, 2010). Bilingualism can be defined as proficiency in two or more languages – the term is used to cover both strict bilingualism and also multi-lingualism – but the manifestation of this is highly heterogeneous, such that the term ‘bilingualism’ covers a spectrum of proficiently levels, ages of acquisition and language use in daily life (Marian, 2018). There is a large and often controversial literature examining the cognitive impacts of bilingualism, such as whether or not bilingual people have enhanced executive abilities, as well as its linguistic manifestations (Poarch & Krott, 2019). A steadily growing body of work is now examining the experience and impact of bilingualism for autistic people specifically.

One motivation for this work concerns important practical questions about how language may develop for autistic people in multi-lingual environments. In particular, many parents of bilingual, autistic children worry that delays in language acquisition or pragmatic challenges of language use may be exacerbated if their child is raised in a bilingual environment (Kay-Raining Bird et al., 2012) or

that exposure to bilingualism will be confusing (Yu, 2013). Research suggests that practitioners can share this view and may advise parents in largely monolingual societies to provide a majority-language, monolingual environment for their child (Hampton et al., 2017). However, concerns about language development have so far not been supported by the literature. No significant differences have been identified between monolingual and bilingual autistic children on parent report measures of receptive and expressive vocabulary (Hambly & Fombonne, 2012), age of early language milestones (Ohashi et al., 2012), or structural language or pragmatics (Meir & Novogrodsky, 2019; Reetzke et al., 2015). Systematic reviews, drawing in work covering a variety of language combinations, reinforce this conclusion (e.g. Beauchamp & MacLeod, 2017; Marinova-Todd & Mirenda, 2016; Uljarević et al., 2016). Ultimately, there is no evidence to support restricting autistic children’s language exposure: in bilingual families, autistic children can and should be bilingual, and practitioner recommendations are beginning to reflect this (Digard & Davis, 2021).

A second motivation concerns a fascinating overlap in cognitive and developmental domains purported to be influenced positively by bilingualism and negatively impacted for autistic people. Considering non-verbal communication, bilingualism is associated with more frequent gesture use compared to monolinguals (Nicoladis et al., 2009). Reduced use of gestures such as pointing and showing is a characteristic common among autistic children (Watson et al., 2013) while preliminary evidence indicates that bilingually exposed autistic children demonstrate greater use of gesture (Valicenti-McDermott et al., 2013). Bilingualism is also associated with advantages in aspects of pragmatic language (Siegal et al., 2009). For example, neurotypical bilingual children speaking both Italian and Slovenian exhibited higher accuracy levels when asked to identify whether a speaker has failed to be informative, truthful, relevant, and polite compared to monolingual controls (Siegal et al., 2009). As previously mentioned, autistic people frequently experience difficulties in this domain (Paul et al., 2014).

Bilingual children and adults often outperform monolinguals on Theory of Mind (ToM) tasks, including appearance-reality, perspective-taking and false-belief tasks

(Goetz, 2003; Kovács, 2009; Rubio-Fernández & Glucksberg, 2012). The mechanism for this may relate to the need for bilingual children to map their language output to the communication needs of their partner. Bilingual children will switch languages to attract their mother's attention (Rontu, 2007), and bilingual pre-school-aged children have been shown to switch languages to match that of an experimenter to repair communication breakdown (Comeau et al., 2007). In contrast, difficulties with ToM task performance for autistic people are widely reported in the literature (Baron-Cohen, 2000; Senju, 2012). This raises the question of whether the explicit marking of individual communication needs and perspectives that accompanies use of multiple languages might facilitate ToM task success for autistic children. That said, ToM abilities are highly heterogeneous across individuals (Scheeren et al., 2013) and the real-world relevance of these laboratory tasks is unclear (Quesque & Rossetti, 2020). In addition, contradictory findings on autistic ToM may be attributable to differences methodologies (Bloom & German, 2000). This raises the possibility that apparent enhancement of ToM task performance for bilinguals relates to practice in controlling multiple languages, leading to improvement of the executive control abilities that are required for successful performance across ToM tasks.

Indeed, several studies have reported advantages for non-autistic bilingual children across a range of executive function tasks (Barac et al., 2014; Bialystok, 2009), though others report a lack of group differences between monolinguals and bilinguals within the same subdomains (Dick et al., 2019; Paap & Greenberg, 2013). At the same time, autism is commonly associated with executive function difficulties (e.g. Hill, 2004), with children generally exhibiting lower performance levels across executive function tasks (Demetriou et al., 2018). Studies directly examining executive functions in autistic bilinguals have found enhanced task switching abilities in a desktop task, though not from parent report data on this skill in daily life (Gonzalez-Barrero & Nadig, 2019). One small study found more accurate responses on a working memory task, as well as a greater tendency to process stimuli globally rather than locally, among bilingual compared with monolingual autistic children (Baldimtsi et al., 2016). Sharaan et al. (2020) investigated the impact of bilingualism on sustained attention, working memory, interference control and task switching in Arabic-English-speaking autistic and non-autistic children. Autistic bilingual children exhibited an advantage in sustained attention, but no difference in other measured facets of executive function when compared to monolingual autistic children. Similarly, Montgomery et al. (2021) explored the impact of bilingual exposure on inhibitory control in autistic and non-autistic children, measuring bilingualism on a continuum of exposure. While higher levels of bilingual exposure positively impacted the ability to control motor impulses, irrespective of diagnostic status,

bilingual exposure did not significantly affect inhibition involving visual attention.

None of this is intended to imply that bilingual exposure might be used as an intervention. Instead, we find the overlapping pattern of domains raised as candidates for both a positive impact of bilingualism, and an area of common difficulty among autistic people, to be theoretically fascinating. This pattern exposes the flexible nature of developing cognition and the importance of understanding individual differences within the autistic population, which may vary depending on language exposure. Examining variability in the language and cognitive profiles of autistic people can help us move away from models that designate autistic people as categorically impaired in one area or another. For example, if bilingual autistic children perform differently on social-cognitive tasks compared with monolingual peers, this challenges the notion that autism is defined by social-cognitive impairments. Bilingual autistic children may have skills that enable thriving, without normalising.

However, there is also a third motivation to examine autism and bilingualism, regardless of any impact on either language or cognition. Ultimately, autistic people have a right to their cultural heritage, which often includes speaking multiple languages (Davis et al., 2021). Studies have shown that children from minority language-speaking families benefit from the close familial and cultural connections that their shared language affords, and that these benefits may further be associated with social and emotional well-being (Halle et al., 2014; Han & Huang, 2010). Parents may feel more able to connect emotionally with their child in their home language, given the association between one's native language and emotional processing (Opitz & Degner, 2012). Kremer-Sadlik (2005) interviewed immigrant parents of autistic children and found that parents using only English with their children led to a decline in interactions between the parent and child and a decline in the children's participation in family conversations. Similar studies have also found parents report feeling less restricted and closer to their autistic children when using their native language (Kim & Roberti, 2014; Yu, 2013). Hampton et al. (2017) report that for parents with autistic children, minority language use was frequently associated with expressions and affection between parent and child. When parents of neurotypical children were asked the same question, although they valued the minority language because of its links to heritage, they did not refer to parent-child bonds as frequently. If parents feel pressured to speak in their second language only, to provide a monolingual environment for their autistic child that corresponds to the official language of the country they are living in, it is clear that this could have negative implications on their family well-being. In particular, speaking one language to an autistic child, but two languages with other family members, could have a devastating impact on family integration.

The family plays an especially important role in the well-being of autistic people, given the difficulties autistic children may sometimes experience forging peer relationships (Calder et al., 2013; Frankel et al., 2010). In the language domain specifically, autistic children are more likely than their typically developing siblings to acquire their mother's accent (Baron-Cohen & Staunton, 1994). As such, the socio-emotional as well as linguistic benefits of exposure to the minority language in the home are important for autistic children. Reports from adults reinforce and extend this position, by showcasing the positive ways in which speaking multiple languages can impact quality of life. For example, qualitative data from bilingual and multi-lingual adults have shown that bilingualism had facilitated their access to interests and hobbies, as well as employment opportunities (Nolte et al., 2021). Bilingualism also broadened participants' mind-sets and contributed to increased self-confidence in social interactions (Digard et al., 2022).

Studies examining linguistic, cognitive and relational impacts of bilingualism frequently rely on small samples and have, to date, rarely been pre-registered. Confounding factors such as socio-economic status (Morton & Harper, 2007) and language ability (Gathercole et al., 2016) are rarely adequately controlled or examined. This is also an area where autism research is hampered by its strong bias towards data collection in WEIRD countries (Western, educated, industrialised, rich, democratic). Here, monolingualism tends to be the norm, and if children are bilingual, it may be because they are part of an elite, expat community, or part of a disadvantaged community (e.g. refugees). In many LMICs (low- and middle-income countries), multi-lingualism is the norm: conducting more studies in those contexts would enrich our picture of the experience and impact of bilingualism.

It would be wrong to draw firm conclusions from the still-sparse literature at this stage. Very little research has investigated the many intriguing ways in which autism and bilingualism could interact beyond the linguistic domain. Nonetheless, direct research into autism and bilingualism does not indicate that bilingualism poses disadvantages for autistic people in terms of language development. In addition, there are clear and powerful arguments for the importance of bilingualism in supporting the family unit and its cultural heritage. It is vital that clinicians are aware of existing findings suggesting no detrimental effects of bilingualism, in order to be able to give informed language environment recommendations to families. Regardless of any potential benefit, or indeed disadvantage, from being bilingual, autistic children's rights to their cultural and linguistic heritage are paramount.

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