COMMENTARY

Pragmatic disorder of monolingual and bilingual children with autism

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Children with autism show pragmatic disorder in their language and communication regardless of the structural language skills, i.e., morpho-syntax and phonology. Pragmatic impairment is observed very early in children with autism even before the evolvement of language skills. For example, high-risk infants who were later diagnosed with autism showed significant delays in communicative gestures at 12 months (Talbott, Nelson, & Tager-Flusberg, 2015). Here I discuss language tests and tasks that explore pragmatic skills, and their importance for assessment bilingual children with autism.

As noted by Prevost and Tuller (2022, henceforth, P&T) in many studies that tested children with autism, language measures yield global measures. These include a single score for language, or a distinct score for receptive and expressive language. The global scores might mask the pragmatic disorder and as a result, in many studies the language disorder of children with autism is not shown. Note that different language features are being tested in language tests that use global scores. For example, in the Preschool language Scale (PLS-4 and its previous versions, Zimmerman et al., 2002) each subtest targets a specific language feature, and it is explicitly indexed in the test. The items cover: vocabulary, syntax, morphology, phonology and integrative skills including pragmatic skills (e.g., narrative abilities).

The importance of assessing the pragmatic subscale in the case of autism is discussed by P&T's review. For example, they presented the Children's Communication Checklist-2 questionnaire (CCC-2, Bishop, 1998) subscale, which aim to distinguish between pragmatic versus other language features. Indeed, in two studies that tested bilingual children with autism using the CCC, the effect of autism was shown, with no effect of bilingualism (Meir & Novogrodsky, 2020a; Reetzke et al., 2015). Children with autism, regardless of their language status (monolingual or bilingual) scored lower than their typically-developing peers on pragmatic subscales of the CCC. Furthermore, Meir and Novogrodsky (2020a) showed that the CCC scores strongly correlated with the Autism Diagnostic

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Observation Schedule (ADOS) scores (Lord et al., 2000), suggesting that the CCC tool is also sensitive to autism severity. The findings are highly important in the light of abundant findings that bilingual children with typical and atypical language development show different levels of proficiency across their two languages. These findings also support the importance of using parental questionnaires (Kašćelan et al., under review; Novogrodsky & Meir, 2020). In the case of bilingual children with autism, parental questionnaires comprise important information such as Age of Onset of Acquisition (for each language the child uses), quality and quantity of language experience.[1] This information can be developed to a continuous measure of bilingualism rather than a dichotomy grouping of children to monolingual versus bilingual.

The importance of subscales and sub-linguistic features in the case of language assessment of children with autism is supported by studies that explored different language skills. These studies showed specific patterns of pragmatic disorder (Meir & Novogrodsky, 2019; Novogrodsky & Edelson, 2016; Tager-Flusberg, 2004). For example, as noted by P&T's review, monolingual children with autism showed unique pragmatic errors in a production task of Wh-questions (e.g., perseveration response when a question production is required), which were not shown in typically-developing children and children with Developmental Language Disorder. Another example is shown in Tager-Flusberg (2004) who tested 44 children with autism using detailed language assessment tools: non-word repetition task, lexical-semantic test and syntactic skills. Eleven children from the autism group performed within the normal range in all three tests, suggesting that the language disorder of children with autism can be specific to pragmatics for certain children. This is not to say that some children show a mixed picture of difficulties in both language structure and pragmatics, and as discussed by P&T, to understand the full picture of autism we need to study the full range of the spectrum. Yet, these findings and the studies that used the CCC questionnaire emphasize the pragmatic disorder in autism, which is shown in sensitive pragmatic tasks.

Understanding the pragmatic disorder of bilingual children with autism is complex, due to the interaction of another language when exploring pragmatic features. P&T described how bilingual children learn their other language with minimal communication and interaction. Here I add a contrastive profile of a child who is fluent in her heritage language but struggles in acquiring the societal language. The aim of this story is to highlight the complexity of language

1. For monolingual children, parental questionnaires are used as complementary tools in addition to direct testing of the child. For bilingual children, in some cases these might be the core source of information for clinical and research decisions (Novogrodsky & Meir, 2020).

assessment in the case of children with autism, when another language interacts in acquisition. We met a school-aged girl as part of a research project in which we tested bilingual children with autism in Hebrew and Russian (Meir & Novogrodsky, 2020b). She was 8 years old, born in Israel to Russian-speaking parents and was diagnosed with autism at the age 3. She has been attending special education kindergarten for children with autism, where the societal language (Hebrew) is used. The kindergarten team reported that she hardly communicated with them nor with the children. However, with the Russian-speaking researcher, the girl freely communicated in Russian, showed intact syntax, developed lexicon and high non-verbal IQ. Despite being exposed to Hebrew for 5 years, 6 days a week for 8 hours, at the age of 8, she communicates only in her heritage language (Russian). There could be many explanations for her poor Hebrew, but this story and the cases described by P&T, call for sensitive measures targeting language-universal over language-specific pragmatic features in the case of bilingual children with autism.

A recent study explored separate and combined effects of bilingualism (Hebrew and Russian) and autism on pragmatic-universal and pragmatic-specific features (Meir & Novogrodsky, 2021). The language-universal pragmatic measure was informativeness, as indexed by referential contrasts,[2] and the language-specific pragmatic measure was definiteness marking of referential expressions (e.g., introducing a story character with a definite noun phrase, rather than a required indefinite one). The findings showed that both monolingual and bilingual children with autism provided under-informative responses compared with their typically-developing peers. In contrast, definiteness marking was non-target-like in monolingual and bilingual children with autism and in bilingual typically-developing children. The findings suggest that tasks that target informativeness can be used as language-universal pragmatic measures which are sensitive to pragmatic impairment yet not affected by the child's dual language exposure.

To conclude, this commentary calls for developing pragmatic tasks for assessing children with autism (in line with the idea of subscales and language skills across different language domains). It also suggests that language-universal pragmatic measures might be better for the multilingual situation of many children with autism.

2. For example, the expression 'a/the dog' is informative in the context of a single dog, but under-informative in a context in which there are two dogs (e.g., a big one and a small one). In contrast, in the context of a single dog, "the big dog" is over-informative (for more examples of impaired informativeness in autism, see, Marinis, et al., 2013).

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