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Who did what to whom?

A project at the University of Kent demonstrates key areas of language at which individuals with autism excel.

Vikki Janke explains aspects of grammatical and contextual skills that are right on target and why this is good news.



In everyday conversation we refer to people in different ways (i.e. 'Jane', 'the girl', 'she', 'her', 'herself', silent pronoun (which linguists often call an 'empty category' or *ec*) without giving a moment's thought about how we chop and change from one label to another as we become more engrossed in our conversation:

"I saw **Jane** yesterday. **The crazy girl** was changing into a bright red dress for **her** interview. **She** asked how it looked and then admired **herself** in the mirror.

I persuaded her *ec* to change into something a bit more conservative, and said that *ec* turning up at the Foreign Office in a cocktail dress wasn't the best way of securing that particular job."

Throughout this discourse, Jane is referred to in six different ways. However, we know that it is Jane who is wearing the dress, Jane looking in the mirror, Jane getting changed and Jane potentially turning up at the interview. The reason we can be so flexible with the terms we use to talk about people is because

most of the time we can safely assume that the person we're chatting to can keep track of 'who did what to whom' without any difficulty. It's highly likely that they will respond using similar language and that this tacit understanding between us will ensure that we communicate successfully.

But there are some people who can have real problems communicating in this way: the intuitive, effortless bridges we form to make referential links pose challenges which can only be overcome through

painstaking effort. Children with autism spectrum disorder fall into this category. The classic symptoms associated with individuals on this spectrum are a so-called triad of impairments, where, to a greater or lesser degree, there are issues with social competence, communicative ability and repetitive behaviour. But the word 'spectrum' is key. It means that there is a great deal of variation and that children do not conform to some kind of prototype. Aside from this variation, a frequently neglected point is that these children have their own characters quite independent of their autism diagnosis: they are not wholly defined by their diagnosis, a point we should bear in mind when generalising about individuals.

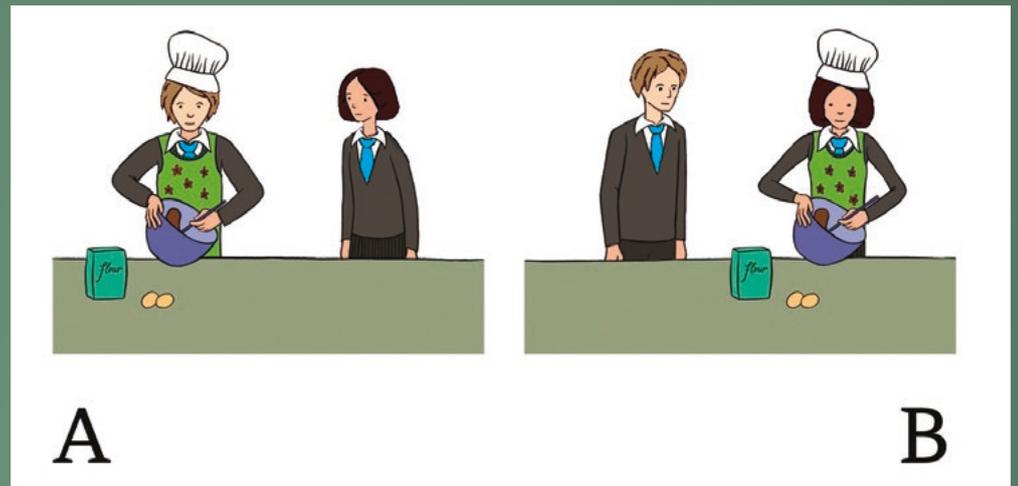
Recent linguistic research has paid more attention to variation in autism. This is important because the more we distinguish between children on this spectrum, the more precise profiles we can build of their communicative strengths and weaknesses. We can then incorporate this knowledge into intervention programmes tailored to meet a particular child's needs. Without this precision, we risk producing overly broad packages which either under – or overestimate a child's linguistic knowledge, resulting in redundant, missed or delayed language therapy.

Together with my colleague, Alex Perovic at University College London, I have recently uncovered aspects of grammar and pragmatics that seem to be in sync with that of typically developing children. This is exciting because most of the literature reports on these children's pragmatic weaknesses, so finding a strength gives us

something that can potentially be used as a stepping stone for more complex pragmatic problems. Here is what we did.

If I read you the sentence below and then asked you to pick the picture that went best with the sentence, which one would you pick?

'Joanna persuaded Arthur ec, to make the cake.'



Yes, the right answer is A! Your job in this so-called 'picture-selection task' is to decide who can be interpreted as the agent of the verb 'make'. It can never be B, in which Joanna is making the cake. If I prompted you with an extra sentence before the critical one, as in 'Let me tell you something about Joanna. Joanna persuaded Arthur to make the cake', your answer should still be Arthur. Even if I gave you a short narrative consisting of two sentences before the critical one, as in 'Joanna is having a birthday party. Joanna prepares all of the party food. Joanna persuaded Arthur to make the cake', you should still stick stubbornly to Arthur as the purported baker of the cake. The reason you do this so confidently is because the interpretation of this sentence is set grammatically: contextual cues do not help you to decide how to interpret it. Most

typically developing children get this right from about six to seven years of age. That is, they ignore contextual cues in inappropriate circumstances.

We examined children with autism between the ages of seven and sixteen on these kinds of sentences and found them to respond no differently to the typically developing control

groups. We focused on a subgroup, namely high-functioning children with autism (these are children who score above 80 on a non-verbal reasoning measure) so that we could pay attention to the heterogeneity referred to above and then replicated this study on a further high-functioning group and found the very same results. This was important as these sentences had never been tested in autism before, so replication allows for extra confidence in the findings.

Once we had confirmed that the children with autism could ignore context when it is not vital to interpretation, we wanted to see if they *did* pay attention to it when it was helpful. This would tell us whether the children were able to attend to context selectively. With this in mind, we presented them with sentences whose interpretations are discourse-

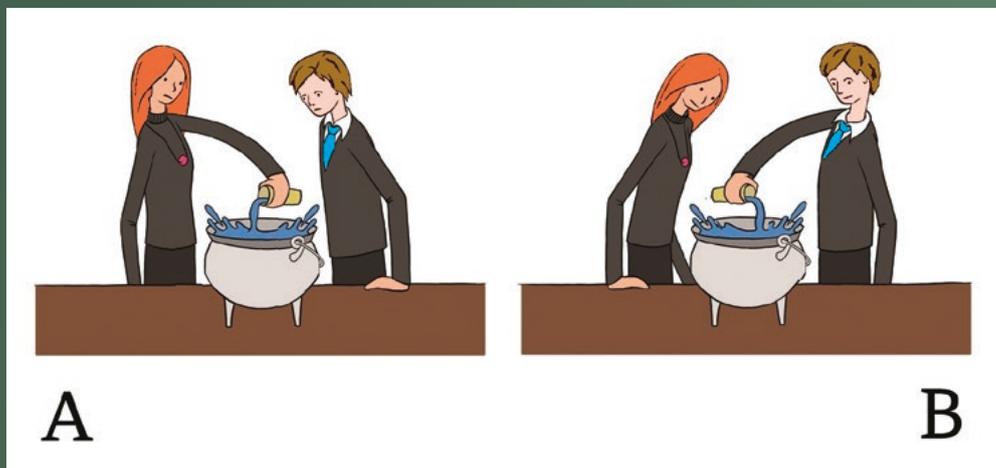
led. Using the same paradigm as above, children were asked to pick the picture that went best with sentences like this: **'Arthur said to Sally that ec, pouring the water quickly was a mistake.'**

namely Arthur. Crucially, our children with autism did exactly the same.

At this point, we had established two things. Firstly, high-functioning children with autism knew how to ignore a

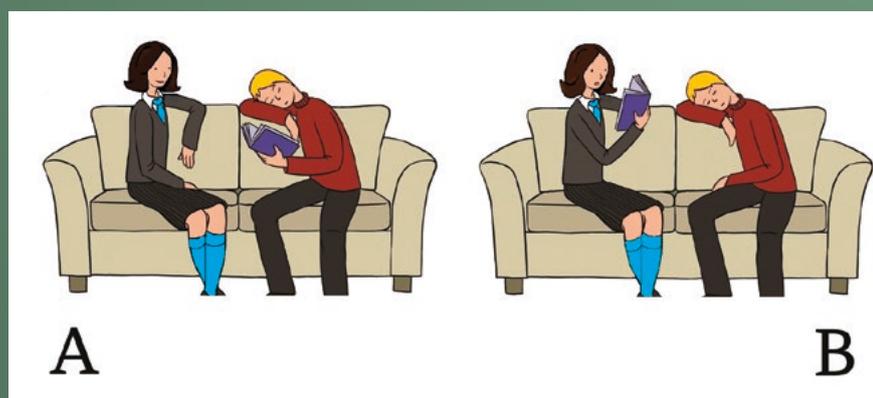
responses. Who would they interpret as reading the book? Well, in the baseline sentence, there was variability again. Many children chose Charlie but the younger the child was, the more likely it was that they went for Joanna. What was made apparent in the contextually-cued conditions, however, was that once again our children with autism were performing exactly like our typically developing children. When presented with 'Let me tell you something about Joanna. Reading the book slowly made Charlie sleepy', nearly all of the children's responses switched to Joanna.

The kind of pragmatic skill I've outlined above is called 'reference resolution' because you have to resolve who is being referred to on the basis of the amount of context given. It's a lot simpler than many of the pragmatic tasks that have been examined in children with autism, which are often used as the basis for the generalisation that children with autism have deficient pragmatic skills. Take, for example, the sentence, 'That man is a toad'. In order to understand this metaphor, the



This time, both groups' responses differed. Although the children chose the picture with Sally as the agent of 'pour' more often, about a third of responses had Arthur as the agent. That's because unlike the first example, there is no right answer to this one. Context decides who the agent is and context can change. The real test came when we inserted the contextual cues before the sentences to see if their answers would differ from the one they had given to the baseline question, as in 'Let me tell you something about Arthur. Arthur said to Sally that pouring the water quickly was a mistake', or 'Arthur is making a stew. Arthur holds the jug clumsily. Arthur said to Sally that pouring the water quickly was a mistake'. Both groups of children performed similarly. Children without autism were not swayed by the weak contextual cue, still preferring Sally as the agent of 'pour'. However, in the face of the strong cue, nearly all of the responses shifted in line with the referent primed in the narrative,

contextual cue when it was not relevant, and – when given a really strong cue – they could use it when appropriate. One last sentence type was needed to show us that they could also attend to weak cues in a typical way. We used a sentence known to be easier for adults and typical children to shift pragmatically: **'ec, Reading the book slowly made Charlie sleepy.'**



In this last construction only one person is mentioned in the sentence, namely Charlie. The question was whether the presence of Joanna as a purely visual cue would affect children's

child must first grasp what a toad is, which relies on their having access to this encyclopaedic knowledge. S/he then has to reject this encyclopaedic knowledge and link attributes



“... high-functioning children with autism knew how to ignore a contextual cue when it was not relevant, and – when given a really strong cue – they could use it when appropriate.”

prototypically associated with toads (e.g. slimy, warty) to properties that can be used to describe humans (e.g. loathsome, vile). Only then can s/he reach the conclusion that what is intended is that the person is being described as horrid. So this example of pragmatics requires the ability to perform a complex sequence of inferences before its non-literal interpretation can be reached. If we start to break down these components though, and pay equal attention to the smaller inferential steps needed to understand pragmatically regulated examples of language, we might tap into areas that are intact and that can be used when tackling the more complex cases.

The type of pragmatic skill we tested in this study focused on the children’s ability to reject contextual cues that are not helpful and also to use contextual cues to establish links between referents that are. This weighing up of the appropriateness of incoming

information for sentences with variable reference is a feat our high-functioning children with autism proved to excel in, and could be a valuable tool to exploit when trying to bridge the various gaps that exist in conversation between what is said and what is intended. Our project complements other studies that are also finding encouraging results in children and adults with autism which look at less complex pragmatic inferences, such as those used to understand the words ‘or’ and ‘some’ in different contexts. Having hit upon such a positive skill, we intend to pursue ways in which this could be put to work by children when facing further communicative hurdles. ¶

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Find out more

Articles

‘Scalar inferences in autism spectrum disorders’ by Coralie Chevallier, Deirdre Wilson, Francesca Happé and Ira Noveck, in *Journal of Autism and Developmental Disorders*, 40 (9) (2010).

‘Intact grammar in HFA: evidence from control and binding’ by Vikki Janke and Alexandra Perovic, in *Lingua* 164 (2015).

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Chapters

‘Pragmatic abilities in Autism Spectrum Disorder: A case study in philosophical and the empirical’ by Jessica De Villiers, Robert Stainton and Peter Szatmari, in *Midwest Studies in Philosophy*, XXXI (Blackwell Publishing, 2007).

‘Advanced syntax and primary pragmatics in children with ASD’ by Vikki Janke and Alexandra Perovic, in *Innovative Investigations in Autism Spectrum Disorders*, edited by Letitia Naigles (APA/De Gruyter Mouton, 2016).