Medical Xpress

Learning to 'talk things through in your head' may help people with autism

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Teaching children with autism to 'talk things through in their head' may help them to solve complex day-to-day tasks, which could increase the chances of independent, flexible living later in life, according to new research.

The study, led by Durham University, found that the mechanism for using 'inner speech' or 'talking things through in their head' is intact in children with autism but not always used in the same way as typically developing children do.

The psychologists found that the use, or lack of, thinking in words is strongly linked to the extent of someone's communication impairments which are rooted in early childhood.

However, the researchers suggest teaching and intervention strategies for children targeted at encouraging inner speech may make a difference. These strategies, which include encouraging children to describe their actions out loud, have already proven useful for increasing mental flexibility among typically developing children.

It is also suggested that children with autism spectrum disorder (ASD) could, for example, benefit from verbal learning of their daily schedule at school rather than using visual timetables as is currently a common approach.

The research by Durham University, Bristol University and City

University London is published in *Development and Psychopathology*.

Lead author, Dr David Williams, lecturer in the Department of Psychology at Durham University, said: "Most people will 'think in words' when trying to solve problems, which helps with planning or particularly complicated tasks. Young typically developing children tend to talk out loud to guide themselves when they face challenging tasks.

"However, only from about the age of seven do they talk to themselves in their head and, thus, think in words for problem-solving. How good people are at this skill is in part determined by their communication experiences as a young child."

One out of every 100 people in the UK has ASD, which is diagnosed on the basis of a set of core impairments in social engagement, communication and behavioural flexibility. Children with autism often miss out on the early communicative exchanges when they are young which may explain their tendency not to use inner speech when they are older. This relative lack of inner speech use might contribute to some of the repetitive behaviours which are common in people with autism.

In the study, those individuals with more profound communication impairments also struggled most with the use of inner speech for complex tasks. People with ASD did, however, use inner speech to recall things from their short-term memory.

Dr Williams said: "These results show that inner speech has its roots in interpersonal communication with others early in life, and it demonstrates that people who are poor at communicating with others will generally be poor at communicating with themselves.

"It also shows that there is a critical distinction between being able to express yourself verbally and actually using silent language for problem-

solving. For example, the participants with ASD in our study were verbally able, yet did not use inner speech to support their planning."

Caroline Hattersley, Head of Information, Advice and Advocacy at the National Autistic Society, said: "This study presents some interesting results and could further our understanding of autism. If the findings are replicated on a wider scale they could have a significant impact on how we develop strategies to support children with the disability."

METHODS

In the study, 15 high-functioning adults with ASD and 16 comparison participants were asked to complete a commonly used task which measures planning ability, called the Tower of London task. This task consists of five coloured disks that can be arranged on three individual pegs. The aim of the task is to transform one arrangement of disks into another by moving the disks between the pegs, one disk at a time, in as few moves as possible. This type of complex planning task is helped by 'talking to yourself in your head'.

The participants did the task under normal conditions as well as under an 'articulatory suppression' condition whereby they had to repeat out loud a certain word throughout the task – in this case, either the word 'Tuesday' or 'Thursday'. If someone uses inner speech to help them plan, articulatory suppression prevents them from doing so and will detrimentally affect their planning performance, whereas it will have little impact on the planning performance of someone who doesn't use inner speech.

The results showed that whilst almost 90 per cent of normally developing adults did significantly worse on the Tower of London task when asked to repeat the word, only a third of people with autism were in any way negatively affected by articulatory suppression during the task. This

suggests that, unlike neurotypical adults, participants with autism do not normally use inner speech to help themselves plan.

The participants also completed a short-term memory task to asses the use of inner speech in short-term recall.

The research was funded by a City University London Research Fellowship to the lead researcher.

CASE STUDY

Jude Ragan OBE is Headteacher at Queensmill School in London. Queensmill School is one of the largest state funded schools for children with autism which has over 100 pupils and is accredited by the National Autistic Society.

Jude Ragan OBE said: "Complex planning ahead is not a strength of people with autism which means, for people most severely affected, that they can only comprehend the here and now. This can be hugely stressful and at times quite frightening. Everything that we do in an ASD specific school is to help our pupils recognise when something they are doing might finish, what might happen next and so on. Encouraging inner speech is very much part of that as it can work as a life-long support.

"In order to encourage children to use inner speech, we start with visual timetables when they are in nursery. This will have pictures for different activities, such as a nappy for toilet time and a spoon for lunch. We will change this as the child progresses, to symbols, then symbols with words and then words only. By the time we are using written tick lists for the child to know what they are doing when, this will be accompanied by speech to begin to build the foundations for inner speech to solve problems.

"We can then ask the child questions such as 'What do you have next Tim? What will you need for that? Which room is it in? What happens after that? This is all scaffolding for inner speech which is naturally a more 'normal' way of planning and one that we would want a child to move to if they have the ability to do so.

"We also use 'parallel talk' whereby we play alongside the child and talk through what he or she is doing. That way, we are teaching them in a playful way to talk things through. We know that neurotypical children learn a great deal about how the world and social interaction works by naturally talking whilst they are playing but children with autism do not normally do this. It is important for us to show them how they can do that.

"Peer-reviewed research like this is very valuable as it informs the way we teach our pupils. As educators, we need to remind ourselves that whilst responding to visual cues is a strength of autism, we should never miss an opportunity to develop language, particularly inner language which I feel is more comfortable to a person with autism than spoken language."

More information: Source Inner speech is used to mediate short-term memory, but not planning, among intellectually high-functioning adults with autism spectrum disorder, Williams, Bowler and Jarrold, published by Cambridge University Press in *Development and Psychopathology*, January 2012.

Provided by Durham University

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