

A hand is shown holding a puzzle piece over a cracked, textured surface. The puzzle piece is a light brown color with a dark brown outline. The background is dark and textured, with several other puzzle pieces scattered around. The overall image has a dark, moody atmosphere.

The Story of

# AUTISM

**PART 23:**

**SEPARATION OF  
TEXT AND SOUND  
LEADS TO SPEECH  
IMPAIRMENT**

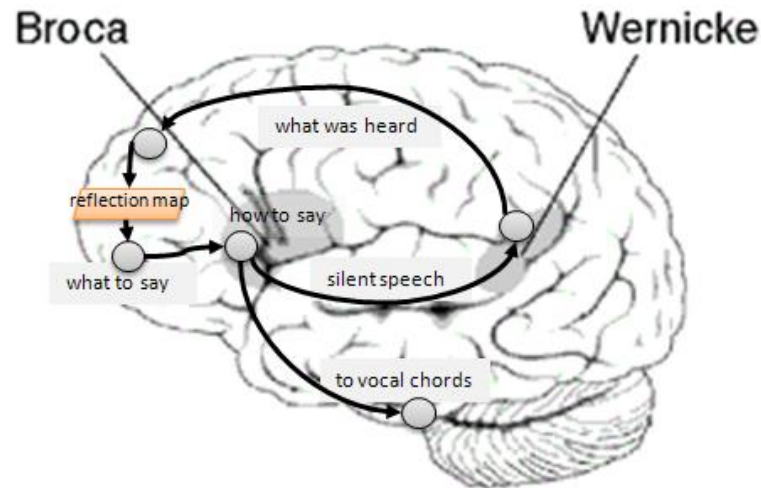
# The STORY OF AUTISM: Separation of Text and Sound

It shouldn't be surprising that speech impairment is a primary symptom of autism, since **Broca's area**, the area responsible for turning written words into spoken language, is at the tail end of the cortical processing chain (requiring the most intricate and integrated sensory motor connections and feedback).



# The STORY OF AUTISM: Separation of Text and Sound

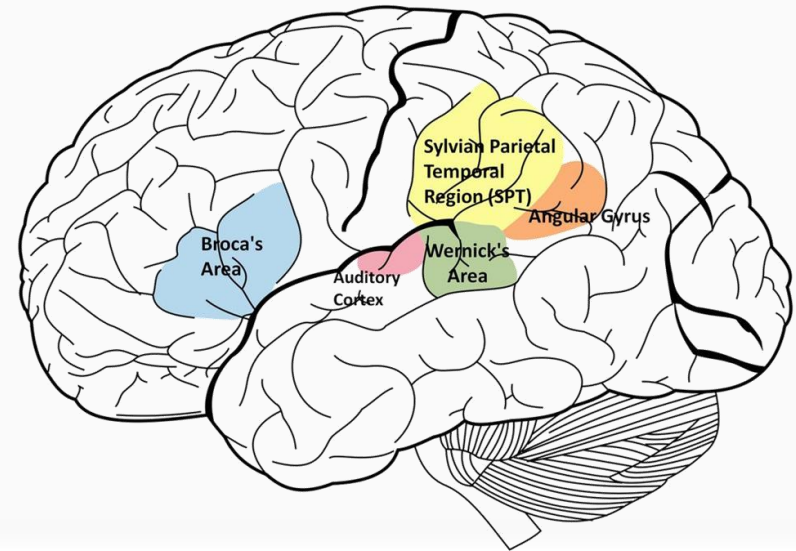
But, in fact, the breakdown in the verbal language loop occurs earlier in the cortical circuit, before auditory and visual stimuli (hyped up by the RAS and dysregulated by cerebellar input) reach the frontal lobe structures.



# The STORY OF AUTISM: Separation of Text and Sound

It starts in the parietal lobe, in the **sylvian parietal temporal region (SPT)**, where sensations from the mouth and facial muscles are supposed to combine with sensations of sight and sound.

How do you think this process goes in young kids with autism?



# The STORY OF AUTISM: Separation of Text and Sound

I think you know the answer to that. Not very well.

However, the SPT has another important function: that of **acquiring new vocabulary**.

**This function might not be impaired at all in autism.**



# The STORY OF AUTISM: Separation of Text and Sound

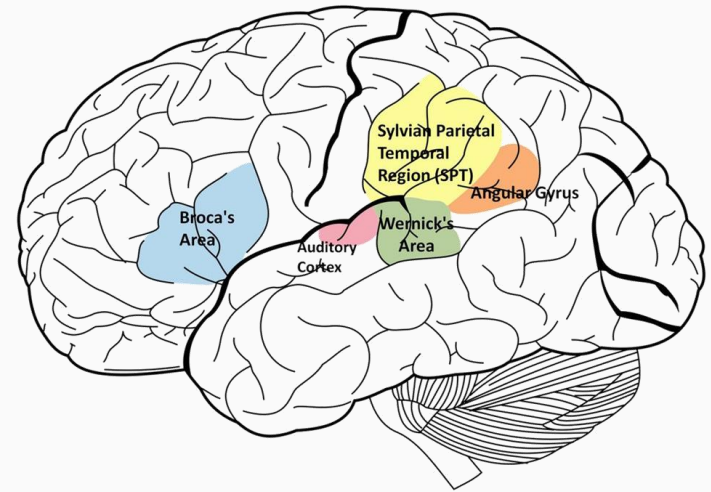
Surprising, I know. But... I'd wager to say that many individuals with autism, my daughter included, have a better vocabulary than most of us who have been talking all of our lives. Because they have been listening all of theirs!



# The STORY OF AUTISM: Separation of Text and Sound

Just because they don't say words out loud doesn't mean they don't have them stored in their brain.

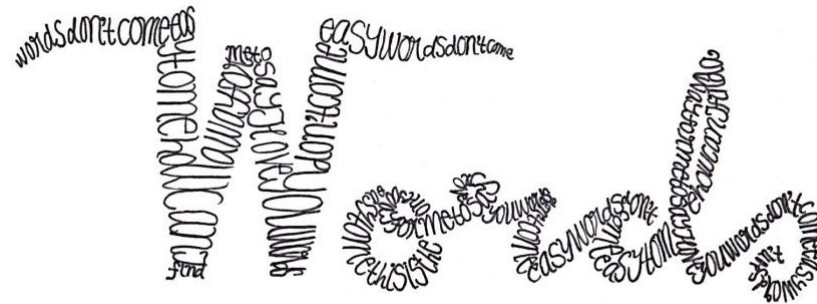
The **Angular Gyrus** is associated with reading, writing and the interpretation of what is written.



# The STORY OF AUTISM: Separation of Text and Sound

I think both the Angular Gyrus (AG) and SPT are functional in the autistic brain, they just work a bit differently – at least in my daughter's brain.

The AG takes all new vocabulary and converts it all into written words.

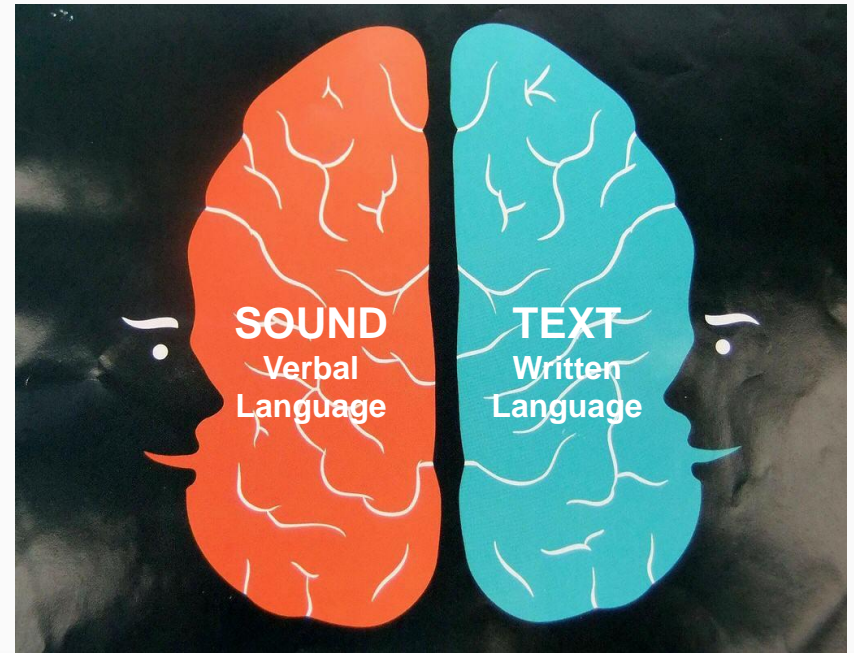




# The STORY OF AUTISM: Separation of Text and Sound

And the SPT, which is supposed to route sound and text *together* on to frontal lobes, so that they can be converted into speech...

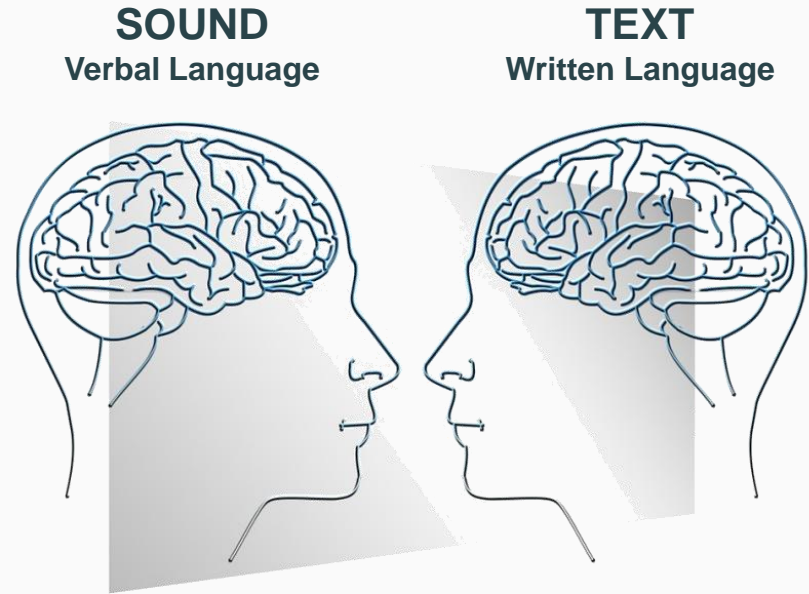
**...instead routes each one separately on to the frontal lobes.**



# The STORY OF AUTISM: Separation of Text and Sound

The **sound stimuli** winds up in a language area on the left side of the brain.

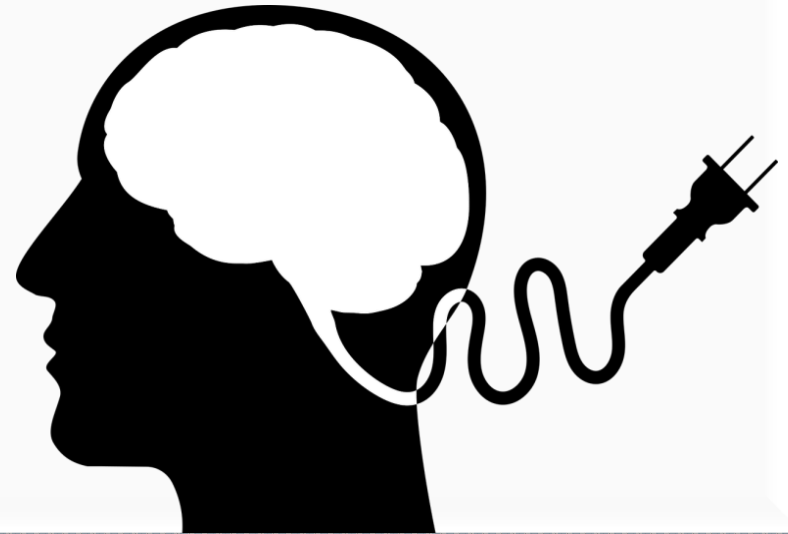
The **text stimuli** winds up in a written language area on the **right side of the brain**.



# The STORY OF AUTISM: Separation of Text and Sound

And since the wiring between the two sides of the autistic brain is sketchy at best, the integration of text and speech, of sight and sound, that happens so naturally in typical brains, just doesn't happen.

**Without this connection,  
speech impairment is  
inevitable.**



# The STORY OF AUTISM: Separation of Text and Sound

Speech impairment is called **aphasia** and there are many types, depending on the brain region involved.

**Conduction aphasia** involves the SPT and results in the inability to repeat speech, particularly multi-syllabic speech. This impairment does not affect speech comprehension.



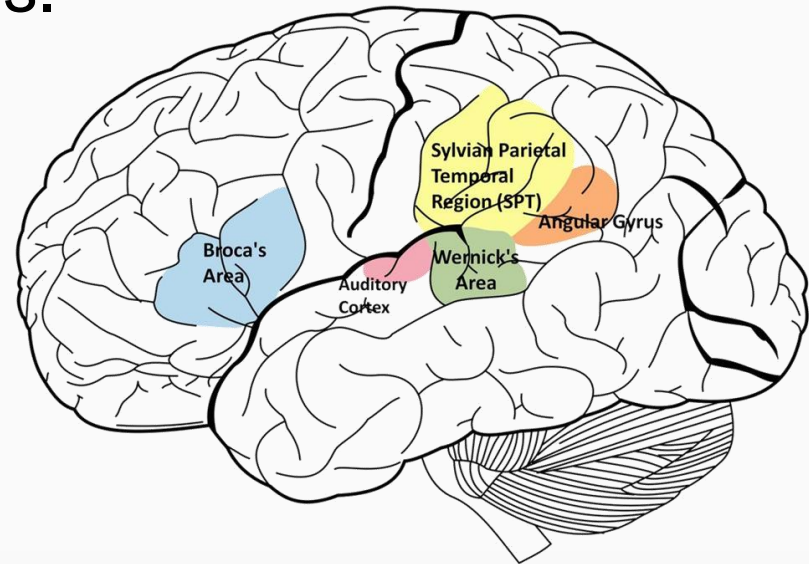
# The STORY OF AUTISM: Separation of Text and Sound

Interestingly, most conduction aphasiacs **can repeat high-frequency, simple words**. It is their ability to repeat low-frequency, complex words that is impaired.



# The STORY OF AUTISM: Separation of Text and Sound

**Broca's aphasia** is similar to conduction aphasia, in that it is a motor speech impairment. The difference is that the problem is in the frontal lobe and it affects the tongue and facial muscles.

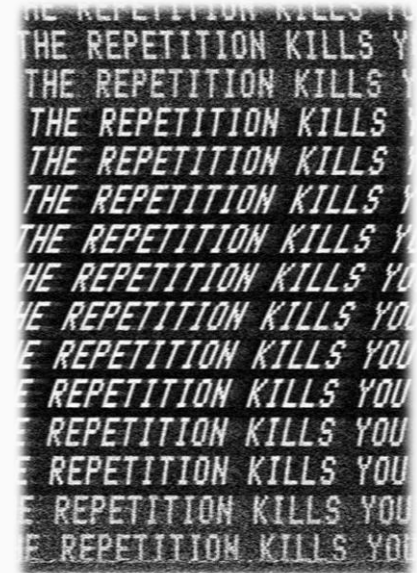




# The STORY OF AUTISM: Separation of Text and Sound

Instead of them picking up new words, they start repeating the same words and simple phrases over and over again. They answer your questions with the same predictable answers.

Sometimes they're right, sometimes they're wrong. They don't particularly care. They just like saying the words.







# The STORY OF AUTISM: Separation of Text and Sound

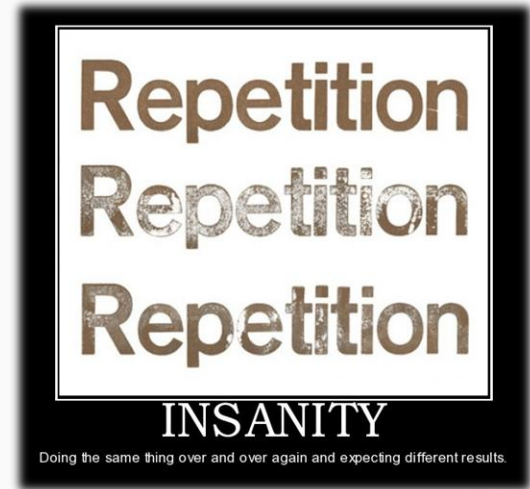
Turns out there's a place in the **motor cortex** that actually stores high-frequency, simple words in order for them to be quickly and easily retrieved without need of the complex processing involved in the production of more thoughtful language.



# The STORY OF AUTISM: Separation of Text and Sound

These stored rote responses are not real language and they cannot be built upon in the way high level, integrative spoken language can.

This is why the speech of autistic children rarely progresses beyond the rote and repetitive.



# The STORY OF AUTISM: Separation of Text and Sound

**This does NOT mean, however, that the autistic brain is limited to the rote and repetitive.**

This is a HUGE misunderstanding about autism.



# The STORY OF AUTISM: Separation of Text and Sound

People with autism have amazing minds capable of remarkable thoughts and insight. They can and need to be given the opportunity **to communicate these thoughts non-verbally.**



