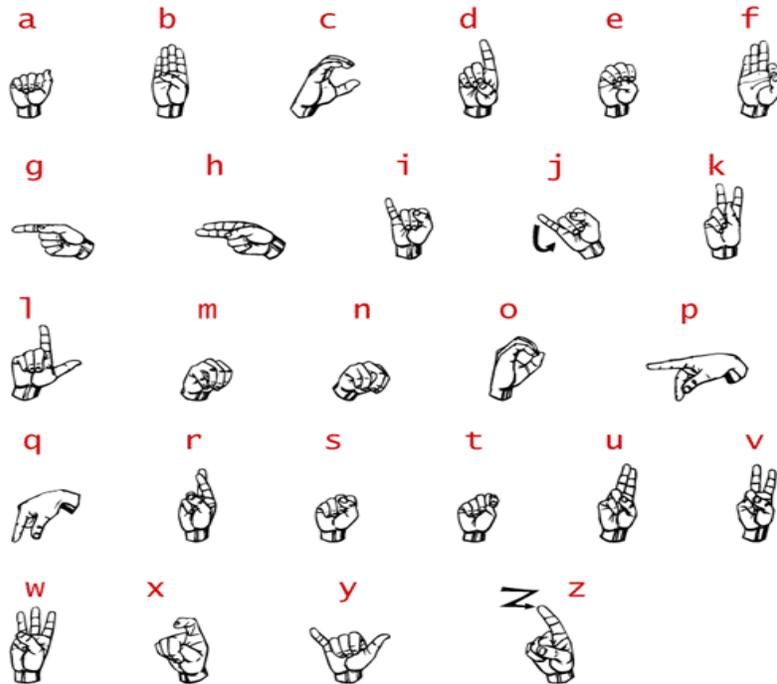


Listening with your Eyes



(Photo from terptopics.com)

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*“You need to focus on a deaf person’s abilities.
Not their disabilities. The only thing I can’t do is hear.”*

~ Marlee Matlin

Marlee Beth Matlin is an American actress. Being deaf since eighteen months old, she is the only deaf performer to win an Academy Award for Best Actress in a Leading Role, which she won for



the movie *Children of a Lesser God*. At the age of twenty one, she became the youngest woman in history to win that award. She has been in both film and television resulting in a Golden Globe, with two other nominations, and four Emmy nominations. (*Wikipedia - Marlee Matlin*) I had the pleasure of meeting her briefly, after I saw her sign in Boston, at Bunker Hill Community College. I feel privileged that I got to be in her presence, and I loved what she had to say. She connected with the audience through her sense of humor and it felt like I was with a friend and not a famous actress. Marlee Matlin,

Marlee Matlin (Photo: <http://www.omahahomeforboys.org/>)

like many deaf people, serves as a reminder to us that deaf people can rise to great heights, when they refuse to be held back.

Introduction

Deaf people can do anything hearing people can do except hear. They have American Sign Language for this. You don’t have to listen to understand ASL, because more than anything it’s a visual form of communication. The shape, placement, and movement of hands, as well as the facial expressions and body movements all play important parts in conveying information for one to see. Since ASL is a language that does not rely on hearing, it uses only visual cues to communicate. Visual memory must be used. American Sign Language depends on visual memory, in view of the fact that deaf people must memorize through sight what hearing people can learn by listening. In this paper I will take you through a brief history of American Sign Language, how it is used today, sign language around the

world, deaf culture, and finger spelling. I will describe how visual memory is necessary. Visual memory is about retrieving a mental image from the mind. I will be analyzing the four lobes of the brain: frontal, parietal, occipital, and temporal, and also the cerebral and visual cortices. Lastly, I will be connecting the two: American Sign Language and visual memory.

History of American Sign Language

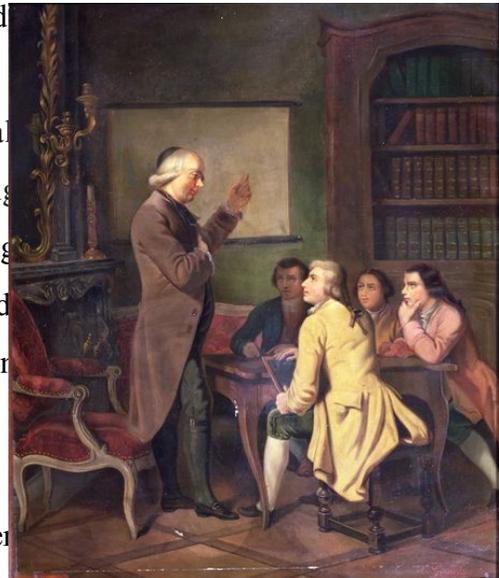
Sign language has been used for centuries around the globe. Before the birth of *American Sign Language*, *signed* languages were used in many diverse communities. As early as 1541 Francisco Vasquez de Coronado, a Spanish explorer, reported that the Plains Indians had developed a sign language to communicate between tribes of different languages. There was a documentation of sign language used in Spain in the 1500s. In 1620, a man named Juan Pablo Bonet published *Reducción de las letras y arte para enseñar a hablar a los mudos* ('Reduction of letters and art for teaching mute people to speak') in Madrid. It was considered the first modern thesis of sign language phonetics, setting out a method of oral education for deaf people and manual alphabet (*Wikipedia - Sign language*).

However, American Sign Language is historically and, to some degree, grammatically linked to the sign language used in France in the early 1800s. French Sign Language is connected to the work of Charles-Michel de L'Épée. It is said that he discovered the already existing language by total accident; having ducked into a nearby

Charles-Michel de l'Épée (Photo: <http://www2.artflakes.com/>)

house to escape the rain, he fell upon a pair of twin sisters who were deaf, and was struck by the richness and complexity of the language that they used to communicate among themselves and the deaf Parisian (a person born and raised in Paris) community (*Wikipedia - French Sign Language*).

A man named Thomas Hopkins Gallaudet travelled to Europe in order to adopt the methods of the French. Charles Michel de L'Épée who was the founder of one of the most known French schools for the Deaf, Institut National de Jeunes de Paris, was the man that Thomas Hopkins Gallaudet was looking for. He convinced Laurent Clerc, an assistant de L'Épée to accompany him back to the United



States. Upon his return, Gallaudet founded the American School for the Deaf on April 15, 1817, in Hartford Connecticut.

Martha's Vineyard Sign Language was a village sign language once widely used on the island of Martha's Vineyard off the coast of Massachusetts, from the early 18th century to 1952. The language was able to thrive on Martha's Vineyard because of the unusually high percentage of deaf islanders and because deafness is a recessive hereditary trait, which meant that almost anyone might have both deaf and hearing siblings. Hearing people sometimes signed even when there were no deaf people present: children signed behind a schoolteacher's back; adults signed to one another during church sermons; and farmers signed to their children across a wide field, where the spoken word would not carry. (*Wikipedia - Martha's Vineyard Sign Language*)

Without providing a way for deaf people to communicate, the world would have lost many contributions from brilliant deaf people. Ludwig van Beethoven was a German composer and pianist. He lived from 1770 to 1827. He lost his hearing at the age of twenty-six. He suffered from a severe form of tinnitus, a "ringing" in his ears that made it hard for him to hear music. The cause of his deafness was unknown, but the explanation from Beethoven's autopsy was that he had a "distended inner ear," which developed lesions over time. This meant that his inner ear was damaged in a way that caused him to lose his hearing. Many doctors tried to find a scientific explanation for Beethoven's deafness but couldn't. His personal doctor told him that he should come to terms with his condition. He later wrote to his brother about his thoughts of suicide due to his growing deafness. Over time, his hearing loss became profound: there is evidence that, at the end of the premiere of his Ninth Symphony, he had to be turned around to see the tumultuous applause of the audience, and hearing nothing, he wept. Beethoven's hearing loss did not prevent him from composing music, but it made playing at concerts, a good source of income, increasingly difficult. In 1811, when he failed his attempt to perform his own Piano Concerto No. 2 (the Emperor), he chose to never perform again in public. A large collection of his hearing aids, such as a special ear horn, can be viewed at the Beethoven House Museum in Bonn, Germany. Beethoven didn't use sign language because it was not developed during his lifetime. When Beethoven became profoundly deaf, he started a collection of books that his friends were able to write in. This was one of his forms of communication. These were his "conversation books." The books contained discussions about music and other matters of Beethoven's life and thinking. They are a source for finding

how he wanted to perform his music, and also his view and relation to art. (*Wikipedia - Ludwig van Beethoven*)

Helen Keller was born on June 27, 1880. When she was born she could see and hear, but when she was nineteen months old she caught an illness. Her doctors said it might have been scarlet fever or meningitis. The illness left her both deaf and blind. Through her early childhood she was able to communicate with the daughter of the family cook who understood her informal signs. Once she was seven years old, she had more than sixty home signs that she used to communicate with her family. At a young age, Helen went to see J. Julian Chisolm, a physician who told her family to go to Alexander



Graham Bell who was working with deaf children at the time. Bell told them that they should contact the Perkins Institute for the Blind. There Helen met Anne Sullivan, who taught her how to read braille, and use traditional signing. She learned how to “hear” people’s

Helen Keller as a child (left) and Anne Sullivan

(Photo: <http://www.globalresearch.ca/>)

speech by reading their lips with her hands. She could feel them speak, and read their lips by using a subtle touch. (*Wikipedia - Helen Keller*) We can be inspired by Helen Keller, who has proved to conquer the obstacles in her life, even though, for her it was not being able to see or hear. It changes the way we look at people with disabilities. If she made her way through life, than we can too.

How is ASL used today?

ASL has many modern uses that are not just for deaf people. The Oxford English dictionary defines American Sign Language as a system of communication. ASL can be communication between a hearing parent and a child, as well as between a deaf parent and child.

Today many hearing parents teach their hearing children at a young age how to sign. The main benefit is their language development in the long run. A mother’s signing skills are predictive of later language development in deaf or hard of hearing children. (*Baker*) Perhaps this is because the child will

visually observe their parent signing, resulting in quickly picking it up. Currently parents teach their babies many signs such as, *dad, mom, eat, more, finish(ed), etc.* This can help young children by reducing frustration, and encouraging thought. Deaf and hard of hearing children who receive early intervention services have been found to have better language outcomes up to age five. (deafchildren.org) High levels of family involvement have been found to produce greater language development outcomes in deaf and hard of hearing children, and long-term use of a sign language may enhance visual abilities.

Other uses of sign language are being able to communicate discreetly in public. For example, imagine that you have something to say, but you don't want to say it out loud in front of others. You could use sign language to communicate privately.

There are perhaps two hundred cultural sign languages used around the world today, and forty manual alphabets (finger spelling). French Sign Language and British Sign Language are the most widely known sign languages (besides ASL). French Sign Language is the sign language of the deaf in the nation of France. According to *Ethnologue: Languages of the World*, it has 50,000 to 100,000 native signers. French Sign Language is related to Dutch Sign Language, German Sign Language, Flemish Sign Language, Belgian-French Sign Language, Irish Sign Language, American Sign Language, Quebec (aka French-Canadian) Sign Language, and Russian Sign Language. (*Wikipedia - French Sign Language*) British Sign Language (BSL) is the sign language used in the United Kingdom (UK), and is



This painting is about the global signing community where all Deaf people around the world are united. We support and recognize our cultural sign language. (Photo: <http://www.nancyourke.com/>)

the first or preferred language of some deaf people in the UK; there are 125,000 deaf adults in the UK who use BSL plus an estimated 20,000 children. In 2011 15,000 people, living in England and Wales, reported themselves using BSL as their main language. The language makes use of space and involves movement of the hands, body, face and head. Many thousands of people who are not deaf also use BSL. Hearing relatives of deaf people use BSL in the UK. (*Wikipedia - British Sign Language*) In

Australia, Australians use Australian Sign Language. The culture of Australian Aboriginals have their own sign language(s).

Logograms are visual symbols representing words. An example of this would be Chinese characters. Chinese characters and ASL have to do with each other, because they both *show* you something. In Chinese Sign Language (CSL), the signs are like written Chinese characters. (*About.com - Deaf Community - China*)

Deaf Culture *

Deaf culture encompasses the social beliefs, behaviors, art, literary traditions, history, values, and shared institutions of communities that are affected by deafness and which use sign languages as the main means of communication. Members of the deaf community tend to view deafness as a difference in human experience rather than a disability. People in the Deaf community are equal to any one person. (*Wikipedia - Deaf culture*) Sign language is just one part of deaf culture. Deaf identity is also built around specific beliefs, values and art. For example, deaf people have a positive attitude toward being deaf. (Deafness is not generally considered a condition that needs to be fixed.) Second, the use of a sign language is central to deaf cultural identity. Speaking would be considered unnecessary. And lastly, Deaf communities strongly oppose discrimination against deaf people. Some members of deaf communities oppose to the cochlear implant, and the fact that some people think that deafness should be “fixed.” These views help us move on to the topic: conflicts of the Deaf community.

When I went to see her speak, Marlee Matlin discussed today’s conflicts of the Deaf community. She talked about a new phenomenon. British researchers have started re-building the hearing nerves in deaf gerbils to see if they could fix stem cells to make them ‘hear again.’ If they could pull this off, it might also work for deaf humans, because gerbils hear a similar range of sounds to people. On Twitter her hashtag for what was happening was “#deafnesscureistrending.” This has created a conflict in the Deaf community these days, just like the cochlear implant did back in 2006. The cochlear implant is a surgically implanted electronic device, that can restore hearing in the profoundly deaf. Some deaf people prefer being deaf, they like it. They have their *own* culture, their *own* beliefs. And some think this change would be a good thing. There are many risks that come along with getting a cochlear implant. They have to cut open the patient’s brain to install it. There are still some long term,

unknown risks out there about the cochlear implant. According to the U.S. Department of Health & Human Services these are some of the many risks of getting the cochlear implant surgery. In any surgery there is a risk that your body will not react well to the anaesthesia, there may be injury to the facial nerves, temporary or permanent weakening or full paralysis on the same side of the face as the implant. Meningitis, an infection of the lining of the surface of the brain. Cerebrospinal fluid leakage is when the fluid surrounding the brain may leak from a hole created in the inner ear or elsewhere from a hole in the covering of the brain as a result of the surgical procedure. These are the physical risks but, there are also the mental risks. The individual may come out of the surgery and may hear sounds differently, they may not hear as well as others who have had successful outcomes with their implants, and they may not be able to understand language well.

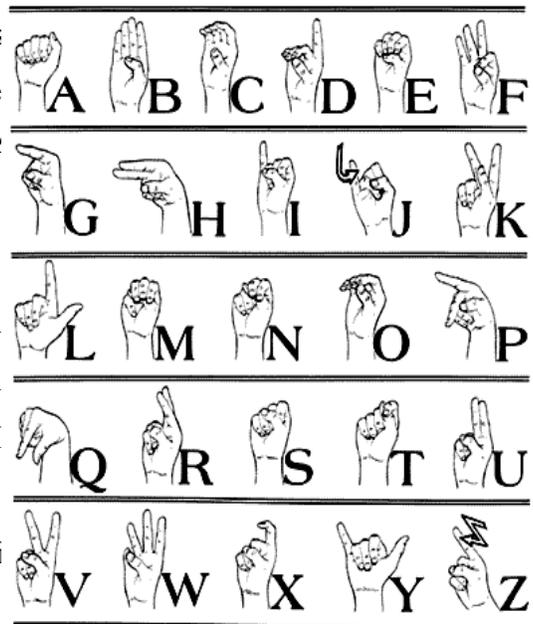
Some people say it's a miracle: Deaf people getting their hearing back. They could listen to music and they could talk on the telephone. A large amount of the Deaf community don't like the idea of the cochlear implant. Going back to the deaf gerbils, people have asked to Marlee Matlin and asked her what her opinion was on this new Deaf research. She does not have an opinion. She believes in choice overall.

Fingerspelling

Photo: America Sign Language manual alphabet (nfarendandwhite.com/)

The American Manual Alphabet which is used in American Sign Language, is the proper name for fingerspelling. Fingerspelling is the representation of the letters of a writing system, and sometimes numeral systems, using only the hands. These manual

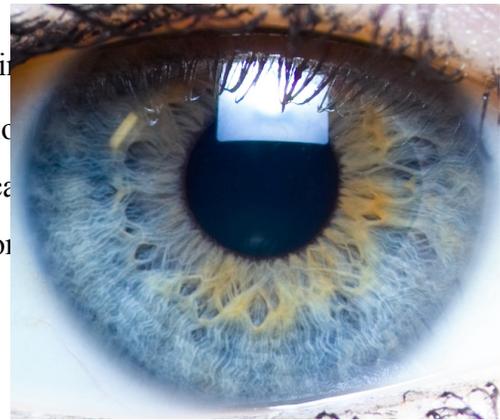
alphabets (also known as finger alphabets or hand alphabets) have often been used in deaf education, and have been adopted as a distinct part of a number of sign languages. Along with other forms of manual communication, fingerspelling can be comprehended visually or tactually (connected with simple touch). The simplest visual form of fingerspelling is tracing the shape of letters in the air, or tactually, tracing letters on the hand. (Anne Sullivan first taught Helen Keller this way.) Fingerspelling can be one-handed such as in American Sign Language, French Sign Language and Irish



Sign Language, or it can be two-handed such as in British Sign Language. Fingerspelling has been introduced into certain sign languages. In many ways fingerspelling serves as a bridge between the sign language and the oral language that surrounds it. Fingerspelling is used in different sign languages and registers for different purposes. It may be used to represent words from an oral language which does not have one know sign. Examples could be, *TV*, or simply spelling something out for better understanding. (Wikipedia - Fingerspelling)

Introduction of visual memory

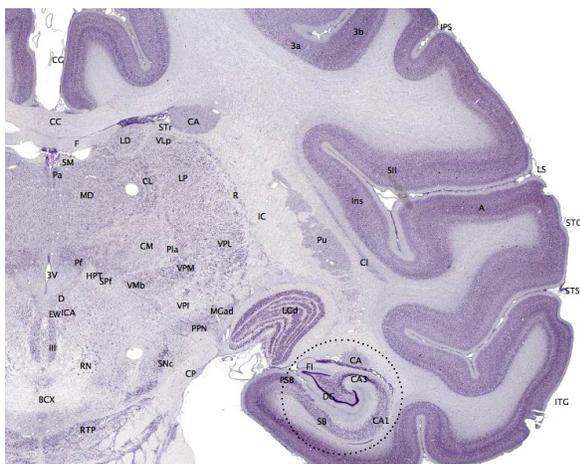
Imagine a picture, something enjoyable. Imagine looking at this picture and then looking away from it. Close your eyes, and you can see it. It's there. At anytime you can close your eyes, and pull this picture from your memory. *Visual memory is when we can look at something and later retrieve a mental image from our mind. Some people who have a stronger visual memory can remember the whole picture and others may only remember slightly what they saw.*



The cerebral & visual cortexes

(Photo: en.wikipedia.org^)

The cerebral cortex is the layer of the brain often referred to as gray matter. In the human brain, the cerebral cortex (a thin layer of tissue) is gray because nerves in this area lack the insulation that makes most other parts of the brain appear to be white. The cerebral cortex consists of folded bulges called gyri that create deep furrows called sulci. The folds in the brain add to its surface area and therefore increase the amount of gray matter and the quantity of information that can be processed. The cerebral cortex encloses about two-thirds of the brain mass and lies over and around most of the structures of the brain. (About.com Biolodgy - Cerebral Cortex)



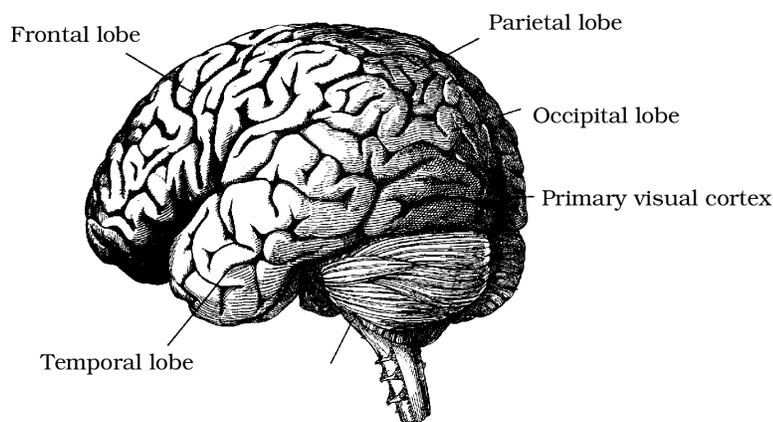
called gyri that create deep furrows called sulci. The folds in the brain add to its surface area and therefore increase the amount of gray matter and the quantity of information that can be processed. The cerebral cortex encloses about two-thirds of the brain mass and lies over and around most of the structures of the brain. (About.com Biolodgy - Cerebral Cortex)

The cerebral cortex is the outer layer depicted in dark

violet. (Photo: en.wikipedia.org)

Your cerebral cortex plays an important role in consciousness. Damage to the cerebral cortex will cause loss of consciousness. It's the protective layer of your brain. The cerebral cortex is the outermost layered structure of neural tissue of the cerebrum (brain), in humans and other mammals. It covers the outer portion of your brain. If you crack open the shell, inside, it's divided into your right and left hemisphere and the four lobes of your brain. It is the most highly developed part of the human brain and is responsible for thinking, recognizing, producing and understanding language. Most of the actual information processing in the brain takes place in the cerebral cortex. *(Photo down below: stanford.edu)*

Your visual cortex is part of your cerebral cortex. It receives and processes sensory nerve

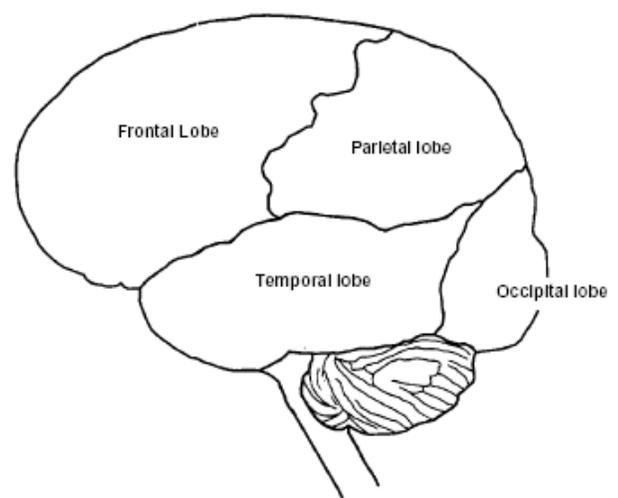


impulses from your eyes. It's almost like your eyes are sending messages to your brain, to tell it to process what you're looking at. A sensory nerve is an enclosed, cable-like bundle of sensory nerve fibers in the nervous system. *(Wiki)* The visual cortex of the brain is the part of the cerebral cortex responsible for processing visual

information. It is located in the occipital lobe, which is in the back of the brain.

The different lobes of your brain...

The cerebral cortex is divided into lobes that each have a specific function. For example, there are specific areas involved in vision, hearing, touch, movement, and smell. Other areas are critical for thinking and reasoning *(About.com Biology - Cerebral Cortex)* I will be describing a step-by-step of each of the four lobes of your brain, so you can get an idea of what goes on in this important muscle.



The frontal lobe is one of the four major lobes of the cerebral cortex. Like its name says, the frontal lobe of your brain is located at the front of your

(photo: <http://old.epilepsyfoundation.org/>)

brain. It also lies at the front of your cerebral hemisphere, which are the two halves of your brain, separated by a groove-like crevice. Your **parietal lobe** is positioned behind your frontal lobe. It lies at the top of your cerebral cortex. It's positioned above your temporal lobe, and partly above your occipital lobe. Your **temporal lobe** lies at the bottom of your cerebral cortex. Like your frontal lobe lies at the front of your cerebral cortex, your **occipital lobe** lies at the back. The name comes from your overlying occipital bone.

... and their functions

In the brain there are specific areas that are meant to process the human's many different senses. In order to understand visual memory it's important to know that the occipital lobe is the visual processing center of a mammal's brain. It cues sight, image recognition, and image perception (image awareness). The occipital lobe contains most of the anatomical region of the visual cortex.

The part of your brain that understands written and spoken language comprehension lies on a border between the occipital and parietal lobes. This is called your Wernicke's area. When someone is talking or if you are reading text from a book this part of your brain helps you understand the speech. The upper part of your frontal lobe helps you with eye movement and orientation. Your temporal lobe is involved in the reservation of visual memories, processing sensory input (stimulating the nervous system and receiving the external or internal environment), comprehending language, storing new memories, emotion, and deriving meaning. (Wikipedia - Temporal lobe)

American Sign Language & visual memory

Visual space is important to have in your cerebrum, in order to learn ASL. A person's visual space will broaden as they learn new signs, because they see, and then that certain sign might stick in the brain. Thus, they memorize them. According to the American Psychological Association, in an article called, "*Learning sign language may improve memory for abstract shapes*", Allegra Cattani, PhD, a psychology professor at the University of Plymouth in the United Kingdom, explains, "*Learning sign language is a really difficult thing to do, the students of sign language courses need to learn how to use the visual space to remember the signs.*"

Sign language and the brain

With signing, the brain processes linguistic (of or relating to language) information through the

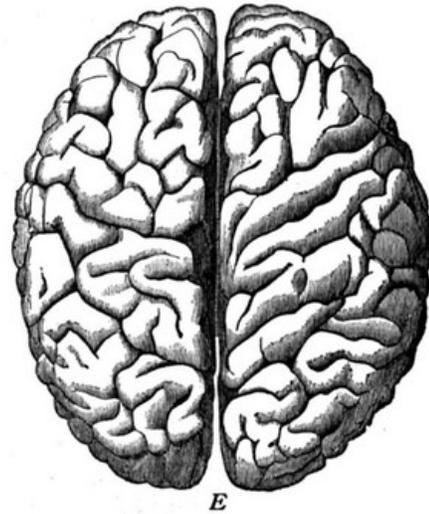
eyes. Neurological studies have shown that signed languages and spoken languages are processed in the same region of the brain. In other words, like spoken languages, signed languages are controlled by the left hemisphere of brain, in Broca's and Wernicke's areas. Doug Baynton an author of a book, titled Forbidden Signs, says, "...*They (the Deaf) are facing not a theory but a condition, for they are first, last, and all the time the people of the eye.*" Facial expression and body language are equally as important as the hand positions, if not more so. This helps with the meaning of the sign. We are able to place in memory, visual information which resembles objects, places, animals or people in a mental image. This could also include American Sign Language. The experience of visual memory is also referred to as the mind's eye through which we can retrieve from our memory a mental image of again, anyone of these things I mentioned before: objects, places, animals, people, *or* ASL. Visual memory is of course, also one of several mental systems, which are all interconnected parts that combine to form the human memory.

When we use the term "sign language," we are talking about the natural visual languages that have evolved--and, as with spoken languages, are still evolving--among populations of deaf people. A critical distinction between speech awareness and sign awareness is that the articulators (moveable speech organ) are entirely visible for sign, but not for speech. For sign language, "what you see" is "what you produce" in terms of the relation between perception (the ability to become aware through the senses) and production. Languages that are not auditory and vocal, namely signed languages, provide a unique window into the factors that shape the structure of working memory. (Poor)

The right and left hemispheres of the brain

For more than a century, we have known that the left hemisphere of the human brain is critical for producing and grasping speech. The data from adult signers who have suffered some type brain injury clearly show that damage to areas of the left hemisphere (the language zone of the brain) can cause loss of ability to understand sign language. A historical review of 16 cases of signers who sustained left-hemisphere damage (LHD) reveals that only damage to critical left-hemisphere structures leads to sign language impairments. The right hemisphere of the brain may play a greater role in both sign and speech comprehension, compared to reading and writing English. The right hemisphere of the brain appears to control the production of emotional facial expressions and may also play a greater role in the recognition of emotional expressions. For hearing non-signers, a right-hemisphere advantage was

found for both types of facial expressions, suggesting that the right hemisphere is specialized for recognizing all forms of facial expression. The question is, is this right hemispheric specialization due to a superiority in processing human faces in general, or is it due to a superiority in processing emotional information? Sign language provides a unique tool for investigating these questions because facial expression is used to signal linguistic (language) distinctions. In contrast, for Deaf signers, hemispheric processing was influenced by the function of the facial expression, with more left hemisphere involvement for linguistic expressions. (*Language, Cognition, and the Brain* by Karen Emmorey)



(Photo: kidport.com)

Although the loss of a human's ability to understand speech does not result from right hemisphere damage, the right hemisphere of your brain is clearly not related to speech or language. The right hemisphere has been shown to exhibit linguistic abilities at both lexical (relating to

words, vocab, and language) and discourse levels (which are analyzing written, vocal, or signed language), and as already noted, it is becoming clear that the right hemisphere is more engaged when individuals are listening to spoken language than when they are either reading or speaking, which does not appear to be more left-lateral. (Left side long)

Heightened senses

An article in healthland.time.com, titled, *Study: Why Deafness May Improve Vision*, analyzes an interesting study scientists did four years ago. On October 12, 2010 there was a study on deaf animals done, mainly cats for the reason that their brains function much like ours do. Scientists believe that deaf and blind people have heightened senses outside their impairment.

Research found that brain regions that would normally have assisted in hearing were taken over and used to enhance vision instead. This may relate to how deaf people are able to see movement and activity better than sighted people. The study on deaf cats may relate to a deaf human, because in general cats don't have better overall vision than their hearing. Rather, like deaf humans, the cats are better at two particular visual tasks — seeing objects in far outer vision and detecting very slow motion.

Steven Lomber, a researcher of the University of Western Ontario in London, Canada, indicates, “You can’t hear the dog running or the car coming at you, so being able to see it seems like a really good skill.” When the researchers disabled specific parts of the cats’ brains that were related to hearing, the cats lost similar visual skills: so, for instance, when the region responsible for localizing sounds was inactivated, so was the animals’ outer supervision. The study focused on cats that were born deaf, so it is unclear if those with worsening hearing would experience the same neurological shift. Additional studies will be needed to determine if other senses, such as touch, taste and smell are also affected. So, a deaf person whose vision is stronger due to loss of hearing might have stronger visual memory for what they see. This means they may be able to learn American Sign Language quicker than hearing people.

Editor, Esther Inglis-Arkell explains, “People with disabilities didn't develop super senses. They just used the abilities they had to a degree that most people don't. They looked at all the visual cues in a situation, instead of just listening for sounds to explain what was happening.” She believed that deaf people really do have enhanced sight. Most people only focus on what's in front of them. Although they can train themselves, or be trained by experience, to notice things in their outer vision, their eyes are set up to look straight ahead. The nervous cells of the retina of deaf people were scattered to take in the furthest extremes of outer vision. Specifically, they were designed to take note of what happened in the direction of the person's ears. The actual set-up of the eye changed to take in more of the surrounding area than hearing people would, all in order to mimic the way eyes and ears work together to form a picture of the world.

Picking up sign language from a young age...

Earlier in my paper I made it clear how sign language can be used in the real world. I also talked about mother-to-child sign language. It seems like children who start learning sign language at a young age learn faster and are able to be fluent by the age of, approximately five. It’s the same as spoken language. Children often grow up with their parents talking to them. They listen and they learn *their* language. With American Sign Language, the deaf child grows up without sound. They have to look around, and see



the world for themselves. *See* their language.

(Photo of child: <http://2.bp.blogspot.com/>)

... and long term use

Author David S. Martin says, *“We just can’t answer whether deaf people have the same memory skills as hearing people. It depends on too many things. Levels of memory performance by deaf and hearing individuals. Different knowledge factors. Age difference, children's strategies and performance.”* I believe that people who used sign language from day one, have a stronger knowledge of signing. Anyone can learn and get better. It takes time, but they can get fluent, like with any other language.

Factors affecting visual memory

For people who are learning ASL it is essential to keep the visual memory as sharp as possible. The four factors that can affect the average human being’s visual memory are: sleep, brain damage, age, and alcohol. (*Wikipedia - Visual memory*) If a person suffers from sleep deprivation, or (let’s say) plays a sport in their everyday life that can cause brain damage or concussions, this can influence loss of visual memory. A person who is an alcoholic can lose bits and pieces of their visual memory over time. There are certain kinds of alcohol that can be severe to your visual memory. It also depends on how old the person is. As we get older we often lose the memories we once had. I will also talk about amnesia, which is the loss of our memory (or in my case visual memory). There are many different types of amnesia, but these two pinpoint losing the ability to recall information.

Sleep. The findings surrounding sleep and visual memory have been mixed. Studies have reported performance increases after a normal amount of sleep compared with the same period of waking. The results of this are that there is a slow, disconnected process during sleep that strengthens and enhances the main memory. It has also been found that there are gender differences between males and females in regards to visual memory and sleep. A study was done testing sleep and memory for images. It was found that daytime sleep took away source memory, rather than item memory in females. Females could not remember or grasp the concept influenced by daytime sleep, whereas males undergoing daytime sleep could.

Brain damage. Brain damage is another factor that has been found to have an effect on visual memory. Poor memory after damage to the brain leads to information being lost or left unreachable.

Age. Age also affects visual memory. As you get older some people lose their vision and memory. Age has an impact on your visual memory performance. Seeing things, and remembering them gets harder as you get older. *(photo: <http://eofdreams.com/>)*

Alcohol. Alcohol can damage your visual memory, especially with increased amounts of alcohol consumption. The more you drink the more it has an effect on loss of visual memory. Ethanol is a kind of alcohol that affects different types of memories, including visual memory. Alcohol can impair and alter the functioning in the cerebellum otherwise known as the cerebral cortex the outer layer of the brain, which affects motor function and coordination.

Essentially, amnesia is loss of memory. Anterograde amnesia refers to the inability to create new memories due to brain damage, while long-term memories from before the event remain intact. The brain damage can be caused by the effects of long-term alcoholism or head trauma. Retrograde amnesia refers to inability to recall memories before onset of amnesia. One may be able to encode new memories after the incident. Retrograde is usually caused by head trauma or brain damage to parts of the brain. *(Wikipedia - Amnesia)*

Conclusion

A deaf life is far from quiet. Although deaf people cannot hear the sounds of life, they can see what is happening all around them. They don't have to listen with their ears. They listen with their eyes. They listen to the gestures, the facial movement, the way the mouth moves to form each word. They become experts of their own environment. They have the benefit of being deaf. All the extra noise is gone. They focus on the one person, they focus on communicating, they focus on *their* language. They watch the hands move, they watch the mouth move. They don't have to listen, they can *see*. Deaf people memorize what they see. They memorize sign language. They memorize the shape and movement. Hearing people listen. Deaf people memorize. *American Sign Language relies on visual memory, because Deaf people must memorize through vision what hearing people can learn by listening.*

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