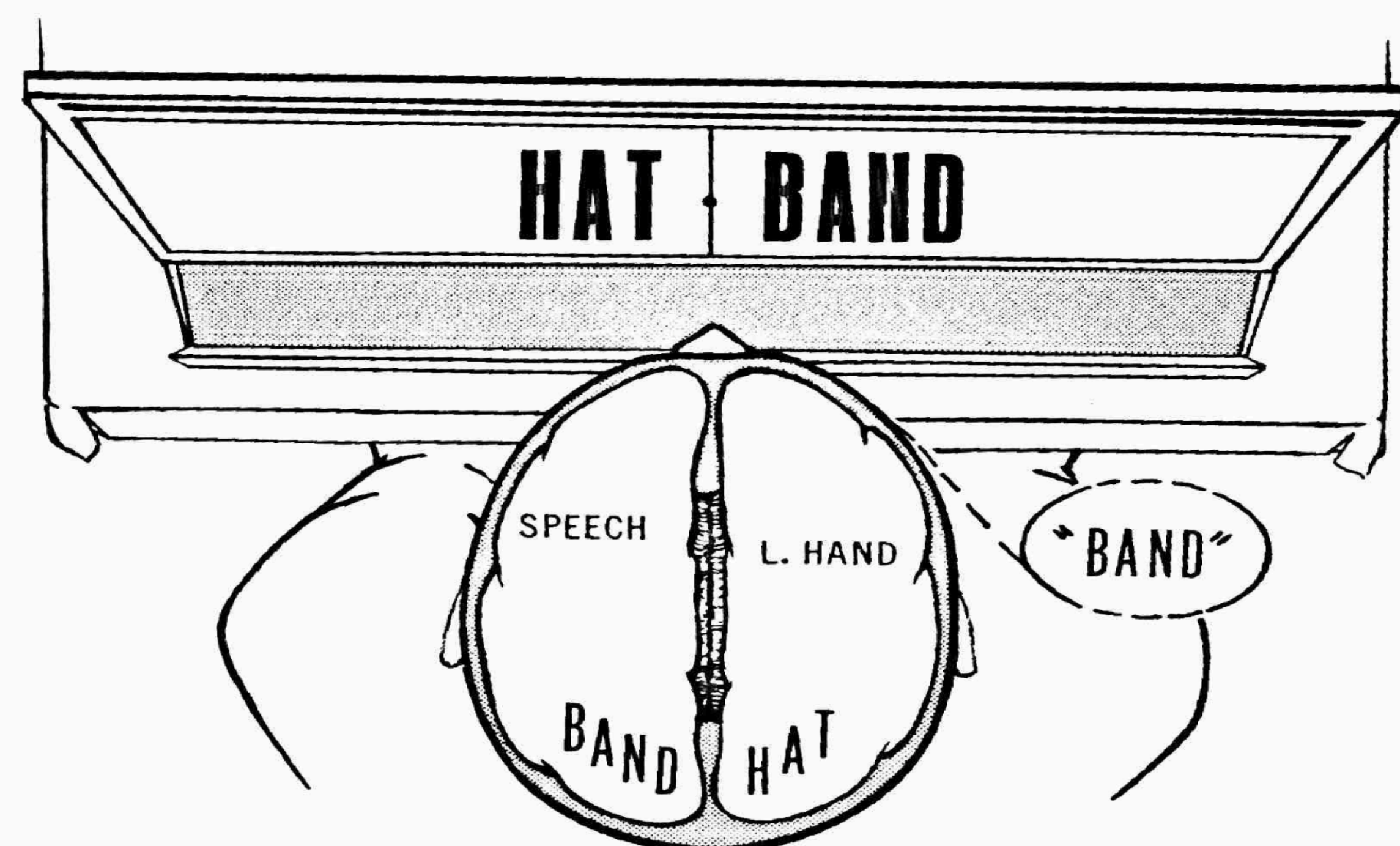


## Introduction

- Dr. Roger W. Sperry was the first psychologist to win the Nobel Prize. He won the Nobel Prize in Physiology or Medicine in 1981 (Puente, 2016).
- Sperry's work involved the discovery of the right and left hemisphere and their individual responsibilities. This was one of the main reasons he was awarded the Nobel Prize.
- This discovery came from post-operational testing of split-brain individuals. Procedures involved cutting of the corpus callosum in attempt to eliminate seizure activity. The neurosurgeons who performed the surgeries worked closely with Sperry and his colleagues following the procedure. They also closely observed the patients.
- There were approximately 42 patients who underwent the surgery and those who participated in research allowed for a better understanding of the brain's functions
- Neurobiology and psychology overlapped and contributed to Psychology's first Nobel Prize by working together to discover underlying functions of the brain that were previously unknown.
- More information regarding Roger Sperry can be found at <http://rogersperry.org>.

## Objective

- Study the specializations of the cerebral hemispheres and further understand their roles and interaction with one another.
- Measure distinct changes and differences of brain functions in individuals who underwent operations
- Observe the performance and analyze the results of individuals on given tasks



## Psychology Perspective

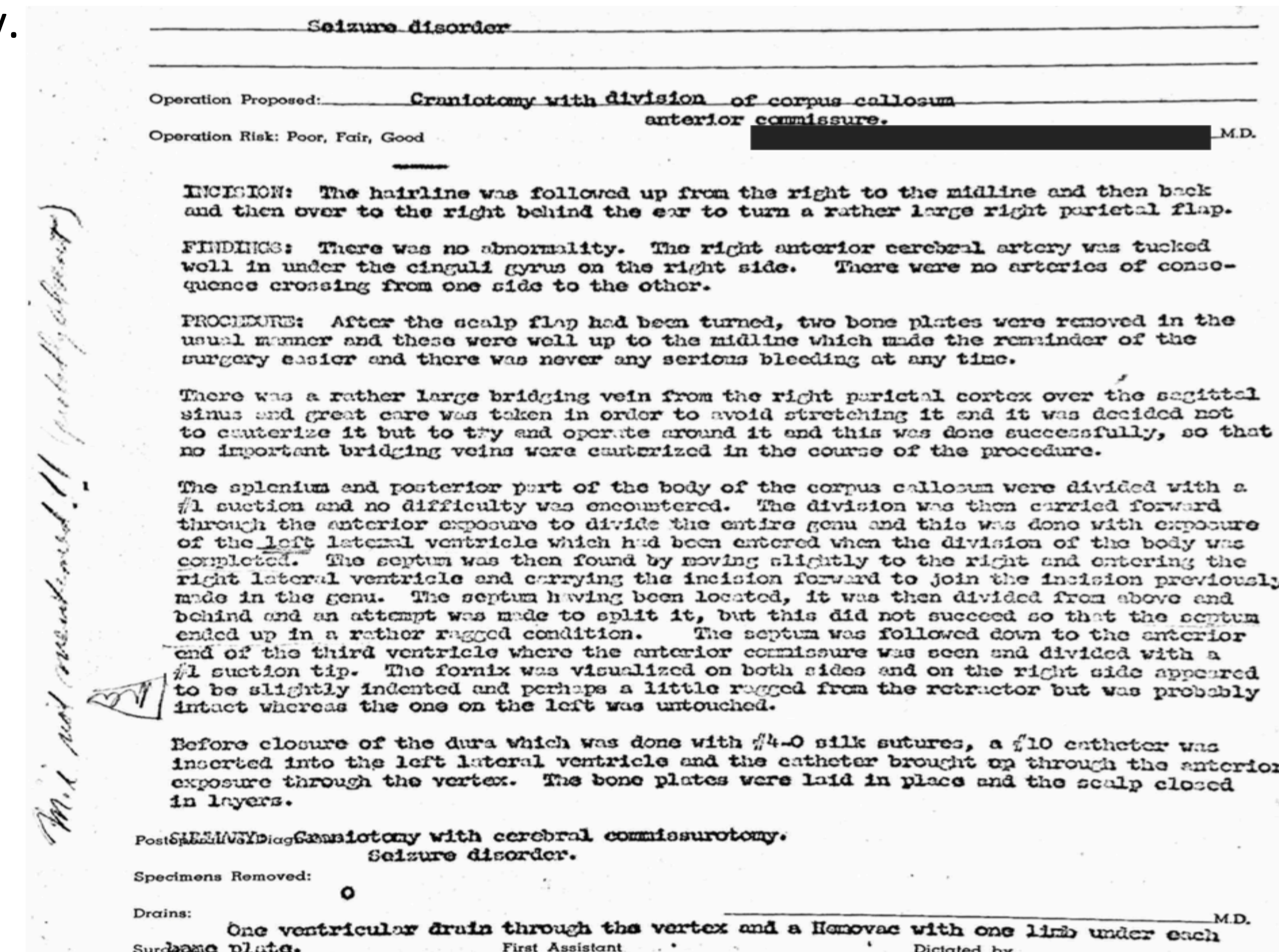
- Patients were given several psychological tests that assessed cognitive, perceptual, memory, and behavioral characteristics through various stimuli, objects, visual fields, perceptual tasks and images.
- Testing data aided in better understanding of interpretation of the neurobiological procedure, the impacts it had on an individual, and cerebral hemispheric functions and their individual responsibilities.
- To test the independent hemispheres, objects or images were shown to only one hemisphere and field of vision. Individuals attempted to verbalize what they saw. This led to the discovery that visual and verbal processing were located in separate hemispheres. Without the corpus callosum acting as a channel of communication, a subject may recognize an object visually, but be unable to verbalize it.

### Statement on Use of Human Subjects for Research in Psychobiology For Annual IRB Review, 1979

Studies involving human subjects in the psychobiology laboratory are centered around the investigation of hemispheric specialization of higher cognitive functions. The experimental procedures include a variety of standardized psychological tests and commonly used behavioral and neurological tests for perception, memory, learning and other sensory, cognitive and motor functions. Behavioral and occasionally associated autonomic responses (GSR, EEG, EOG) as well as eye movements are recorded. Neurological patients, mainly commissurotomy and hemispherectomy patients of Drs. P.J. Vogel and J.E. Bogen of Los Angeles, along with occasional stroke patients or others with lateral brain damage, normal subjects and occasionally children, participate. In the case of three patients a scleral contact lens is used to occlude visual input to one visual half-field at a time.

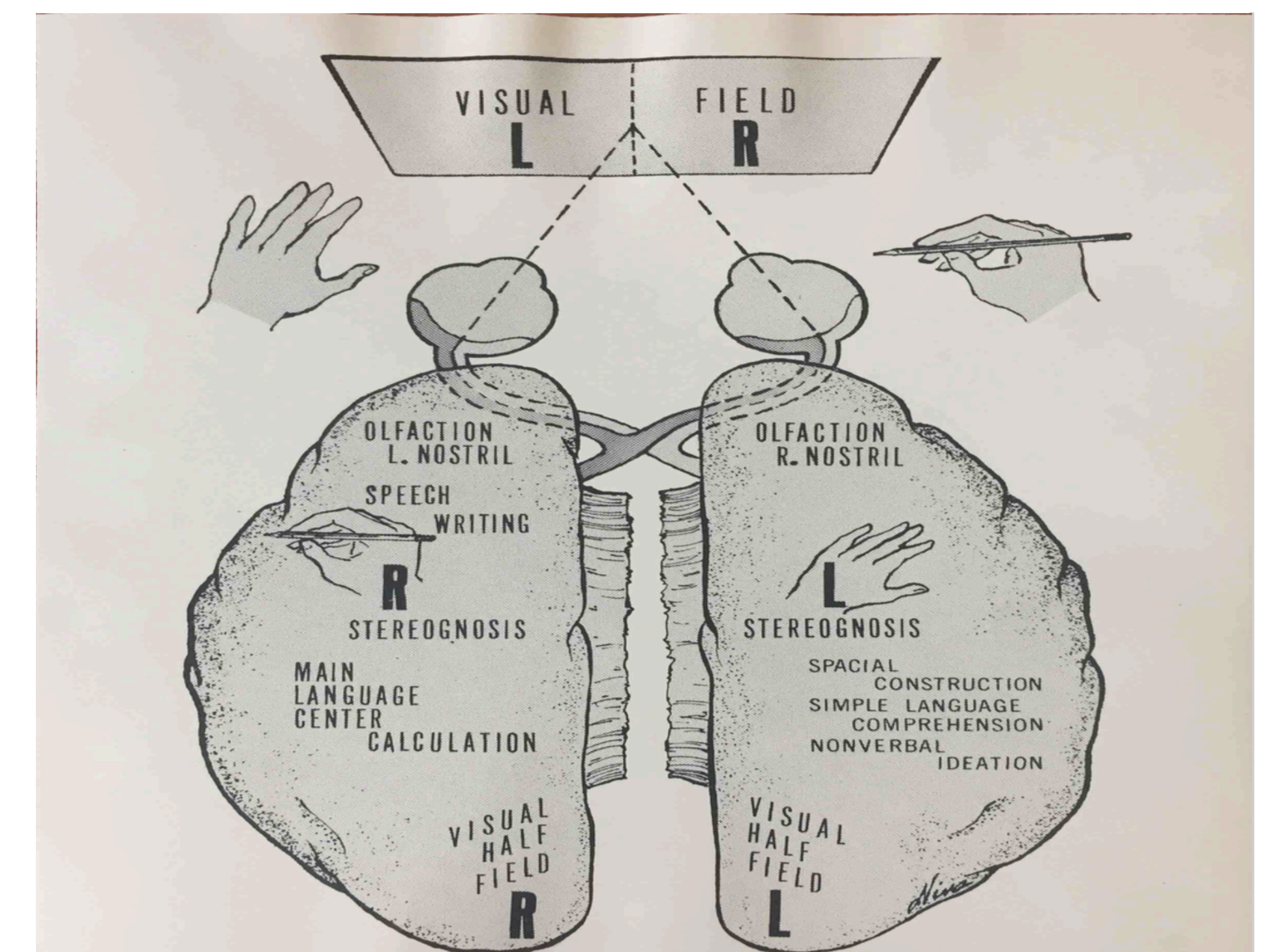
## Neurobiology Perspective

- Neurobiology was the first step to winning the Nobel Prize in that the split-brain patients underwent cerebral commissurotomy (cutting of the corpus callosum to reduce/eliminate seizures)
- Understanding brain anatomy was necessary for correct incisions to be made and to ensure that proper healing occurred following the surgery.



## Collaborative Approach Results

- Sperry's lab was a psychobiology lab where neurobiology and psychology overlapped through measurements and tests.
- The integration of neurobiology and psychology was done to learn more about the brain and produce different methods for treating and aiding individuals who suffered severe brain injuries.
- Collaboration between these two disciplines was essential whereas brain anatomy revealed what structures were impacted, while psychology contributed to the understanding of the specific functions



## Discussion

- Sperry was the first psychologist to win the Nobel Prize largely due to his discovery of the right and left hemispheres of the brain. Psychology and neurobiology were essential elements in this discovery. The neurobiological understanding of the brain allowed for certain psychological tests, such as cognitive and behavioral tests, to be developed to assess specific responsibilities of each hemisphere.
- While the brain is a neurobiological organ, psychology allows for a deeper understanding of its capabilities by examining individual's daily functions.
- Sperry's split-brain research relied equally on these two diverse fields in order to come to the conclusion that the brain is composed of two distinct hemispheres that communicate via the corpus callosum. Without this integration, this discovery may not have been made nor would Sperry have received the Nobel Prize.

## References Cited

Puente, A. (n.d.). Roger Wolcott Sperry. Retrieved September 25, 2017, from <http://rogersperry.org>

Information and pictures obtained from original archives of Norma Dupree Sperry