Faculty Guide
for use with

WORTH PUBLISHERS:
NEUROSCIENCE VIDEO
COLLECTION
BY RONALD J. COMER, PRINCETON UNIVERSITY

to accompany
AN INTRODUCTION TO
BRAIN AND BEHAVIOR,
SECOND EDITION
BY BRYAN KOLB AND IAN Q. WHISHAW

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## CONTENTS AND SEGMENT LENGTHS FOR VHS, DVD, AND INSTRUCTOR RESOURCE CD-ROM (CONTAINS VIDEOS IN MPEG FORMAT)

*Segment lengths are approximate.*

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## Faculty Guide

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### CHAPTER 6 HOW DOES THE BRAIN DEVELOP AND ADAPT?

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Segment Length:

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EPILOGUE  What Have We Learned and What Is Its Value?
Segment 80  Gene Therapy Research and Applications: Ethical Concerns....4:48
Segment 1
Touching the Brain: Electrically Stimulating the Speech Regions of the Brain (2:30)

Description
In the course of an operation to remove a tumor from a patient’s brain, a neurosurgeon needs to identify the speech region of the patient’s brain. He electrically stimulates various speech areas of the brain near the tumor to clarify the speech areas of the brain.

Relevant topic(s)
Brain surgery, Brain tumor, Language, Speech regions of the brain

Features of interest
Assessment/treatment technique, Case presentation

Source
Brain Story: All In the Mind (BBC Worldwide Americas Inc.)

Segment 2
Prefrontal Lobotomy Procedure, 1942 (2:50)

Description
In the late 1930s, the neuropsychiatrist Egas Moniz developed the lobotomy, a brain operation in which a surgeon would cut the connections between the cortex of the brain’s frontal lobes and the lower centers of the brain. This segment from 1942 shows excerpts from a lobotomy procedure, done by the American neuropsychiatrist Walter Freeman.

Relevant topic(s)
Lobotomy, Psychosurgery, Schizophrenia

Features of interest
Assessment/treatment technique, History

Source
Segment 3
Patients Before and After Prefrontal Lobotomy, 1944 (5:53)

Description
This segment shows historical footage of patients before and shortly after their lobotomies. Although each case was pointed to as a success, it is obvious, looking back, that postoperative behavior and functioning were hardly ideal or problem-free.

Relevant topic(s) Lobotomy, Psychosurgery, Schizophrenia
Features of interest Assessment/treatment technique, History
Source Prefrontal Lobotomy in Chronic Schizophrenia, 1944 (A. E. Bennett, Bishop Clarkson Memorial Hospital, Psychiatric Department). Courtesy: History of Medicine Division, National Library of Medicine.

Segment 4
Seeing the Brain: Traumatic Brain Injury and the MRI (3:19)

Description
This segment examines what happens in the brain following traumatic injury, and explores the role of imaging technology in showing precisely which areas of the brain have been damaged. It also touches upon how three-dimensional MRI technology has revolutionized the study of the brain, both in research and in treatment. Includes the work of Erin Bigler.

Relevant topic(s) MRI, Traumatic brain injury, Frontal lobes, Temporal lobes
Features of interest Research design, Assessment/treatment technique
Source Worth Publishers

Segment 5
Reading and the Brain: Learning to Read (1:27)

Description
This segment examines the multiple skills involved in reading and learning to read. Correspondingly, it highlights the multiple activities and parts of the brain at work in reading, from attention and visual representation to visual symbols and articulation. Includes the work of Guinivere Eden and Maryanne Wolf.

Relevant topic(s) Reading, Attention, Vision, Interacting brain pathways
Features of interest Assessment/treatment technique, Theory
Source THE SECRET LIFE OF THE BRAIN
“The Child’s Brain: Syllable From Sound”
David Grubin Productions
**Segment 6**
**Dyslexia and the Brain** (3:06)

**Description**
This segment focuses on the reading disorder of dyslexia, including the phonemic skills lacking in individuals with the disorder and the abnormalities in brain activity during reading displayed by such individuals. It further indicates that dyslexic individuals who respond to treatment for this learning disorder later show expanded brain activity while reading, including, at times, activity in the right hemisphere. Includes the work of Maryanne Wolf and Guinivere Eden.

**Relevant topic(s)**
Dyslexia, Reading, Speech, Phonemic awareness, Brain hemispheres

**Features of interest**
Research design, Assessment/treatment technique, Theory

**Source**
THE SECRET LIFE OF THE BRAIN
“The Child’s Brain: Syllable From Sound”
David Grubin Productions

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**Segment 7**
**Dyslexia: Clinical Picture and Treatment** (5:35)

**Description**
This segment features two dyslexic children discussing how their dyslexia has affected their lives and how they have dealt with their learning disabilities. It also explores some of the methods that help dyslexic children overcome their reading obstacles. Includes the work of Eileen Marzola.

**Relevant topic(s)**
Dyslexia, Reading, Learning disorders, Phonemic awareness

**Features of interest**
Assessment/treatment technique, Case presentation

**Source**
Worth Publishers

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**Segment 8**
**Phonemic Awareness: A Key to Better Reading Skills** (8:21)

**Description**
This segment looks at phonemic awareness tasks, primary tools in developing reading skills, as well as in treating reading disorders such as dyslexia. Several children are shown performing on phonemic awareness tasks, with varying degrees of success.

**Relevant topic(s)**
Phonemic awareness, Reading, Dyslexia

**Features of interest**
Research design, Assessment/treatment technique, Theory

**Source**
Worth Publishers

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**Segment 9**
**fMRI: Unraveling Brain Structure and Function** (2:47)

**Description**
This news piece explores how the fMRI helps clinicians to treat brain disorders and researchers to investigate different kinds of functioning, from memory to emotion. In particular, it focuses on fMRI indications that the languages of certain bilingual persons each involve different regions of brain activity. Includes the work of Joy Hirsch.

**Relevant topic(s)**
fMRI, Bilingual, Speech regions of the brain, Brain tumor

**Features of interest**
Research design, Assessment/treatment technique, Case presentation

**Source**
NBC News Archives
### Segment 10
#### Undergoing an fMRI

**Description**
This segment demonstrates the fMRI procedure. A subject is shown being prepared for and then undergoing an fMRI as part of a research study into the perception and recall of faces. The segment also shows operators controlling the fMRI from the next room. Resulting scans are shown and explained. At the conclusion of the segment, dynamic three-dimensional scans are presented to demonstrate how the fMRI shows brain activity. Features the work of Leslie Ungerleider.

**Relevant topic(s)**
fMRI, Vision, Visual pathways, Memory, Perception

**Features of interest**
Research design, Assessment/treatment technique, Theory

**Source**
Worth Publishers

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### Segment 11
#### Silent Strokes

**Description**
This news piece examines the phenomenon of silent strokes, an increasingly identified problem in Western society. It focuses upon the brain event itself and its identification, as well as the possible causes, impact, and prevention (e.g., exercise). Includes the work of Jeffrey Saver.

**Relevant topic(s)**
Stroke, Exercise, Memory, Dementia

**Features of interest**
Assessment/treatment technique, Case presentation

**Source**
NBC News Archives

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### Segment 12
#### Stroke: Motor Effects, Rehabilitation, and Brain Plasticity

**Description**
This segment demonstrates how post-stroke patients can regain certain motor skills. Rehabilitation, which consists of forcing patients to repeatedly perform relevant motor tasks, results in increased activity in damaged and neighboring areas of the brain. Includes the work of Edward Taub.

**Relevant topic(s)**
Stroke, Motor function, Brain plasticity, Rehabilitation, Neurons

**Features of interest**
Assessment/treatment technique, Case presentation, Theory, History

**Source**
THE SECRET LIFE OF THE BRAIN
“The Aging Brain: Through Many Lives”
*David Grubin Productions*

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### Segment 13
#### Brain “Neglect”: A Consequence of Strokes

**Description**
This segment demonstrates the phenomenon of “neglect” experienced by some stroke victims. Focusing on one particular female stroke victim, the piece suggests that this condition is due more to attention deficits that can result from strokes than to any visual deficiencies. Includes the work of Peter Halligan.

**Relevant topic(s)**
Contralateral neglect, Attention, Vision, Stroke, Brain hemisphere

**Features of interest**
Assessment/treatment technique, Case presentation, Theory

**Source**
*Brain Story: The Mind’s Eye* (BBC Worldwide Americas Inc.)
<table>
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<th>The Making of the Brain</th>
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<tr>
<td><strong>Description</strong></td>
<td>This segment illustrates how the brain develops initially. It focuses on formation of the neural tube, neuron formation and expansion, stem cells, and migration. Includes the work of Mary Hatten, Carla Shatz, and Susan McConnell.</td>
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<tr>
<td><strong>Relevant topic(s)</strong></td>
<td>Neurons, Glia, Stem cells, Migration, Brain development</td>
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| **Source** | THE SECRET LIFE OF THE BRAIN  
“The Baby’s Brain: Wider Than The Sky”  
David Grubin Productions |

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<th>The Formation of Neural Networks</th>
<th>(3:12)</th>
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<tr>
<td><strong>Description</strong></td>
<td>This segment illustrates how neurons build increasingly precise and complex networks throughout development. Includes the work of Carla Shatz and Susan McConnell.</td>
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<tr>
<td><strong>Relevant topic(s)</strong></td>
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“The Baby’s Brain: Wider Than The Sky”  
David Grubin Productions |

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<th>Hydrocephalus Aftermath: The Left Hemisphere and Brain Plasticity</th>
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<tr>
<td><strong>Description</strong></td>
<td>This segment presents the case of a young woman who has suffered prominent loss of brain tissue in the left hemisphere due to hydrocephalus. Although she experiences significant problems with perceptual motor and visual perception tasks, her language and reading skills are normal, a remarkable demonstration of brain plasticity. Includes the work of Erin Bigler.</td>
<td></td>
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<tr>
<td><strong>Relevant topic(s)</strong></td>
<td>Hydrocephalus, Brain damage, Brain ventricles, Brain hemispheres, Brain plasticity, Language, Motor function, Visual perception, Reading, Speech</td>
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<td>Assessment/treatment technique, Case presentation, Theory</td>
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<tr>
<td><strong>Source</strong></td>
<td>Worth Publishers</td>
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### Segment 17
**The Human Genome Project**

**Description**
This news piece was broadcast in 2001, soon after the initial success of the Human Genome Project, in which all the genes in the human body were catalogued. It indicates how surprised scientists were at that time about some of the project’s findings, such as the number of genes in the human body and the complexity of human genes versus animal genes. It also reflects scientists' excitement at that time about the medical discoveries and treatments that might result from the project. Includes the work of Eric Lander, Francis Collins, and Craig Venter.

**Relevant topic(s)**
Genes, Gene therapy

**Features of interest**
Research design, Assessment/treatment technique, History

**Source**
NBC News Archives

### Segment 18
**Observing Electrical Activity in the Brain: The Magnetoencephalogram (MEG)**

**Description**
This segment explains and demonstrates the operation of the magnetoencephalogram (MEG), a device for measuring electrical activity throughout the brain during cognitive functioning.

**Relevant topic(s)**
MEG, Cognitive neuroscience

**Features of interest**
Assessment/treatment technique, Research design

**Source**
*Brain Story: All In the Mind* (BBC Worldwide Americas Inc.)

### Segment 19
**Epilepsy and Brain Imaging**

**Description**
Focusing on the case of a sixty-year-old man with epilepsy, this news piece demonstrates how the fMRI can be used to help determine the nature and causes of the disorder, and the prospects for surgical treatment. Includes the work of Joy Hirsch and Guy McKhann.

**Relevant topic(s)**
Epilepsy, fMRI, Brain surgery

**Features of interest**
Research design, Assessment/treatment technique, Case presentation, Theory, History

**Source**
NBC News Archives

### Segment 20
**Early Electroconvulsive Therapies**

**Description**
In the 1930s, electroconvulsive therapy was developed in the belief that inducing a seizure in patients with severe mental disorders would bring improvement. This segment shows the early versions of this therapy.

**Relevant topic(s)**
Electroconvulsive therapy, Brain seizures

**Features of interest**
Assessment/treatment technique, History

**Sources**
Segment 21
Modern Electroconvulsive Therapy (1:40)

Description
This segment illustrates what ECT is like today, including the use of medication to help persons sleep through the procedure, muscle relaxants to reduce thrashing, oxygen, and the consequent reduction of the overt symptoms of the grand mal seizure.

Relevant topic(s)
Electroconvulsive therapy, Brain seizures

Features of interest
Assessment/treatment technique

Source
The Mind, Second Edition (Thirteen, WNET and Worth Publishers)

Segment 22
Activity, Exercise, and the Brain (4:55)

Description
This segment examines the effects of mental and physical activity on the aging brain. It highlights animal research into the effects of environment, mental stimulation, and activity on brain function and development. It also makes a distinction between mental and physical activity, showing why both are essential. Includes the work of William Greenough.

Relevant topic(s)
Physical activity, Brain development, Neurons, Synapses, Brain vascular system, Learning, Animal research

Features of interest
Research design, Theory, History

Source
Worth Publishers

Segment 23
Neurotransmitters Spring into Action: Linking Placebo Effects to Endorphins (3:15)

Description
This segment shows an experiment with human subjects whose findings suggest that the effectiveness of placebo drugs is partly a result of the patients’ release of endorphins, their natural opioids. The implication is that, for some people, the expectation that a given treatment will soon be helpful causes them, without awareness, to release endorphins throughout their brain and body. In turn, the endorphins reduce their pain or help them to feel better in other ways.

Relevant topic(s)
Neurotransmitters, Endorphins, Placebo effects, Pain

Features of interest
Research design, Assessment/treatment technique, Theory

Source
The Keys to Paradise (BBC Worldwide Americas Inc.)

Segment 24
Stem Cells (1:15)

Description
This segment explores the implications of research indicating that new neurons can continue to form throughout life. It examines the activities of stem cells, both embryonic stem cells and stem cells in the adult brain. Includes the work of Fred Gage and Marilyn Albert.

Relevant topic(s)
Neurons, Stem cells, Brain development

Features of interest
Research design, Theory, History

Source
THE SECRET LIFE OF THE BRAIN
“The Aging Brain: Through Many Lives”
David Grubin Productions
Segment 25
The War Against Parkinson’s Disease (3:46)
Description
This segment from the 1990s looks at early studies into the surgical procedure of implanting human fetal brain tissue into patients with Parkinson’s disease, showing footage of the procedure. Explaining the double-blind studies, the segment discusses the levels of success that some subjects achieved in alleviating the symptoms of Parkinson’s disease. In the intervening years since the production of the segment, ethical concerns raised by the procedure have caused controversy, altering the timeline for future research laid out in the segment. Includes the work of Curt Freed.
Relevant topic(s)
Fetal cell implantation, Stem cells, Parkinson’s disease, Dopamine, Brain surgery, Scientific ethical controversies, Animal research
Features of interest
Research design, Assessment/treatment technique, Theory, History, Ethical issues
Source
Worth Publishers

Segment 26
Development, Memory, and Familiarity (2:17)
Description
This segment examines how memories of familiar stimuli (from auditory to visual) vary throughout development, beginning at birth. Includes the work of Charles Nelson.
Relevant topic(s)
Memory, Auditory memory, Visual memory, Brain development, Infancy, Familiarity, Mother-child relationship
Features of interest
Research design, Assessment/treatment technique, Theory
Source
Brain Story: Growing the Mind (BBC Worldwide Americas Inc.)

Segment 27
Development and Shape Recognition: Distinguishing Faces from Other Forms (2:02)
Description
This segment examines the recognition of faces as distinct from the recognition of other shapes. It includes research that reveals major differences between the performance of newborns and the performance of eight-month-olds in facial recognition.
Relevant topic(s)
Vision, Shape recognition, Face recognition, Memory, Brain development
Features of interest
Research design, Assessment/treatment technique, Theory
Source
Brain Story: Growing the Mind (BBC Worldwide Americas Inc.)

Segment 28
Schizophrenia, Brain Structure, and Prenatal Development (6:00)
Description
This segment explores the origins and causes of schizophrenia, including the possibility that prenatal brain cell migration during the critical second trimester of brain development is disrupted. It also describes normal prenatal brain cell migration during the second trimester, explaining its importance. Includes the work of Arnold Scheibel.
Relevant topic(s)
Schizophrenia, Brain development, Second trimester, Prenatal cell migration, Hippocampus, Frontal lobes, Prefrontal cortex
Features of interest
Research design, Assessment/treatment technique, Theory, History
Source
Worth Publishers
<table>
<thead>
<tr>
<th>Segment 29</th>
<th>Age Versus Learning: Language Acquisition by Children Triggers Shifts in Brain Organization</th>
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</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Showcasing EEG studies of infants, this segment explores the shifts children undergo in brain organization as they acquire language skills. While thirteen-month-old babies tend to listen and understand with both cerebral hemispheres, by the age of twenty months, following an increase in vocabulary, the language center has shifted to the temporal-parietal regions of the left hemisphere. The segment suggests that this shift in brain organization and specialization is triggered by language acquisition rather than by biological factors such as brain maturity. Includes the work of Debra Mills.</td>
</tr>
<tr>
<td><strong>Relevant topic(s)</strong></td>
<td>Language development, Brain hemispheres, EEG, Brain development</td>
</tr>
<tr>
<td><strong>Features of interest</strong></td>
<td>Research design, Assessment/treatment technique, Theory</td>
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</tbody>
</table>
| **Source** | THE SECRET LIFE OF THE BRAIN  
“The Child’s Brain: Syllable From Sound”  
David Grubin Productions and Worth Publishers |

<table>
<thead>
<tr>
<th>Segment 30</th>
<th>The Teenage Brain</th>
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</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>As this news piece suggests, some research indicates that the development of the brain continues at a high pace into the mid-twenties, rather than slowing down at the age of twelve, as once thought. This research indicates that areas of the brain linked to emotion, reasoning, and problem-solving are the last to fully develop in teenagers and young adults. Includes the work of Paul Thompson.</td>
</tr>
<tr>
<td><strong>Relevant topic(s)</strong></td>
<td>Brain development, Adolescence</td>
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<tr>
<td><strong>Features of interest</strong></td>
<td>Research design, Assessment/treatment technique, Theory</td>
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<tr>
<td><strong>Source</strong></td>
<td>NBC News Archives</td>
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<thead>
<tr>
<th>Segment 31</th>
<th>Childhood Violence: Nature Versus Nurture</th>
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<tbody>
<tr>
<td><strong>Description</strong></td>
<td>This news piece explores whether violent behavior by children is the result of environmental factors, brain abnormalities, or both. It notes that brain scans of children who repeatedly display violence often reveal abnormal activity in areas of the brain relating to impulsivity, empathy, and emotionality. Includes the work of Nora Volkow.</td>
</tr>
<tr>
<td><strong>Relevant topic(s)</strong></td>
<td>Violence, Aggression, Brain development</td>
</tr>
<tr>
<td><strong>Features of interest</strong></td>
<td>Research design, Assessment/treatment technique, Theory</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td>NBC News Archives</td>
</tr>
</tbody>
</table>
Segment 32  
**Stress Hormones, Aging, and Memory Loss** *(2:12)*

**Description**
This news piece explores the link between stress hormones and memory loss among aging persons. It describes research showing that individuals with greater stress hormone activity experience more memory loss. It also points out the ability of such individuals to improve their memories. Includes the work of Bruce McEwen and Sonia Lupien.

**Relevant topic(s)**
Stress, Stress hormones, Memory, Hippocampus, Aging, Brain plasticity, Brain resilience

**Features of interest**
Research design, Assessment/treatment technique

**Source**
NBC News Archives

Segment 33  
**The Addictive Effects of Cocaine: Sinking and Recovering** *(3:24)*

**Description**
In this segment, a man describes his history of cocaine abuse and dependence, which ruined his personal life and professional career. Now no longer addicted, he also describes his treatment, recovery, and successful climb back. One feature of his recovery was implicit aversion therapy, in which he kept recalling and picturing the life of ruin associated with drug abuse whenever he felt desires or cravings for a drug.

**Relevant topic(s)**
Substance abuse, Substance dependence, Cocaine, Craving, Treatment

**Features of interest**
Assessment/treatment technique, Case presentation

**Source**
The Mind, Second Edition (Thirteen, WNET and Worth Publishers)

Segment 34  
**The Biology of “Craving”: Cocaine Addiction** *(8:02)*

**Description**
This segment explores new directions of research into the treatment of drug addiction. It showcases PET scan studies into what happens in the brain while a person is undergoing craving for cocaine, identifying the involvement of the amygdala, limbic system and specific neurotransmitter activity. It suggests the future potential to use these research findings to help treat drug addiction. Includes the work of Ann Rose Childress.

**Relevant topic(s)**
Substance abuse, Substance dependence, Craving, Amygdala, Limbic system, Neurotransmitter activity, Brain blood flow, Emotion

**Features of interest**
Research design, Assessment/treatment technique, Theory, History

**Source**
Worth Publishers
Segment 35
Blindsight

Description
This segment examines the phenomenon of blindsight, in which damage to certain parts of the brain’s visual pathway leaves individuals able to see but without full awareness that they are in fact seeing. Includes the work of Lawrence Weiskrantz.

Relevant topic(s)
Vision, Visual pathways, Consciousness, Attention, Awareness, Animal research

Features of interest
Research design, Assessment/treatment technique, Case presentation, Theory

Source
Inside the Animal Mind: Animal Consciousness (Thirteen/WNET New York)

Segment 36
Learning to Draw by Using the Right Hemisphere of the Brain

Description
In this vintage news piece, from 1990, an art professor teaches people to draw by providing them with techniques that help them to use the right hemisphere of the brain. She theorizes that the visual pathways in the right hemisphere are less influenced by other cognitive processes than those in the left hemisphere.

Relevant topic(s)
Drawing, Visual pathways, Brain hemispheres

Features of interest
Case presentation, Theory, History

Source
NBC News Archives

Segment 37
Brain Pathways Working Together: Vision and Hand Posturing

Description
This segment examines the links between visual processing and hand positioning, and how motor coordination is affected when persons are exposed to optical illusions designed to confuse visual processing. It further describes the multiple visual pathways in the brain.

Relevant topic(s)
Visual pathways, Motor coordination, Optical illusions

Features of interest
Research design, Assessment/treatment technique, Theory

Source
Brain Story: The Mind’s Eye (BBC Worldwide Americas Inc.)

Segment 38
The Temporal Lobe and Visual Sensory Experiences

Description
In this segment, the temporal lobe of a blindfolded subject is stimulated. This procedure triggers a range of visual sensory experiences, including, at the extreme, visual hallucinations. Includes the work of Michael Persinger.

Relevant topic(s)
Visual sensory pathways, Temporal lobe, Sensory experiences, Spiritual feelings, Hallucinatory experiences

Features of interest
Research design, Assessment/treatment technique, Theory

Source
Brain Story: All In the Mind (BBC Worldwide Americas Inc.)
Segment 39
Language Impairment in Stroke Victims  (3:49)
Description  This segment focuses on language problems, such as aphasia, that may develop after strokes that damage the left hemisphere. It further examines areas of the brain that are related to language ability. Includes the work of Nina Dronkers.
Relevant topic(s)  Language, Aphasia, Stroke, Left-hemisphere, Brain plasticity, Wernicke’s Area, Broca’s area
Features of interest  Research design, Assessment/treatment technique, Case presentation, Theory, History
Source  *Brain Story: First Among Equals* (BBC Worldwide Americas Inc.)

Segment 40
Speech Deficits After Removal of the Left Hemisphere: Brain Plasticity  (4:22)
Description  This segment focuses on the case of a child who had his left brain hemisphere removed in order to alleviate very severe epilepsy. It reveals that removal of the left hemisphere leads to greater deficits in the production of spoken language than in the understanding of spoken language. It also clarifies the role and precise nature of brain plasticity in cases of left hemisphere. Includes the work of Dana Boatman.
Relevant topic(s)  Speech, Brain hemispheres, Brain plasticity, Epilepsy, Brain surgery
Features of interest  Research design, Assessment/treatment technique, Case presentation, Theory
Source  THE SECRET LIFE OF THE BRAIN
“The Child’s Brain: Syllable From Sound”
*David Grubin Productions*

Segment 41
Does Early Music Training Change the Brain?  (2:20)
Description  This news piece reflects an ongoing controversy regarding the relationship between musical skill and the brain. Does genetic predisposition determine musical ability, does early musical training change the brain, or both? Researchers in this segment find that musical training produces changes in the brain, and one states his belief that early training, rather than genetic predisposition, is the primary determinant of musical skill. Includes the work of Mark Tramo, Gottfried Schlaug, and Benjamin Martin Bly.
Relevant topic(s)  Musical processing, Musical training, Musical ability, Auditory processing, Planum temporale, Brain development
Features of interest  Research design, Assessment/treatment technique, Case presentation, Theory, History
Source  NBC News Archives
Segment 42
“Phantom Limb” Sensation (3:16)

Description
This segment explores the phenomenon of “phantom limb” sensation by presenting the case of a female patient who experiences pain and other sensations in the hand of her amputated arm. Looking into the causes of this phenomenon, the segment presents research that suggests the sensation is the result of activity in areas of the brain that lie near the area previously stimulated by the limb before amputation. Includes the work of Peter Halligan.

Relevant topic(s)
Feeling sensation, Somatosensory system, Pain, Brain plasticity

Features of interest
Case presentation, Theory

Source
Brain Story: All In the Mind (BBC Worldwide Americas Inc.)

Segment 43
Autism: A Clinical Picture (4:10)

Description
Showing autistic children both at home and working with teachers, this segment depicts autism and its impact on families. It also highlights the value of early intervention and treatment in developing communication skills and functioning.

Relevant topic(s)
Autism, Treatment

Features of interest
Assessment/treatment technique, Case presentation

Source
Behavioral Treatment of Autistic Children (Focus International, Inc., and Worth Publishers)

Segment 44
Sensory Overstimulation: An Insider’s Look at Autism (6:11)

Description
Featuring Temple Grandin, an autistic person who has earned a PhD. and achieved great success in the field of livestock handling, this segment presents an insider’s look at the experience of having autism. Grandin describes feelings of sensory overstimulation and the importance of early intervention. She describes and demonstrates her “squeeze machine,” which she designed to help her relax and cope with the discomforts and anxiety associated with her autism.

Relevant topic(s)
Autism, Sensory stimulation, Treatment

Features of interest
Assessment/treatment technique, Case presentation, Theory

Source
Worth Publishers

Segment 45
Autism and Early Brain Development (3:37)

Description
This segment explores structural abnormalities in the brains of autistic individuals. Dismissing the outdated notion that autism is due to defective parenting, it describes abnormalities in the limbic system and cerebellum, presenting whole brain serial section research findings that these abnormalities have likely occurred prenatally, during the second trimester of pregnancy. Includes the work of Margaret Bauman.

Relevant topic(s)
Autism, Limbic system, Cerebellum, Prenatal brain development

Features of interest
Research design, Assessment/treatment technique, Theory, History

Source
Worth Publishers
### Segment 46
**Causes of Autism: The Parents’ View**

**Description**
In this segment, two mothers of children with autism give their views on the causes of the disorder. One mother feels that the causes are environmental, focusing on vaccinations, mercury levels, and antibiotics as possible causes. The other feels there is also a genetic predisposition that plays a major role.

**Relevant topic(s)**
Autism, Genes, Vaccinations, Mercury

**Features of interest**
Case presentation, Theory

**Source**
Worth Publishers

### Segment 47
**Aggression and the Brain**

**Description**
This segment explores which brain activities and structures may help trigger aggression. It centers on research involving the implantation of electrodes in key brain areas of animal subjects. Includes the work of Jose Delgado.

**Relevant topic(s)**
Aggression, Violence, Emotion, Hypothalamus, Animal research

**Features of interest**
Research design, Assessment/treatment technique, Theory, History

**Source**
The Brain, Second Edition (Thirteen, WNET and Worth Publishers)

### Segment 48
**Disgust and the Brain**

**Description**
This segment examines reactions of disgust with regard to taste, notions of contamination, and further realms of functioning. It implicates the activity of the anterior insula as a key factor in such feelings of disgust. Includes the work of Paul Rozin.

**Relevant topic(s)**
Anterior insula, Negative emotion, Disgust, Taste, Vision, Obsessive-Compulsive Disorder

**Features of interest**
Research design, Assessment/treatment technique

**Source**
Brain Story: In the Heat of the Moment (BBC Worldwide Americas Inc.)

### Segment 49
**The Frontal Lobe and Higher-Order Planning**

**Description**
This segment examines the role of the frontal lobe in higher-order planning and motivated behavior. An imaging study reveals brain activity while a subject tries to perform a problem-solving task.

**Relevant topic(s)**
Frontal lobe, Higher-order planning, Motivated behavior, Problem-solving

**Features of interest**
Research design, Assessment/treatment technique, Theory

**Source**
Brain Story: First Among Equals (BBC Worldwide Americas Inc.)
Segment 50
Post-Traumatic Stress Disorder: The Roles of the Amygdala and Hippocampus (1:48)

Description
This segment examines the usual operation of the amygdala and the hippocampus, and further considers the roles these brain structures may play in post-traumatic stress disorder. Research suggests that emotional pathways (amygdala) and memory systems (hippocampus) are impaired by traumatic events in such disorders. Includes the work of Douglas Bremner.

Relevant topic(s)
Post-traumatic stress disorder, Fear, Amygdala, Hippocampus, Emotion, Memory

Features of interest
Research design, Assessment/treatment technique, Case presentation, Theory

Source
Brain Story: In the Heat of the Moment (BBC Worldwide Americas Inc.)

Segment 51
Love, Relating, and Oxytocin (2:35)

Description
This segment examines the links between feelings of love and the hormone oxytocin. It also ties this hormone and neurotransmitter to other emotions and behavior that are associated with loving. Includes the work of Rebecca Turner.

Relevant topic(s)
Oxytocin, Love, Intimacy, Relationships, Reproduction, Sex

Features of interest
Research design, Theory

Source
Brain Story: In the Heat of the Moment (BBC Worldwide Americas Inc.)

Segment 52
Measuring Hunger and Pleasure During Hypothalamic Stimulation (2:00)

Description
Over the years, researchers have stimulated key brain areas, seeking to determine their roles in behavior. A common target area has been the lateral hypothalamus. In one early study, the stimulation of this area seemed to produce hunger and eating behavior, while in another, such stimulation seemed to produce feelings of pleasure. Are these reactions compatible? Is the role of the hypothalamus more complex than past studies suggested? Includes the work of Bart Hoebel.

Relevant topic(s)
Hypothalamus, Electrical stimulation, Hunger, Eating, Pleasure

Features of interest
Research design, Theory, History

Source
Hypothalamic Reward in Feeding, Running and Mating Behavior (Bart Hoebel, Alan C. Rosenquist, & Anthony R. Caggiula)
### Segment 53
**Natural Appetite Suppressants in the Brain**

**Description**
Over the past decade, there have been many efforts by researchers to identify natural appetite suppressants in the brain. This news piece appeared in 1996, on the day that scientists reported that injections of the protein glucagon-like-peptide-one (GLP-1) into the brains of rats seemed to suppress their appetites. The piece reflects the excitement that has accompanied discoveries of various natural appetite suppressants over the years. Includes the work of Stephen Bloom.

**Relevant topic(s)**
Eating, GLP-1, Weight, Diet

**Features of interest**
Research design, Theory, History

**Source**
NBC News Archives

### Segment 54
**Light Therapy for Seasonal Affective Disorder: Mimicking Nature**

**Description**
Clinicians have become aware that many people suffer from Seasonal Affective Disorder (SAD). They become clinically depressed each winter due apparently to the decreases in light that occur during winter months and to corresponding increases in their body’s secretions of the hormone melatonin. One helpful treatment for this kind of depression is light therapy, treatment that provides SAD sufferers with extra doses of light—levels they would be receiving from the sun if they lived closer to the equator. This segment focuses on light therapy and its dramatic impact on some persons with SAD.

**Relevant topic(s)**
Mood disorders, Melatonin, Hormones, Light therapy, Phototherapy, Circadian/rhythms.

**Features of interest**
Assessment/treatment technique, Case presentation

**Source**
“Desperate for Light,” 20-20, 12/30/88 (ABC News)

### Segment 55
**Sudden Infant Death Syndrome (SIDS)**

**Description**
This news piece examines Sudden Infant Death Syndrome. Focusing on a case study and research studies, it considers the possibility that SIDS is related to inadequate brain response to a buildup of carbon dioxide. Includes the work of Hannah Kinney.

**Relevant topic(s)**
SIDS, Sleep, Sleep disorder, Brain development, Carbon dioxide, Reflexes

**Features of interest**
Research design, Assessment/treatment technique, Case presentation, Theory

**Source**
NBC News Archives
Segment 56
Treatments for Insomnia  (2:10)

Description
This segment focuses on the wide prevalence of insomnia and reveals treatments that are now available to people with this problem—both biological and psychological interventions. This segment also examines laboratory sleep research and the impact of insomnia.

Relevant topic(s)
Sleep, Sleep disorder, Insomnia, Treatment

Features of interest
Research design, Assessment/treatment technique, Case presentation

Source
NBC News Archives

Segment 57
Undergoing a Sleep Study  (6:01)

Description
This segment demonstrates the procedures of an EEG sleep study. It shows technicians attaching electrodes and preparing the subject to spend the night in a sleep laboratory, and then depicts how the research is conducted. While the subject is sleeping, technicians are also shown in another room recording the individual’s brain activity.

Relevant topic(s)
Sleep, Sleep study, Sleep disorders, EEG

Features of interest
Research design, Assessment/treatment technique

Source
Worth Publishers

Segment 58
Daydreams  (2:05)

Description
This news piece explores the nature, themes, and causes of daydreams. It describes imaging research findings that auditory pathways are active during daydreams, just as they are when persons are hearing actual sounds and voices.

Relevant topic(s)
Daydreams, Sleep, Auditory pathways

Features of interest
Research design, Assessment/treatment technique, Theory

Source
NBC News Archives

Segment 59
Perception and Recall of Faces  (5:21)

Description
This segment, elements of which are also displayed in Segment 10, examines what happens in the brain when people perceive, recognize, and recollect faces. Utilizing fMRI technology, a study shows that the temporal lobe contains centers for processing visual information, and that areas of the frontal lobe are also active when subjects see faces and try to remember them. These same frontal lobe areas seem further involved in the long-term storage of memories for faces. Includes the work of Leslie Ungerleider.

Relevant topic(s)
Vision, Processing of visual information, Memory, Temporal lobe, Frontal lobe

Features of interest
Research design, Assessment/treatment technique, Theory

Source
Worth Publishers
### Segment 60
**Aging and Normal Memory Loss** (4:00)

**Description**
It is normal to experience some losses of memory as one grows old. But what kinds of memory loss are indeed common and normal? This segment displays laboratory studies that were designed to investigate and measure the issue of normal memory loss, and it reveals findings from these studies. Although past memory studies did not directly examine brain variables, they did highlight the important relationship between age and memory, and set the stage for today’s imaging memory studies. Includes the work of Gilles Einstein and Mark McDaniel.

**Relevant topic(s)**
Memory, Memory loss, Prospective memory, Alzheimer’s disease

**Features of interest**
Research design, Assessment/treatment technique, Theory, History

**Source**
Worth Publishers

### Segment 61
**Diabetes and Memory Impairment** (2:30)

**Description**
This segment describes research that finds a relationship between diabetes (poor glucose tolerance) and memory impairment (hippocampal damage). It also considers the possibility of preventing or reversing such damage with proper exercise, diet, and treatment. Includes the work of Antonio Convit.

**Relevant topic(s)**
Memory, Hippocampus, Diabetes, Glucose

**Features of interest**
Research design, Assessment/treatment technique, Case presentation, Theory

**Source**
NBC News Archives

### Segment 62
**Hippocampal Damage: Living with Memory Impairment** (5:00)

**Description**
This segment features a young man who developed significant memory problems after his hippocampus was damaged, due to complications in the wake of a traumatic injury. The piece describes the brain damage the young man suffered, then he himself describes his memory deficits and how he has learned to compensate for them. His mother and employer also speak on his ability to live independently and function in the workplace. Includes the work of Thomas Bennett.

**Relevant topic(s)**
Memory, Memory disorder, Hippocampus, Traumatic brain injury

**Features of interest**
Case presentation, Theory

**Source**
Worth Publishers
Segment 63
Severe Anterograde Amnesia: A Clinical Picture (5:53)

Description
This segment demonstrates the severe amnestic disorder of Clive Wearing, a former world-renowned choir director and musical arranger whose years of anterograde memory problems are the result of his having contracted viral encephalitis. The segment shows that although Wearing maintains his fundamental abilities in intellect, speech, recognition of his wife Deborah, reading music, and the like, he is unable to form new memories. With each new day or interaction, he is virtually starting over, forgetting the events and learning of previous experiences or interactions. The segment also indicates the impact of amnestic disorders on family members.

Relevant topic(s)
Memory, Anterograde amnesia, Amnestic disorders

Features of interest
Case presentation

Source
The Mind, Second Edition (Thirteen, WNET and Worth Publishers)

Segment 64
Alzheimer’s Disease: A Clinical Picture (4:30)

Description
This segment explores the cognitive, physical, and behavioral progression of Alzheimer’s disease, and the impact the disease has on families. It focuses on the deterioration of a woman with Alzheimer’s disease. Her family is shown caring for her, while she herself is barely able to respond. Includes the work of Kenneth Davis.

Relevant topic(s)
Memory, Memory disorder, Alzheimer’s disease, Dementia

Features of interest
Case presentation

Source
Worth Publishers

Segment 65
The Development of Tangles and Plaques in Alzheimer’s Disease (1:15)

Description
This segment illustrates and describes the activity of tau proteins, neurofibrillary tangles, beta-amyloid proteins, and plaques, and their possible ties to Alzheimer’s disease.

Relevant topic(s)
Memory, Memory disorder, Alzheimer’s disease, Neurofibrillary tangles, Plaques, Tau, Beta-amyloid

Features of interest
Research design, Theory

Source
THE SECRET LIFE OF THE BRAIN
“The Aging Brain: Through Many Lives”
David Grubin Productions
Segment 66
Alzheimer’s Disease: Structural Changes in the Brain
(4:55)
Description
This segment shows the effect of Alzheimer’s disease on the brain. MRI scans of patients highlight the global atrophy and dilated ventricles in a brain afflicted with Alzheimer’s disease. Research involving identical twins strongly suggests a genetic factor in the evolution and development of the disease. Includes the work of Erin Bigler.

Relevant topic(s)
Memory, Memory disorder, Alzheimer’s disease, Brain atrophy, Frontal and temporal lobes, Parietal regions of the brain, Ventricle dilation

Features of interest
Research design, Assessment/treatment technique, Theory, History

Source
Worth Publishers

Segment 67
Can the Immune System Be Used to Combat Alzheimer’s Disease?
(2:02)
Description
Focusing on animal research, this segment examines whether the immune system can be manipulated to combat Alzheimer’s disease. In studies with genetically engineered mice, vaccinated subjects show a marked reduction in plaques and Alzheimer’s-type symptoms. Includes the work of Dennis Selkoe and Dale Schenk.

Relevant topic(s)
Memory, Memory disorder, Alzheimer’s disease, Immune system, Plaques, Beta-amyloid, Animal research, Genetic engineering

Features of interest
Research design, Theory

Source
THE SECRET LIFE OF THE BRAIN
“The Aging Brain: Through Many Lives”
David Grubin Productions

Segment 68
Mental Mapping and Insect Brains
(2:21)
Description
This segment examines the regions of a bee’s brain and their relationship to mental imaging (mental mapping) and possibly consciousness. Includes the work of Robert Pickard.

Relevant topic(s)
Mental mapping, Consciousness, Animal brain structure, Animal research

Features of interest
Research design, Assessment/treatment technique, Theory

Source
Inside the Animal Mind: Animal Consciousness (Thirteen/WNET New York)
Segment 69
The Split Brain: Implications for Cognitive Functioning and Consciousness (4:40)

Description
This segment focuses on Joe, known for years to researchers as “J. W.”, whose brain hemispheres were separated as a treatment for his severe seizure disorder. The segment demonstrates the effects of Joe’s “split brain” upon his vision and language and other cognitive functions. The segment also considers what split brain functioning may teach us about the role of the left hemisphere in consciousness. Includes the work of Michael Gazzaniga.

Relevant topic(s)
Split brain, Brain hemispheres, Consciousness, Vision, Language, Epilepsy, Seizure disorder, Corpus callosum

Features of interest
Research design, Assessment/treatment technique, Case presentation, Theory, History

Source
Brain Story: The Final Mystery (BBC Worldwide Americas Inc.)

Segment 70
Reading and the Brain: Gender Differences (1:27)

Description
This 1995 news piece describes a study (among the first of its kind) in which men and women were found to use different parts of their brains when reading. In men, the left hemisphere of the brain is particularly active, while in women both hemispheres are active. Includes the work of Sally Shaywitz and Bennett Shaywitz.

Relevant topic(s)
Gender brain differences, Reading, Brain hemispheres

Features of interest
Research design, Assessment/treatment technique, Theory, History

Source
NBC News Archives

Segment 71
Listening and the Brain: Gender Differences (2:27)

Description
In this interview from NBC’s Today show, a researcher reports his findings that men and women use different parts of their brains when listening to a story. In men, the temporal lobe on the left side is active, while in women the temporal lobes on both sides of the brain are active. The researcher concludes that men and women may process language differently. Includes the work of Michael Phillips.

Relevant topic(s)
Gender brain differences, Processing language, Temporal lobe, Brain hemispheres

Features of interest
Research design, Assessment/treatment technique, Theory

Source
NBC News Archives

Segment 72
Handedness: Lefties Versus Righties (3:23)

Description
This news piece explores differences in performance between left-handed and right-handed persons. In the segment, researchers suggest a range of possible causes for handedness, from genetic causes, to birth stress, to environmental causes.

Relevant topic(s)
Handedness, Genetic factors, Environmental factors

Features of interest
Research design, Case presentation, Theory

Source
NBC News Archives
Segment 73
Consciousness and the Brain: The Emergence of a Scientific Debate  
(2:38)

Description
In this segment, pioneering and controversial work on consciousness and the brain by Benjamin Libet is examined. Libet found that when electrical stimulation was applied to the brains of awake brain surgery patients, it took a half-second for them to be consciously aware of the stimulation, suggesting to him that human reactions may actually precede conscious awareness.

Relevant topic(s)
Consciousness, Sensory cortex, Brain stimulation, Brain surgery

Features of interest
Research design, Assessment/treatment technique, Theory, History

Source
Brain Story: The Final Mystery (BBC Worldwide Americas Inc.)

Segment 74
Consciousness, Free Will, and the Brain: The Debate Continues  
(3:17)

Description
This segment demonstrates that the motor areas of the brain become active shortly before an individual’s experience of the conscious decision to move. This finding can be interpreted as evidence that our sense of conscious free will may actually follow certain behaviors rather than precede them. Includes the work of Patrick Haggard.

Relevant topic(s)
Consciousness, Free will, Left and right cortex, Motor function

Features of interest
Research design, Assessment/treatment technique, Theory

Source
Brain Story: The Final Mystery (BBC Worldwide Americas Inc.)

Segment 75
Hallucinations: A Clinical Picture  
(3:10)

Description
In this segment, a woman with schizophrenia experiences and describes in detail hallucinations and their powerful impact upon her life.

Relevant topic(s)
Auditory hallucinations, Schizophrenia

Features of interest
Case presentation

Source
Madness: In Two Minds (BBC Worldwide Americas Inc.)

Segment 76
Single-Photon Emission Scan: Comparison of Schizophrenic and Nonschizophrenic Twins  
(2:51)

Description
In this segment, a subject receives a Single-Photon Emission Scan, demonstrating both the tool itself and the kinds of tasks performed during testing. The segment also shows and explains Single-Photon Emission Scan findings and compares the scans of schizophrenic and nonschizophrenic identical twins.

Relevant topics: Single-Photon Emission Scan, Schizophrenia, Identical twins

Features of interest
Research design, Assessment/treatment technique, Theory

Source
Madness: In Two Minds (BBC Worldwide Americas Inc.)
Segment 77
MRI Scan: Comparison of Schizophrenic and Nonschizophrenic Twins (1:00)

Description
In this segment, the MRI scan of a person with schizophrenia is compared to that of his nonschizophrenic identical twin. The ventricles of the schizophrenic twin are bigger than those of his nonschizophrenic identical twin.

Relevant topic(s)
MRI scan, Schizophrenia, Brain ventricles, Identical twins

Features of interest
Research design, Assessment/treatment technique, Theory

Source
Madness: In Two Minds (BBC Worldwide Americas Inc.)

Segment 78
The Therapeutic Effect of Antipsychotic Drugs (2:10)

Description
This segment demonstrates the significant improvement that occurs for some persons with schizophrenia when they take antipsychotic medication. The man in the segment is seen as extremely confused and unable to verbalize effectively prior to taking a new drug. A month later, after the introduction of the drug, he is clear, coherent, and planning for a return to work.

Relevant topic(s)
Psychotropic drugs, Antipsychotic drugs, Schizophrenia

Features of interest
Assessment/treatment technique, Case presentation

Source
The Brain, Second Edition (Thirteen, WNET and Worth Publishers)

Segment 79
Undesired Effects of Conventional Antipsychotic Drugs (0:55)

Description
This segment reveals the undesired effects that may be brought about by conventional antipsychotic drugs, including extrapyramidal effects.

Relevant topic(s)
Psychotropic drugs, Antipsychotic drugs, Undesired effects, Extrapyramidal effects, Schizophrenia

Features of interest
Assessment/treatment technique, Case presentation

Source
Madness: Brainwaves (BBC Worldwide Americas Inc.)

Segment 80
Gene Therapy Research and Applications: Ethical Concerns (4:48)

Description
This news piece explores gene therapy, focusing on the case of a child with Canavan disease, a genetic brain disorder tied to defects in myelin and inadequate lining of the nervous system. The segment considers both the value of gene therapy and ethical concerns about gene therapy research. Includes the work of Matthew During and Paola Leone.

Relevant topic(s)
Gene therapy, Genes, Genetic disorders, Myelin

Features of interest
Research design, Assessment/treatment technique, Case presentation, Ethical issues

Source
NBC News Archives
ANIMATIONS

Animation 1
From Conception to Neurons (1:07)
Description
This piece depicts the first four weeks after conception, including the beginnings of the neural tube, early formation of the brain and spinal cord, and formation of the first neurons.
Source
THE SECRET LIFE OF THE BRAIN
“The Baby’s Brain: Wider Than The Sky”
David Grubin Productions

Animation 2
Neuron Expansion and Migration (1:11)
Description
This piece shows the prenatal migration of neurons from the neural tube, along a cellular pathway, to build the brain.
Source
THE SECRET LIFE OF THE BRAIN
“The Baby’s Brain: Wider Than The Sky”
David Grubin Productions

Animation 3
Neural Networking/Brain Wiring (2:10)
Description
This animation shows the fetus at 24 weeks, as neurons build millions of communication networks each second. The animation compares the development of neural networks to the wiring of telephone lines between cities.
Source
THE SECRET LIFE OF THE BRAIN
“The Baby’s Brain: Wider Than The Sky”
David Grubin Productions

Animation 4
Evolution of the Human Brain (0:27)
Description
This animation shows how the structures of the human brain have evolved over time, from the brain stem to, most recently, the cortex.
Source
Brain Story: In the Heat of the Moment (BBC Worldwide Americas Inc.)

Animation 5
Stem Cell Activity (0:48)
Description
This animation depicts the activity of stem cells, which are active in embryonic brains yet largely inactive in adult brains.
Source
THE SECRET LIFE OF THE BRAIN
“The Aging Brain: Through Many Lives”
David Grubin Productions
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<tr>
<th>Animation</th>
<th>Description</th>
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<tr>
<td>6</td>
<td>Neural Communication Across Synapses</td>
<td>This animation demonstrates how neurons release neurotransmitters across synaptic spaces to trigger the firing of receiving neurons.</td>
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<td>7</td>
<td>Reading and the Brain</td>
<td>This animation demonstrates the series of reactions involved when a child learns to read, highlighting the brain areas involved.</td>
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<td>8</td>
<td>Brain Areas for Visual Processing</td>
<td>This animation demonstrates the many different brain areas involved in the processing of visual information.</td>
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<td>9</td>
<td>Multiple Visual Pathways in the Brain</td>
<td>This animation shows the different brain pathways involved in visual processing.</td>
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<td>10</td>
<td>Language Areas of the Brain</td>
<td>This animation shows Wernicke’s area and Broca’s area, then further highlights numerous additional brain areas that scientists now know are at work in language.</td>
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<td>11</td>
<td>Fear Pathways in the Brain: The Amygdala</td>
<td>This animation shows how the amygdala acts when a person experiences fear, and what happens in the brain as it assesses a given threat.</td>
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Animation 12
Memory and Neuron Activity in the Hippocampus (0:47)
Description
This animation ties memory to neuron activity in the hippocampus. It illustrates how the neurons send messages across synapses and the role of calcium in this process.
Source
THE SECRET LIFE OF THE BRAIN
“The Aging Brain: Through Many Lives”
David Grubin Productions

Animation 13
Neurofibrillary Tangles (0:31)
Description
This animation shows the role and activity of neurofibrillary tangles in Alzheimer's disease.
Source
THE SECRET LIFE OF THE BRAIN
“The Aging Brain: Through Many Lives”
David Grubin Productions

Animation 14
Plaques (0:45)
Description
This animation shows how in Alzheimer’s patients, beta-amyloid proteins form an unusually high number of plaques, triggering a brain defense that actually destroys neurons.
Source
THE SECRET LIFE OF THE BRAIN
“The Aging Brain: Through Many Lives”
David Grubin Productions
CREDITS

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