

The Power of Narrative: Neuroplasticity and the social construction of meaning

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The phone call

- What it means to stop “seeing”
 - The eye
 - The brain

Looking at the connections

- Interpersonal neurobiology (social neuroscience)
 - through the eyes of a religious studies scholar and social scientist
- Connecting various areas
 - Narrative and social construction
 - Attachment research
 - Neuroscience
 - Meaning (religious studies, psychology)



Is the brain narratively structured?

Which one is a narrative?

- Today I fed my cat, and well, I was going to yesterday, but, anyway, I saw that new film you were talking about and I um, I was up late and my cat was running around the house like a lunatic, so that's probably because I didn't feed him last night. D+A+C+B
- I was at a film until late last night and forgot to feed my cat when I got home so he was very hungry this morning. A+B+C

Sleep



Putting the pieces together

Photo Credit: Diane Diederich

The brain is narratively structured and tends toward organizing in the form of a story

Social construction

- What?
 - What is it that we are “constructing?”
- Who?
 - Who is doing the constructing?
- How?
 - How does the “construction” take place?

What do we “construct”

The event: **Autobiographical memory** refers to a specific memory of an event that occurred in a specific time and place in one’s personal past.

Explicit (declarative)	Implicit (nondeclarative)
Working memory	Priming
Semantic memory	Procedural memory
Episodic memory	

Who is doing the constructing?

- All parts of the social context, in various ways
 - Gesture
 - Words
 - *type of language*: metaphors, etc
 - Actual content (discrepancies, exaggerations, additions)
 - Writing (letter, etc)
 - Other

How the construction takes place

- From little fish to big fish
- The social context adds, changes, revises the story to the point that it changes in your own memory. In many cases you will not remember the story in its original version and will even defend (quite adamantly) that it took place “this way.”

With every telling of a story, it may

How “plastic” is the brain?

- Neuroplasticity
 - **Plastic** => Latin, *plasticus* of molding, from Greek *plastikos*, from *plassein* to mold, form
 - **Plasticity** – word introduced by William James in 1890 (father of psychology in the US): “organic matter, especially nervous tissue, seems endowed with a very extraordinary degree of plasticity.”
- How much can the brain be molded or formed? How much does it change or adapt?
- What does this have to do with narrative? Can a story we tell change the process or structure of the brain?

Neuroplasticity

- Does the brain cause changes in thinking and/or behavior?

“Tan”



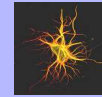
“Yes...ah...Monday...er...
Bonnie...and ...er...path...and
ah...yesterday, ...and oh...today...
walk, ah people...and er...park...
yah”

Neuroplasticity

- Is every brain the same?



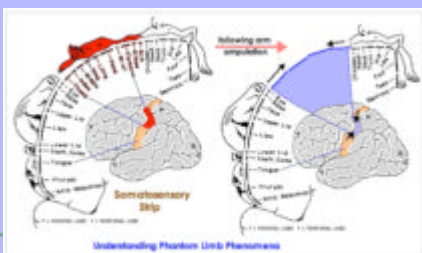
- Why not?



- How different is it?

How plastic is the brain?

- Phantom Limb phenomena
- Why might stroking the face relieve an itch in an amputated arm?

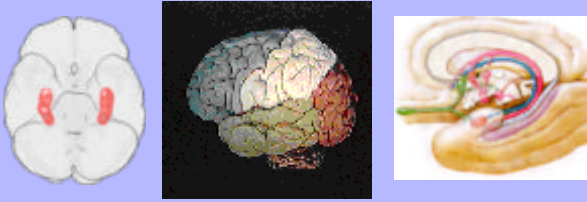


Questions answered

- Does the brain cause changes in thinking and/or behavior? Yes
- Is every brain the same? No
- Why not? Synaptic connections change and/or strengthen with use
- How different is it? Areas “move” to accommodate use

Question unanswered

- Can we grow new neurons?
(neurogenesis)



- “Neurogenesis in the adult human hippocampus, published in *Nature Medicine* in November 1998 by Fred Gage at the Salk Institute.

Why important to the discussion?

- Brain is capable of neurogenesis, specifically in the hippocampus
 - Memory
 - Sense of wonder, novelty
 - More dendrites = more connection
 - Increased ability to connect old facts with new ones
 - Retrieval of memories
 - Seeing links between disparate facts

Can thinking change the brain?

- Can a mental state act back on the brain that created it?
- Research by Jeffrey Schwartz (neuropsychiatrist) on OCD using mindfulness (focused attention)
 - Changed activity in the orbital frontal cortex
 - Conclusion – “The mind can change the brain”

Thinking may change/shape the brain

Where we are in the argument

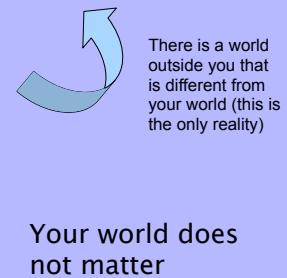
- Narrative and social construction
- Neuroplasticity
- Attachment

Secure Attachment



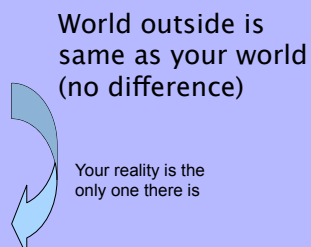
Baby integrates TWO perspectives and can **“play”** with them (increased capacity for empathy)

Insecure Attachment (avoidant)



Baby only has one reality; focuses on keeping self safe and cannot **“play”** between two (decreased capacity for empathy)

Insecure Attachment (anxious)



Baby integrates one perspective (focus on the other) and cannot **“play”** between two realities (decreased capacity for empathy)

How this relates to the discussion

- Perspective taking in hearing and telling stories (the place of memory and empathy)
- Priming enhances altruism/empathy
 - changes attachment response to look more like secure attachment
 - Compassion can be enhanced

Meanings

The shaping of autobiographical memory

- Religious
 - Language – “This is hell”
 - Interpretation –
 - “God is punishing me”
 - “Faith helps me endure”
- Personal
 - Filters: attachment, affect, personality, culture, external events
- Corporate/communal
 - Social construction

Why does it matter?

- Memories, and the way in which memories are constructed and re-constructed, affect agency, transformation and change
 - Research by McAdams (2006)* on generative adults who relate more “redemptive” stories
 - Depression research (emotion affects how we view an event, which further contributes to that emotion)

*The Redemptive Self: Stories Americans Live By (Oxford University Press, 2006)

Introductions....

The story of Denise

(and John, Sherry and Mike)

Final discussion

- Definition of narrative (story)
- The social construction of narrative
- Social construction and meaning
- **The relation of neuroplasticity to the construction of a narrative (story)**

Background

- Experience-dependent plasticity
 - Maternal plasticity
 - Evidence (rats) that brains are affected by nurturing and interaction with pups (size, complexity,* activation)
 - Plasticity in the newborn
 - Attunement is connected to affect regulation, attachment and self identity
 - Idea of the "social brain"
 - "caretakers activate the growth of the brain through emotional availability and reciprocal interactions" (Cozolino, p85)

*complexity refers to number of neurons, synaptic connections and mitochondrial activity

From neurons to narratives

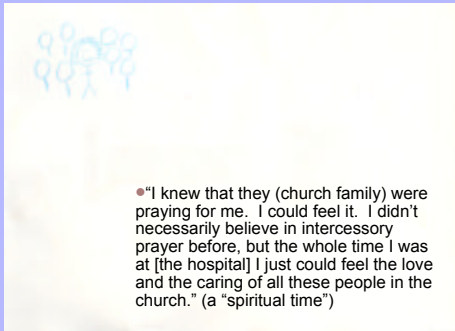
- Neurons fire, grow and interconnect in an experience-dependent way
 - Firing patterns shape neural circuitry
 - The way we think (and the emotion that goes along with it) changes the brain
 - Kite flying: physical change that corresponds with change in association
- Narratives require multiple brain structures to integrate facts, feelings, behaviors, senses (right and left brain, etc)
 - Narratives (stories) help us regulate our emotions
 - Integrate affect and cognition

We form narratives (stories) within a social context and affected by the capacity for relationships. Meanings are attached to those stories in a variety of ways. These meaning-filled narratives may have the capacity to shape the brain.

The Story

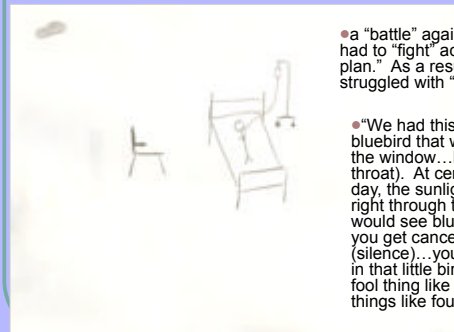
- Denise (breast cancer)
- John (husband)
- Sherry (daughter)

Denise's drawing



• "I knew that they (church family) were praying for me. I could feel it. I didn't necessarily believe in intercessory prayer before, but the whole time I was at [the hospital] I just could feel the love and the caring of all these people in the church." (a "spiritual time")

John's drawing



• a "battle" against cancer that he had to "fight" according to a "battle plan." As a result, he has struggled with "combat fatigue."

• "We had this little glass bluebird that we had sitting in the window... ledge (clears throat). At certain hours of the day, the sunlight would come right through the little guy. We would see blue light. When you get cancer, you get kind a (silence)... you get to believing in that little bird or some darn fool thing like that... and even things like four-leaf clovers."

Sherry's drawing



"It touches down and it just destroys your life. And that is how cancer is... It just sets down and just takes everything and just throws it wherever."

Summary

- Different emotions expressed
 - Denise: primarily positive with negative components
 - John and Sherry: primarily negative
- Specific cancer treatment as focal point and spiritual experience
- Glass bird in the window (mentioned briefly by all)

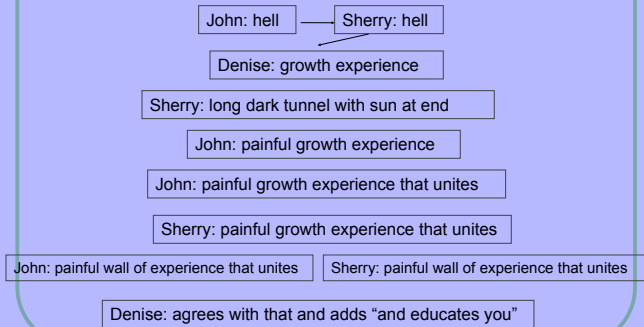
Family construction of story

- Followed Denise's version more closely than the other two, but contained elements of all
- Specific cancer treatment remained the focal point, but took on symbol of support and care
- Little glass bird: (Notes) In the middle of the group discussion, all three talk about the bluebird that sat in the window, and the sunlight that shone through it. For John and Sherry it had spiritual connotations; for Denise, it was a promise of recovery. All agree it was a religious icon.

Family drawing



Going through breast cancer is like...



Conclusions and further questions

- Denise, Sherry and John had individual memories and narratives of the cancer experience that differed from each other
- In constructing their narratives together, the narratives changed.
- This collaborative construction of the narrative affected the way each person looked at the narrative. There are new associations and the possibility for new neural patterns. Every new thought increases the possibility that the thought will be thought again.
- What changes will this bring – in their future thinking and behavior, as well as in brain structure?

Final questions

- How might the gospel story affect the brain?
- How might the patient's story affect our own thinking?