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# The Neuroscience of Stories

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- Today's goals:**
- 1) Explore how stories are more brain-compatible than explanations
  - 2) Examine theories in neuroscience as to why
  - 3) Look at Digitales, a technique for using stories

## 1) The Power of Stories: Research shows...

- Info in stories vs explanations is learned up to twice as quickly and retained twice as long
- familiarity and interestingness can be ruled out as factors that caused greater retention
- Ss memorizing words by putting them in stories remembered 2-7 times as many

## 2) Metaphor & Neural reuse

Our brains make teams of existing parts to do more complex things, such as language or riding a bicycle. That is also how we do complex and abstract thought. We understand it through it on metaphors of experiences in the real world.

## 3) Embodied Simulation

This is how we make meaning. Input, whether seeing the real thing or a symbol for it, activates the same networks in the sensory cortices as if we were experiencing the event ourselves. If we hear "jump," our visual cortex will activate jumping images and our motor cortex will activate the neurons that control muscles for jumping.

## 4) Predictive Processing

The brain is a prediction machine. Rather than the brain reacting to input, it predicts input with representations and models. Input itself then, just confirms what was expected. Emotions too, don't "happen to you;" they are predictions for the given situation.

**Task:** Think of a teaching experience that made you laugh or helped you grow. Tell it, as a story, to other people 5 times. (and I'd be so grateful if you'd mail it to me)

## Finding out more

*BrainSciencePodcast.com (Clark, Anderson, Barret, Bergen interviews*

*Louder than Words - Benjamin Bergen*

*The Art of Storytelling - John D. Walsh*

*How Emotions are Made - Lisa Barret*

*Metaphors We Live By - Lakoff & Johnson*

*The cognitive neuroscience of constructive memory - Schacter & Addis*

### ***The Winner***

Ken was a junior high school student. He loved running. He was very fast. One day, his school had a sports event. It was called Special Olympics. Ken ran in the first race and he won. He got a first place ribbon and everyone cheered.

Then, Ken ran in the second race, too. He was winning again, but just before the finish line, he stopped. Then he stepped off the track. Another boy, Billy, won the race.

His mother was surprised. She asked him, “You were winning. Why did you stop?”

Ken replied, “Because I already had a first place ribbon.

Billy didn’t have one yet.”

*Discussion point: Did Ken do a good thing or bad thing?*

### ***Together Forever***

Isador Strauss was a rich man. He owned a famous store called Macy’s. He was taking a trip with his wife on the Titanic, a ship. One night the Titanic hit an iceberg and began to sink. There were only enough rescue boats for the women and children, so the men had to stay on the ship. Isador helped women get in the boats. He told his wife, Ida, to get in too, but she refused. She wanted to stay with her husband.

He asked her many times. One time she got in a boat and then she jumped out again. She put her maid in the boat instead. She gave her maid her coat and said “I won’t be needing this anymore.”

She looked into her husband’s eyes and said, “Where you go, I go.” She stayed with him on the Titanic. They were holding each other when the ship sank. Mrs. Strauss had lived with her husband for 41 years. She decided to die with him too.

### *A Walk by the Ocean*

One day, two friends were walking along the beach. They began to argue. They became angrier and angrier, until the bigger friend hit the smaller friend. The smaller friend became quiet. She didn't say anything. Then, she picked up a stick and wrote this in the sand: "Today, my best friend hit me."

They kept on walking next to the ocean, but they didn't say anything. Then, the smaller friend stepped on a wet rock, and she slipped. She fell into the ocean. A big wave pulled her out to sea. She could not swim, so she was drowning. The bigger friend jumped into the ocean and saved her. The smaller friend became quiet. She didn't say anything. Then, she took out a knife and wrote this on a stone: "Today, my best friend saved my life."

The bigger friend was surprised. She asked, "Before, you wrote what I did in the sand, but this time, you wrote it on a stone. Why?"

*Discussion point: Why? Answer is, of course, that we should keep the good things and forget the bad.*

### *The Love Letter Contest*

The mayor of Futatsuumachi invited people from all over the country to take part in a "love letter" contest he held last year as part of efforts to promote his town. 7,035 passionate letters were received. Surprisingly, the top prize went to an 80-year-old woman. Take Yanagihara of Akita Prefecture addressed it to her husband who died in battle in China in 1939.

#### *To You in Heaven - Take Yanagihara*

It has been more than half a century since I saw you off with our daughter on my back and waving a small paper Rising Sun flag. You held me in your strong arms for only a fleeting moment.

I would like to board a spaceship and be at your side. You are still young at 32 but I am approaching 80. When we meet, do not ask 'Who are you?' Say instead, 'I've missed you.' Let me cuddle up to you like I did in those days long ago.

Since we said farewell, I have thought of you and lived relying on your love. I wish I could sleep again in your arms. Please hold me tight and never let me go.

### ***Valentine's Day***

Mrs. Smith was an old woman. She lived by herself. It was Valentine's Day and there was snow on the ground. She was looking out of her window, when a flower truck stopped in front of her friend's house. A big man with a box got out. "Who is giving flowers to Mrs. Jones?" she thought. But the man did not go to Mrs. Jones' house, he came up to her house, and rang the doorbell.

Mrs. Smith was scared. The man was so big. But she opened the door a little and said, "Yes?" The man said, "Are you Mrs. Smith?" She said, "Yes, I am." And the man said, "These flowers are for you." He gave her the box and left. Still afraid, she quickly locked the door. Then she looked at the box. "Who is giving me flowers?" she thought. She opened the box and was shocked to see 6 yellow roses, her favorite flower. Her husband always gave her 6 yellow roses on Valentine's Day, but he died eight months ago.

She was even more surprised when she saw the card in the box. It was her husband's handwriting. The note said, "Darling, I am sick and won't live much longer. I don't want you to be sad when you remember me, so I arranged for the flower company to give you six yellow roses on Valentine's Day for the rest of your life.

*Discussion point: The note. Why did he write what he did instead of "... because I want you to remember me"?*

### ***Why Johnny Hates to Go to Bed***

Johnny is a three-year old boy. Every night he and his mother have the same fight. At nine pm, his mother says, "Johnny, do you know what time it is?" and Johnny replies, "No. I don't wanna go to bed!" and runs away. What a bad boy he is.

His mother tried many ways to make him go to bed – cookies, games, scolding – but none worked. One night she tried something different. "Johnny, it is time to go to bed..." "No, I don't wanna go to bed!" Then she said, "Why not, Johnny?" Johnny was surprised. No one ever asked him "Why?" before. He said, "Because... because I am scared." Now his mother was surprised. "Oh Johnny, scared, of what?"

Johnny explained, "You know my bed? And there is a window by it? And outside the window, there is a tree? Well, there is a ghost in that tree. He's scary, Mommy. I don't like to go to bed!"

This was the first time the mother heard this. She said, "Okay, Johnny, show me the ghost." and holding hands, the two of them went upstairs. Then Johnny opened the door to his bedroom and pointed at the tree. He said, "There Mommy. There's the ghost. I'm afraid, Mommy!"

Well, what do you think his mother did? Well, she walked up to the window. She opened it. She pointed her finger at the tree and in an angry voice said, "You! Ghost! I see you! You had better get out of here before I count to 5 or I'll be really angry! 1... 2... 3... See Johnny? The ghost went away." Johnny said, "Uh huh."

"So get in bed, and I'll stay here to make sure he doesn't come back. Okay?" "Okay Mommy." So Johnny got in bed, and in a few minutes, Johnny was asleep like a baby, because, he was a baby.

*Discussion point: This story represents all human conflicts in that we cannot see the other's "ghost in the tree."*