

Language and Neuroplasticity: How Resonant Language Changes and Heals Us

Sarah Peyton – September 2016

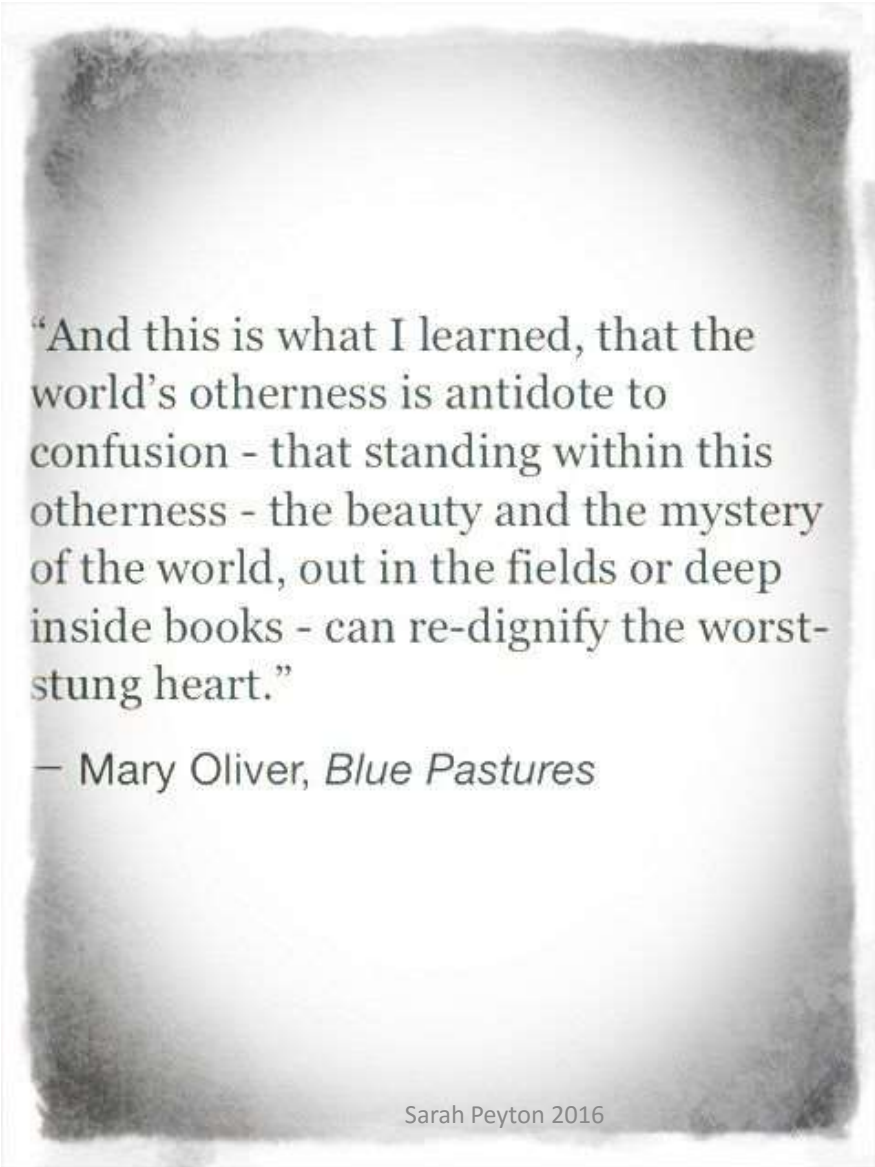
Poems and poem fragments by Mary Oliver

∞ WILD GEESE

You do not have to be good.
You do not have to walk on your knees
for a hundred miles through the desert, repenting.
You only have to let the soft animal of your body
love what it loves.
Tell me about despair, yours, and I will tell you mine.
Meanwhile the world goes on.
Meanwhile the sun and the clear pebbles of the rain
are moving across the landscapes,
over the prairies and the deep trees,
the mountains and the rivers.
Meanwhile the wild geese, high in the clean blue air,
are heading home again.
Whoever you are, no matter how lonely,
the world offers itself to your imagination,
calls to you like the wild geese, harsh and exciting —
over and over announcing your place
in the family of things.

Our Plan for this Evening

1. Left and Right Hemispheres
2. What is Resonant Language?
3. What is neuroplasticity? How do brains change?
4. How does language change the brain?
5. The default network
6. Self-regulation and language: naming experience
7. Language and attachment



“And this is what I learned, that the world’s otherness is antidote to confusion - that standing within this otherness - the beauty and the mystery of the world, out in the fields or deep inside books - can re-dignify the worst-stung heart.”

– Mary Oliver, *Blue Pastures*

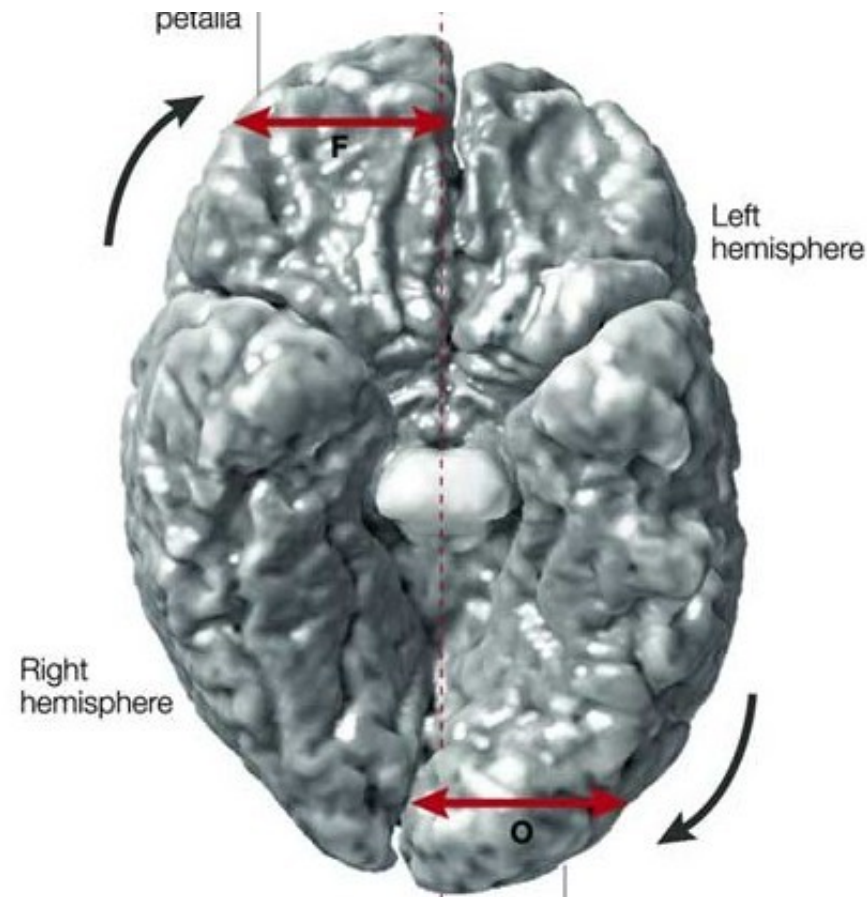
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Left and Right Hemispheres



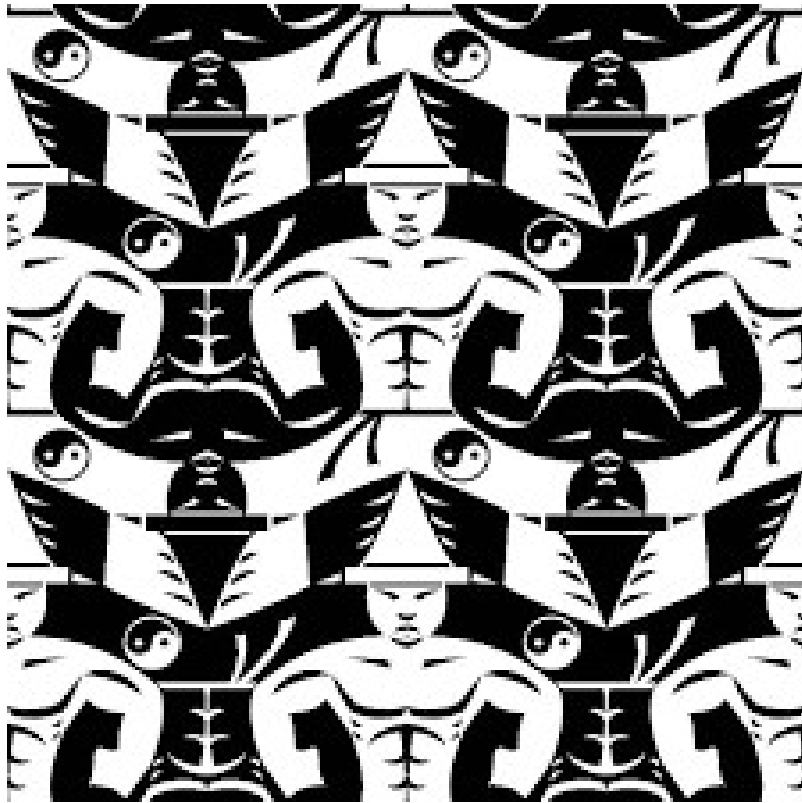
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Our hemispheres have different neural structures



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And those different structures let us see the world in two very different ways



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The right hemisphere sees things whole and in their context, where the left hemisphere sees things abstracted from context, and broken into parts, from which it then reconstructs a “whole”: something very different.

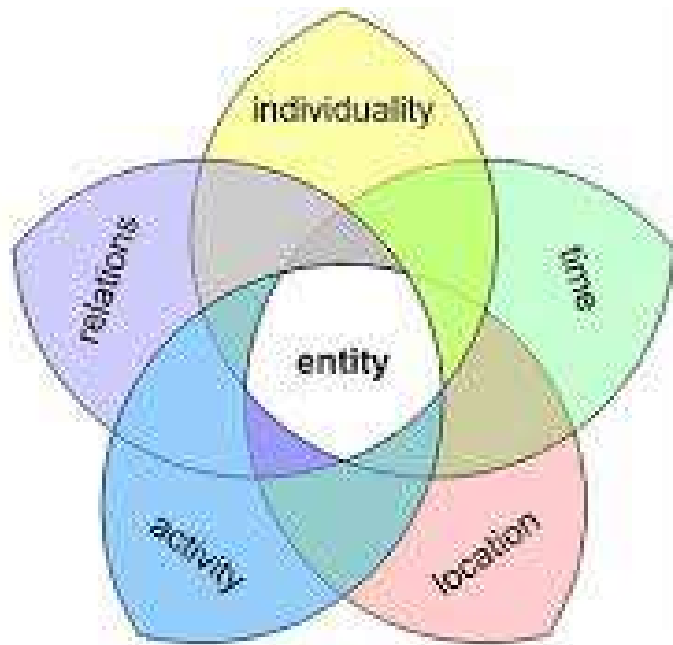
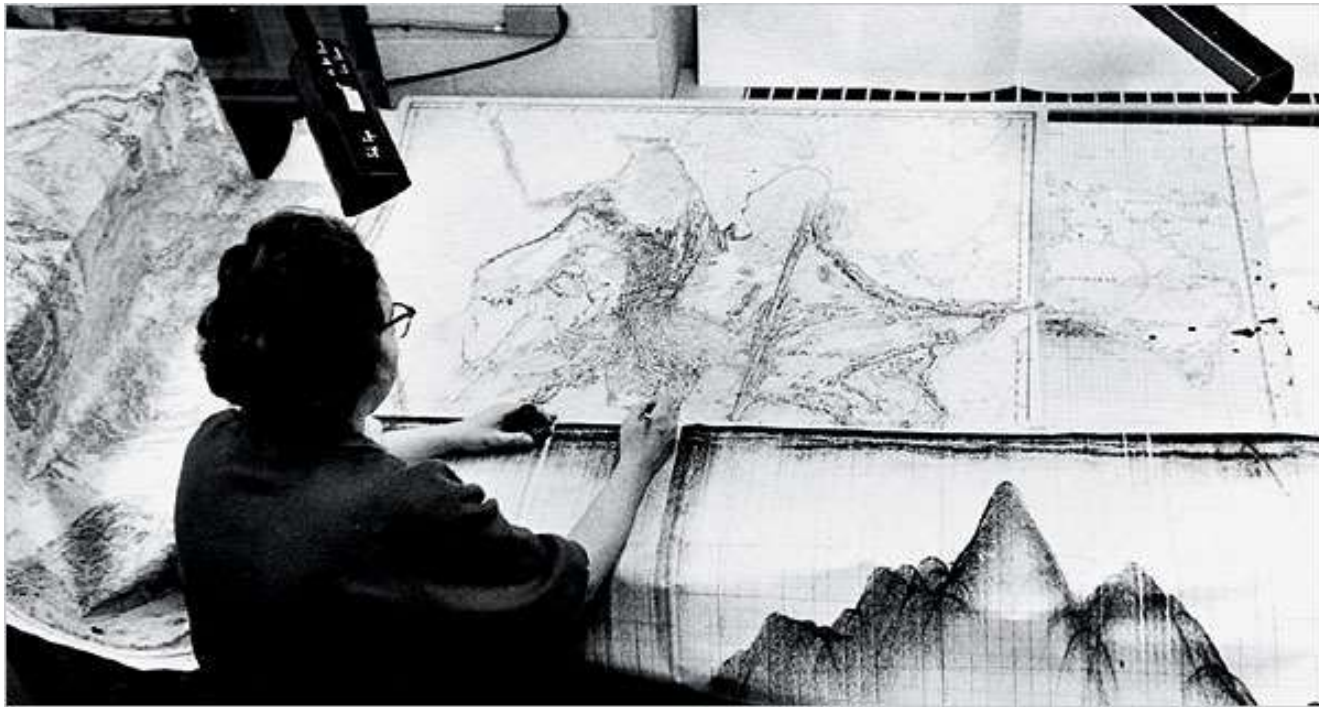


Fig. 1. Five Fundamental Categories for Context Information

The left hemisphere makes maps in order to
decode the world

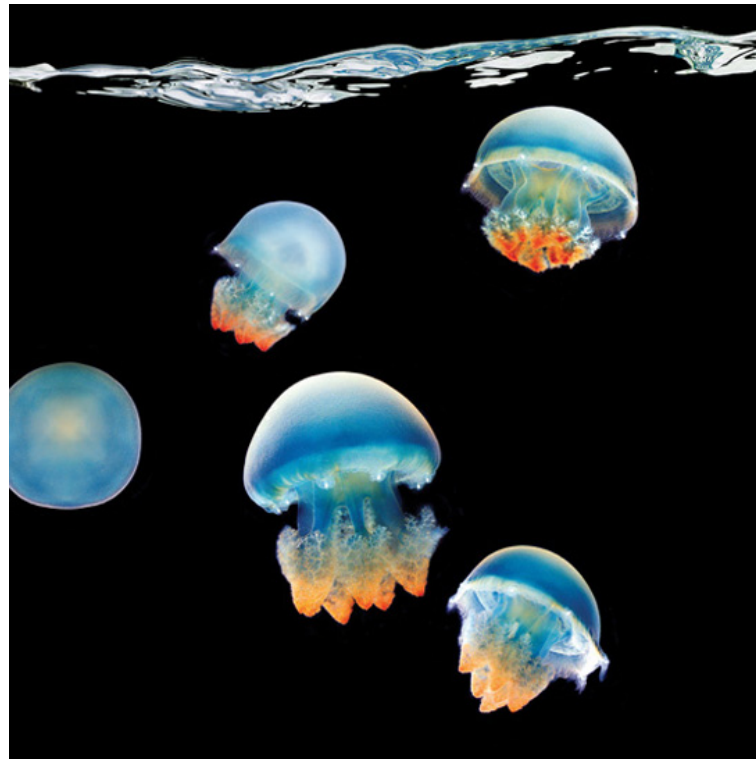


The right hemisphere understands that the map is not the territory

Alaska



We are always both do-ing and be-ing.
The right hemisphere supports be-ing.



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The left hemisphere is our engine and has our fuel for movement through the world



Strengths that rely on our left hemisphere – we can't be effective without it:

- Taking action
- Differentiation
- Chalkboard of the mind/
- Working memory
- Following the plan
- Practical language
- Expression
- Making sense
- Social self
- Spoken/lived narrative
- Analytic problem-solving
- Fact accumulation
- Detail monitoring and tracking
- Dealing with moderate stress
- Handling the familiar
- Logical
- Linear
- Literal

The right hemisphere helps us apprehend the presence of the “Other”



“...the essential difference between the right hemisphere and the left hemisphere is that the right... pays attention to the Other, whatever it is that exists apart from ourselves, with which it sees itself in profound relation.”

The right hemisphere is the birthplace of mysticism (“belief in direct experience of transcendent reality or God, especially by means of contemplation and asceticism instead of rational thought.”)



God needs man in order
to become conscious, just
as he needs limitation
in time and space.

~Carl Jung, Letters Vol. 1, Pages 64-66

The left hemisphere creates the world for us



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But without the right hemisphere as its guiding light, the left has no access to the deep ecology of life and relationship



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The left hemisphere prefers what is clear and certain over what is ambiguous and undecided; it prefers what is single, static, fixed and systematized over what is multiple, fluid, moving and contingent.

- The left hemisphere does not know that the self is fluid, and that the brain is in a constant state of change.

“NEUROPLASTICITY RESEARCH SHOWED THAT THE BRAIN CHANGES ITS VERY STRUCTURE WITH EACH DIFFERENT ACTIVITY IT PERFORMS, PERFECTING ITS CIRCUITS SO IT IS BETTER SUITED TO THE TASK AT HAND.”

NAVEEN JAIN

© Lifehack Quotes

In this best of all possible worlds, our “doing” left hemisphere is in service of our “being” right



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This lets us be effective, committed and successful in manifesting our deepest dreams

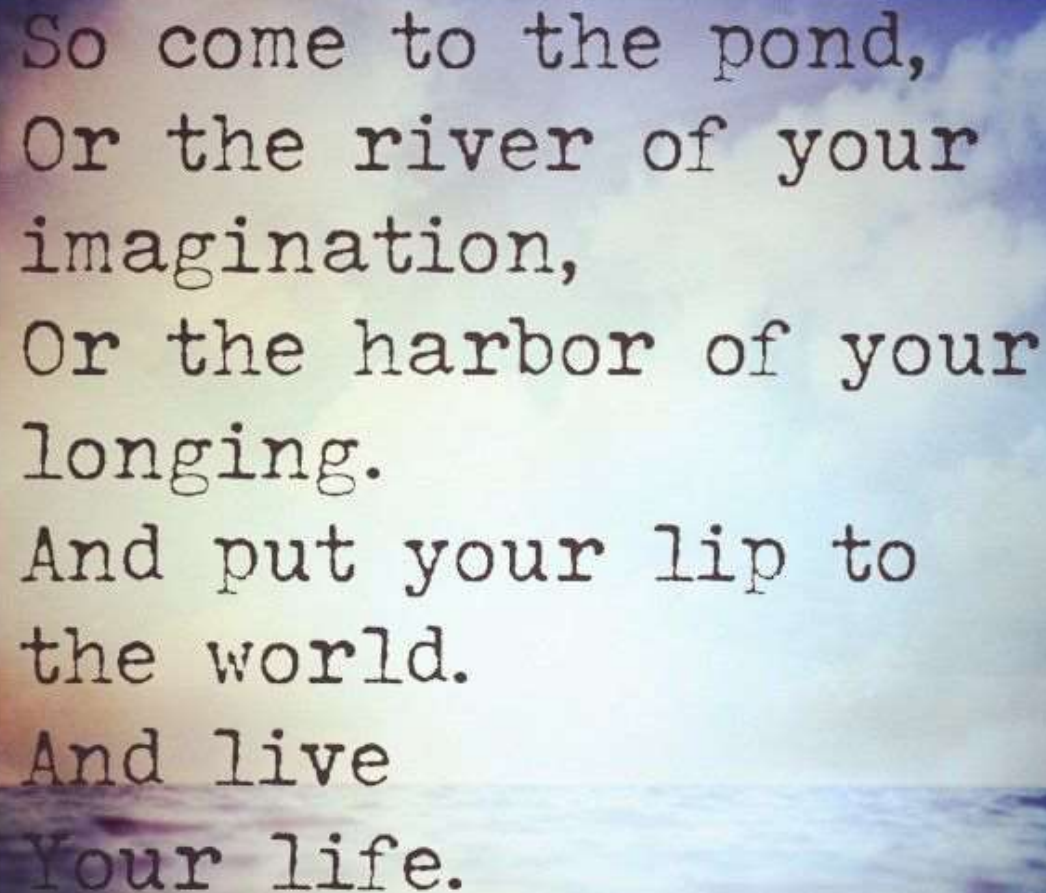


And the left hemisphere allows us to have intentions and move toward them, as for example the implementing the knowledge from the next section about what right hemisphere language is and how it supports us

Metaphor lives a
secret life all around
us. We utter about six
metaphors a minute.

James Geary

QuoteAddicts



So come to the pond,
Or the river of your
imagination,
Or the harbor of your
longing.
And put your lip to
the world.
And live
Your life.

Mary Oliver

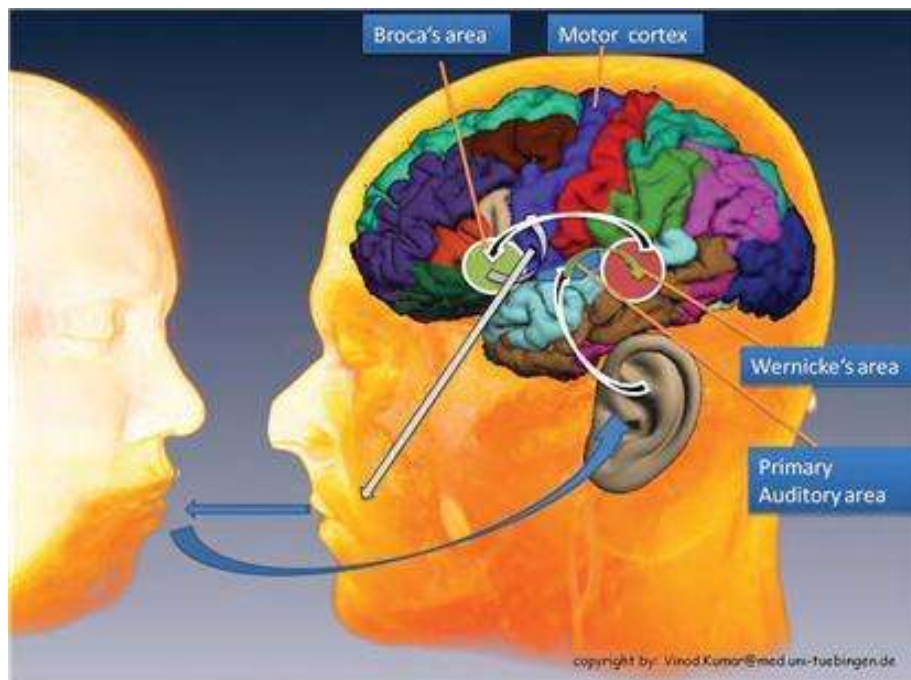
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Language in the hemispheres:

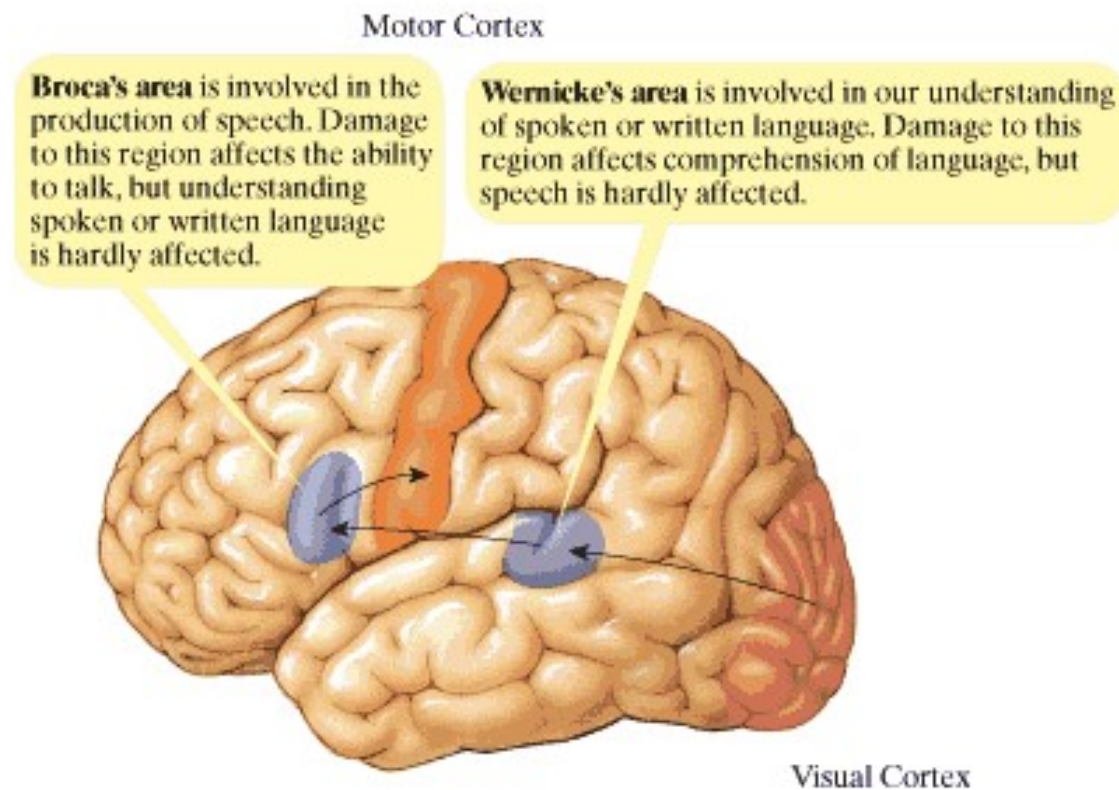


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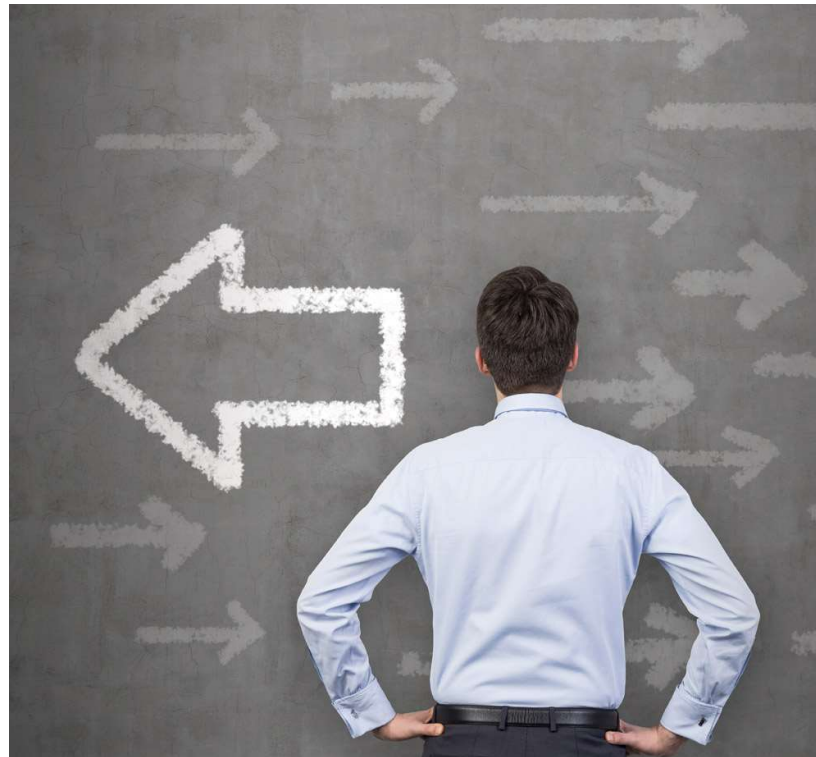
Language lives mainly in the left hemisphere



We speak and write with one area of the left hemisphere and listen and read with another

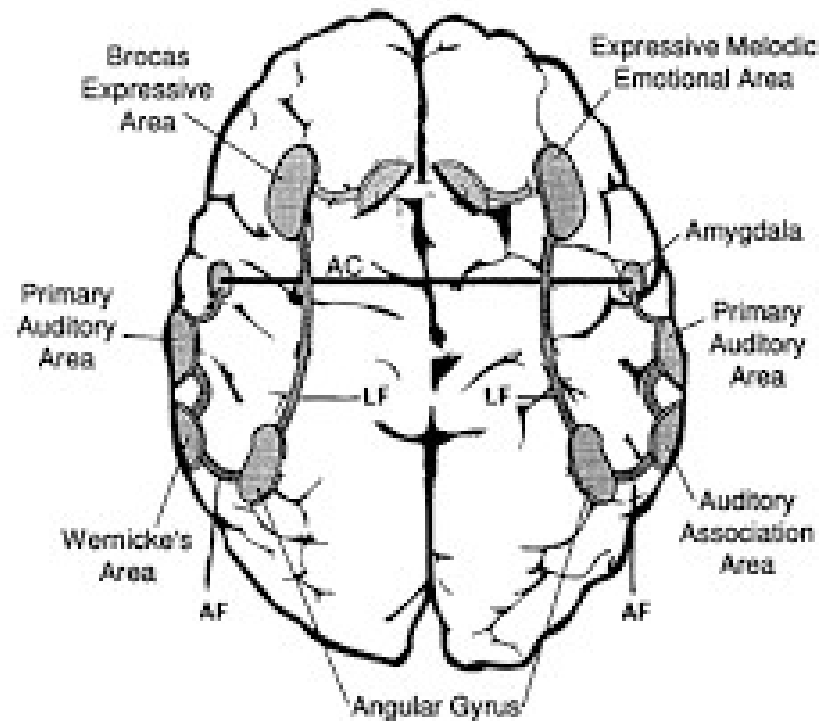


The language centers are largely in the left hemisphere. As soon as we open our mouths, we shift left.

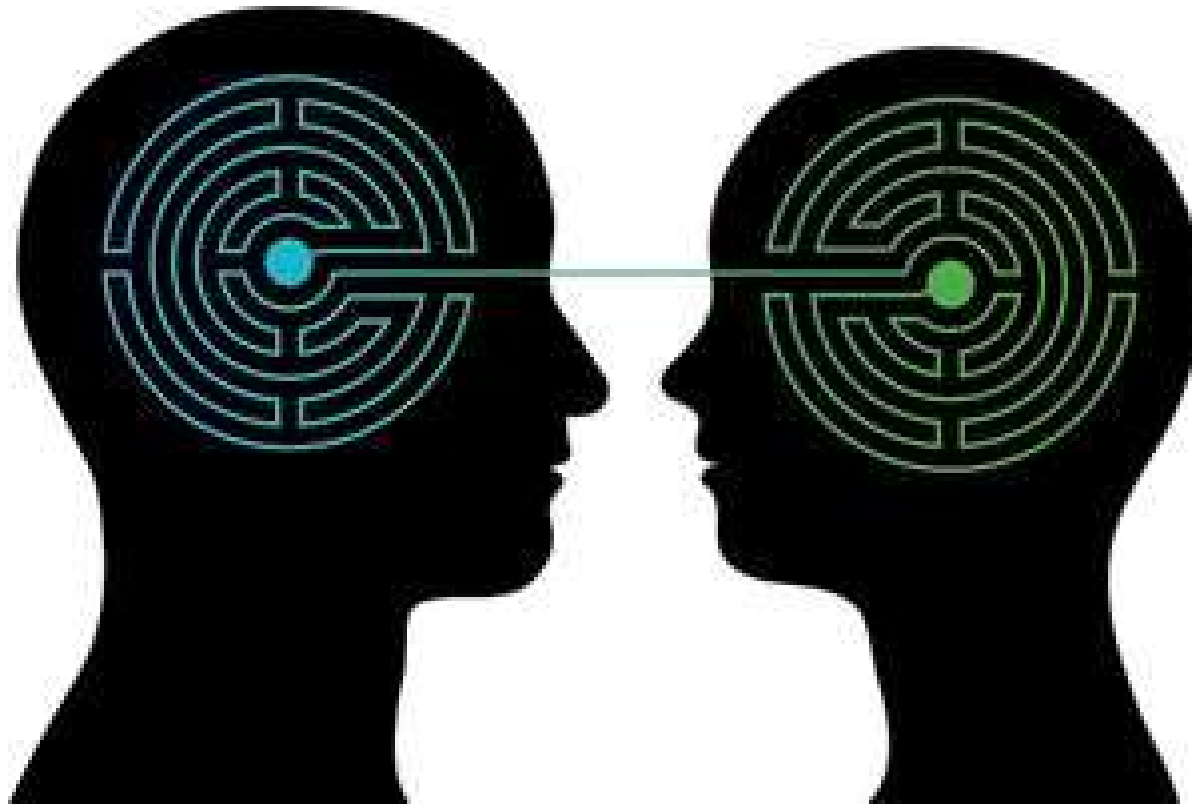


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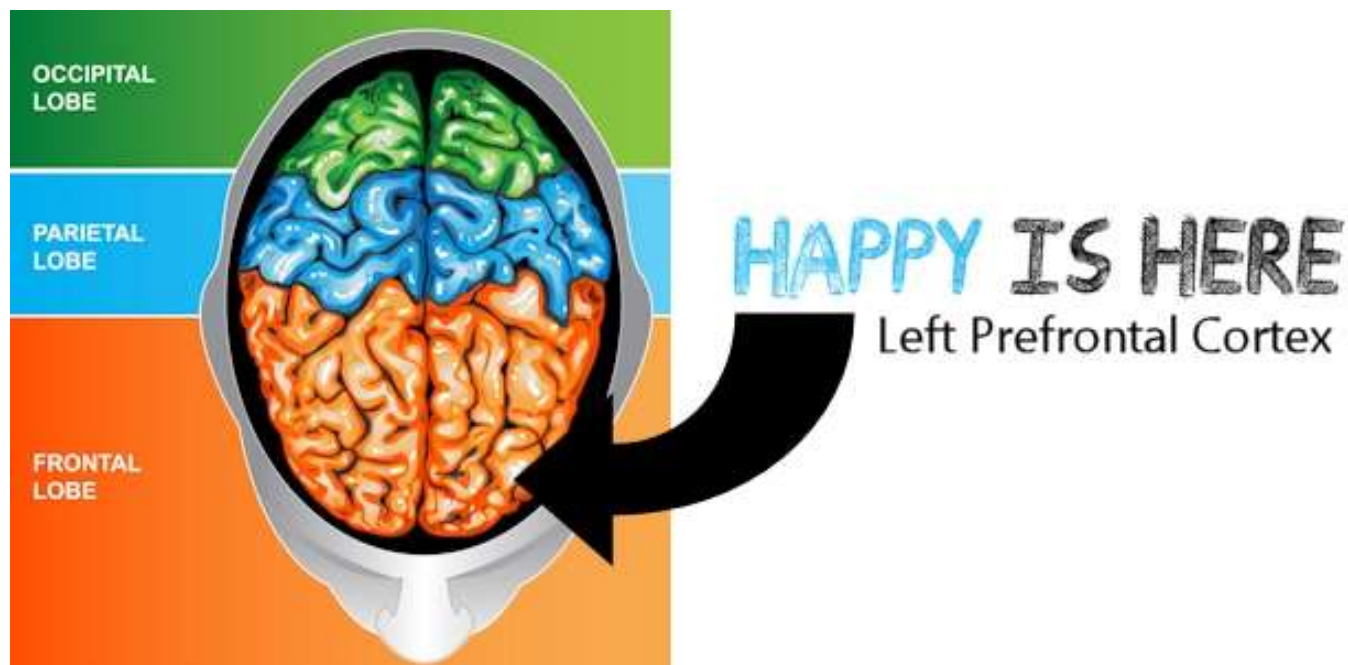
But both hemispheres respond to language



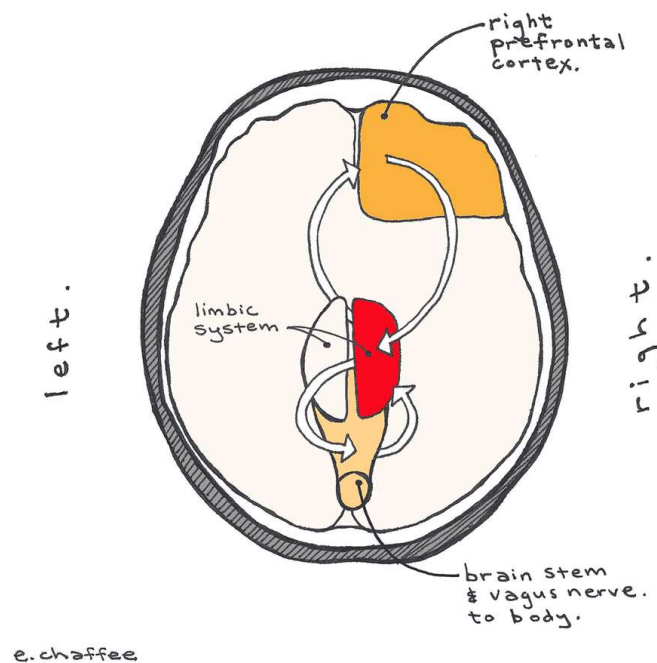
And empathy is a bi-hemispheric experience



Contentment, flow and empathy for positive emotions move us into our left prefrontal cortex



Empathic concern and empathy for negative emotions move us into our right prefrontal cortex



“I want to write something
so simply
about love
or about pain
that even
as you are reading
you feel it
and as you read
you keep feeling it
and though it be my story
it will be common,
though it be singular
it will be known to you
so that by the end
you will think—
no, you will realize—
that it was all the while
yourself arranging the words,
that it was all the time
words that you yourself,
out of your heart
had been saying.”

— Mary Oliver, *Evidence: Poems*

Resonant Language



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So how do we awaken our right hemispheres and create integration in our use of language?



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A word about resonance



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Resonance is when one body vibrates with another, and the second body knows it is being vibrated with.



The intentional road to resonance runs through attunement: one person brings their attention to the other



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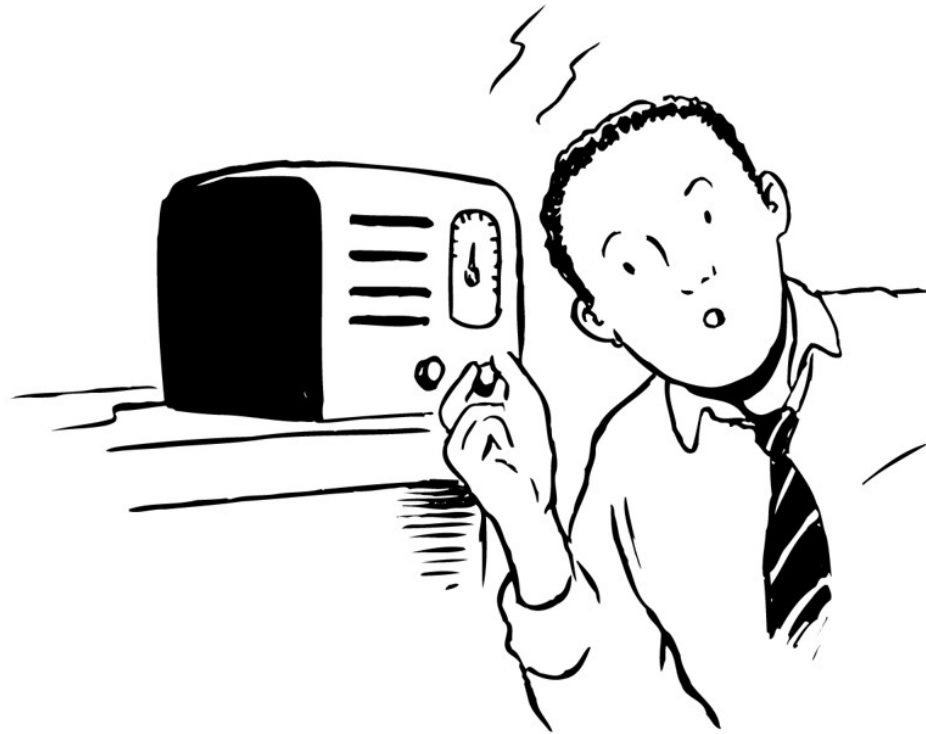
In a spirit of warm curiosity



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Almost like the first person is tuning their emotional radio station to the other person's frequency



Or letting their own instrument (their body)
vibrate with the music that is being played on the
other person by life



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The more resonant humans are with one another, the more they feel accompanied

KINDNESS. IT DOESN'T
COST A DAMN THING.
SPRINKLE THAT SHIT
EVERYWHERE.

More than any other experience, being resonated
with supports brain change, integration and
sustainable peace



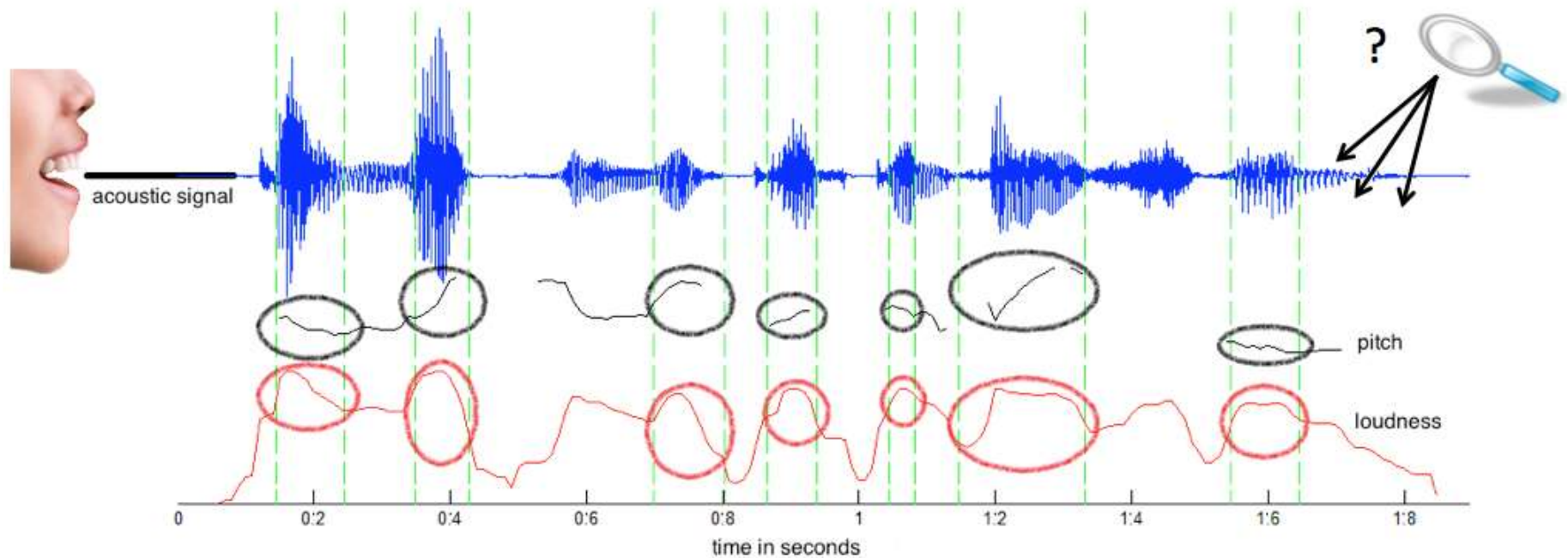
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It can be largely non-verbal.

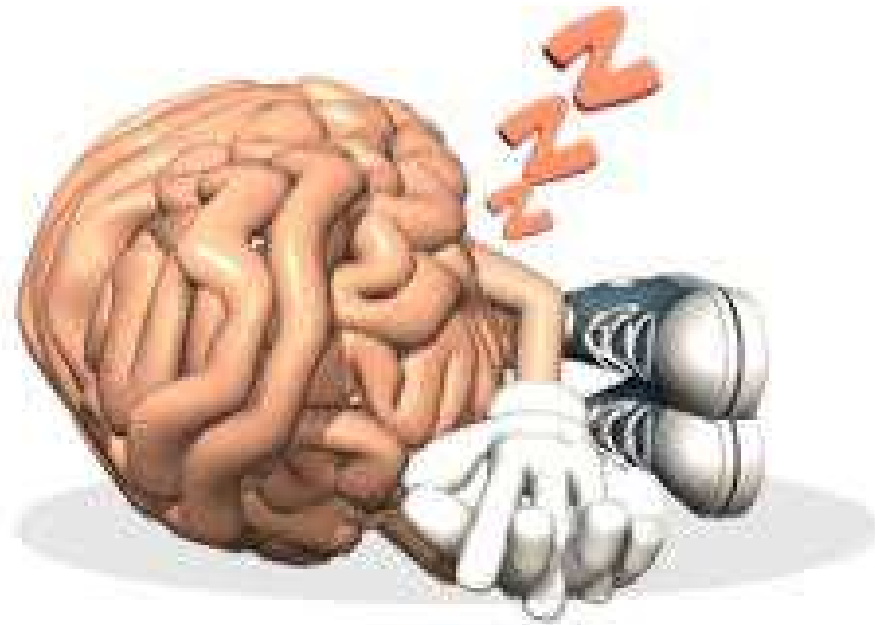


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It is also conveyed verbally. When speaking, the aliveness of our prosody: when pitch, loudness, tempo and rhythm work together and are understood by the right hemisphere.



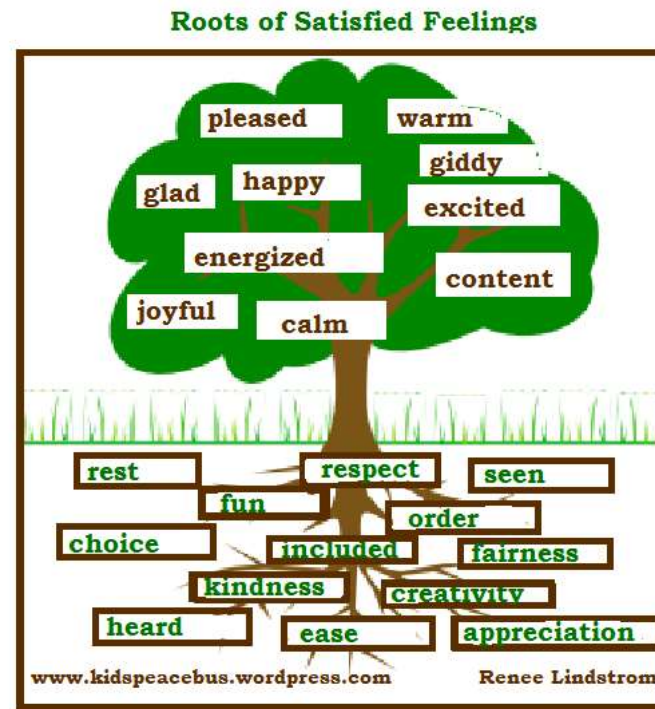
And we can choose to speak using words and language that awaken the right hemisphere



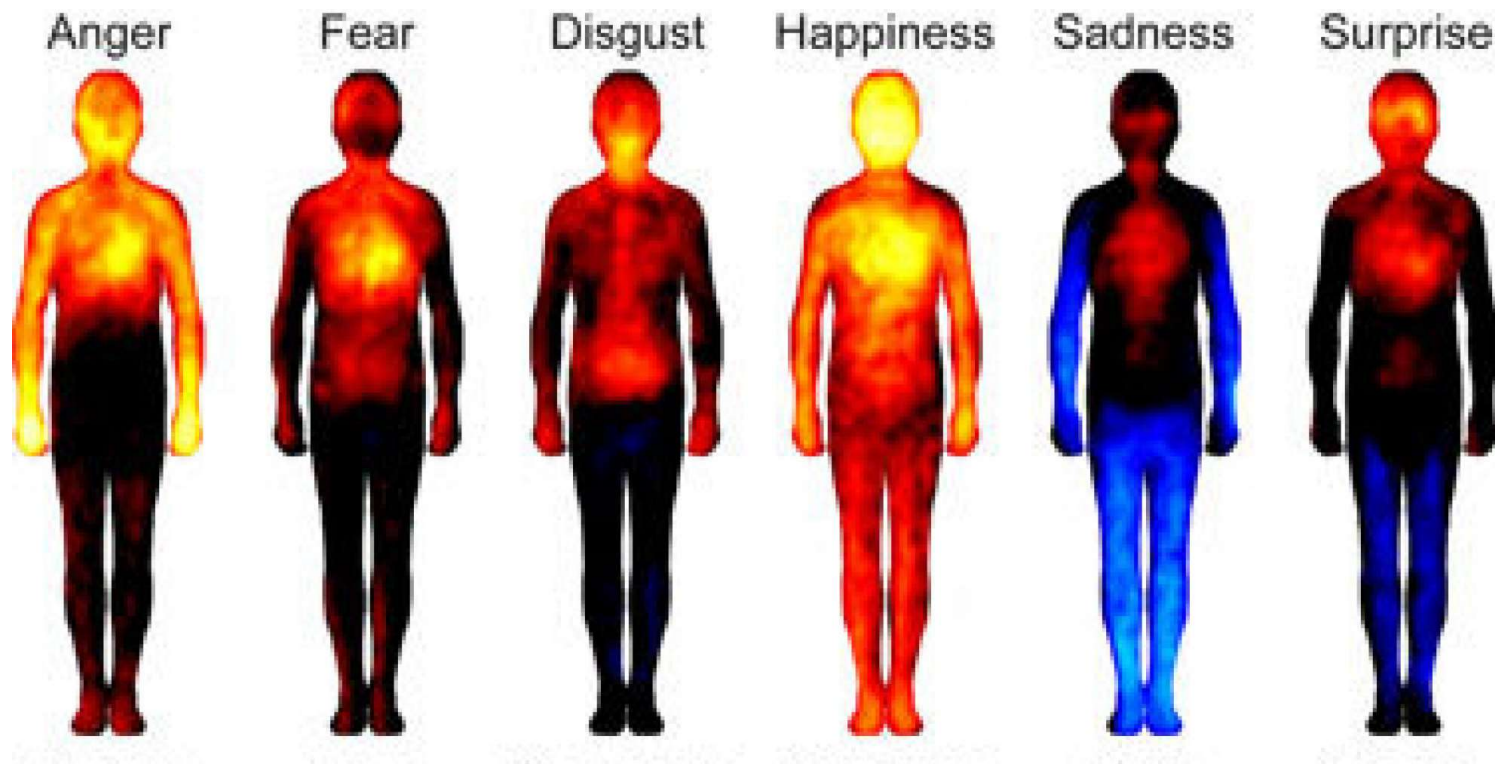
What is Resonant (Right Hemisphere) Language?

1. Feelings and needs
2. Body sensations
3. Relational language
4. Poetry
5. Fresh metaphor and simile
6. Visual imagery
7. Impossible dreams
8. Swear words

Feelings and Needs



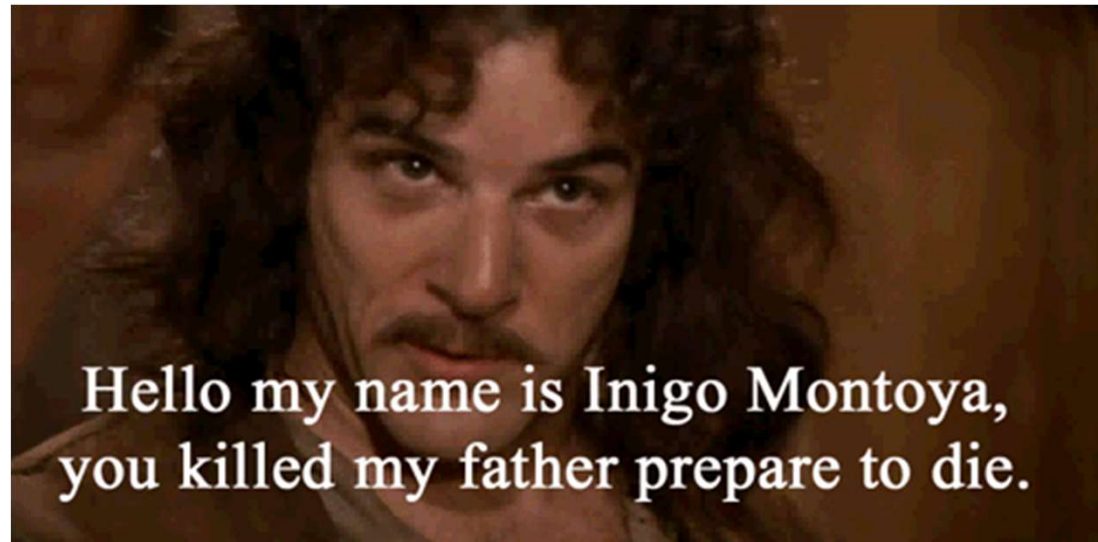
Body Sensations (that can then be decoded as emotions, as shown in this photo)



Relational language



Also



Also, "I love you."



Poetry



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Fresh metaphor and simile

Sometimes I think that creativity is a matter of seeing, or stumbling over, unobvious similarities between things - like composing a fresh metaphor, but on a more complex scale.

David Mitchell

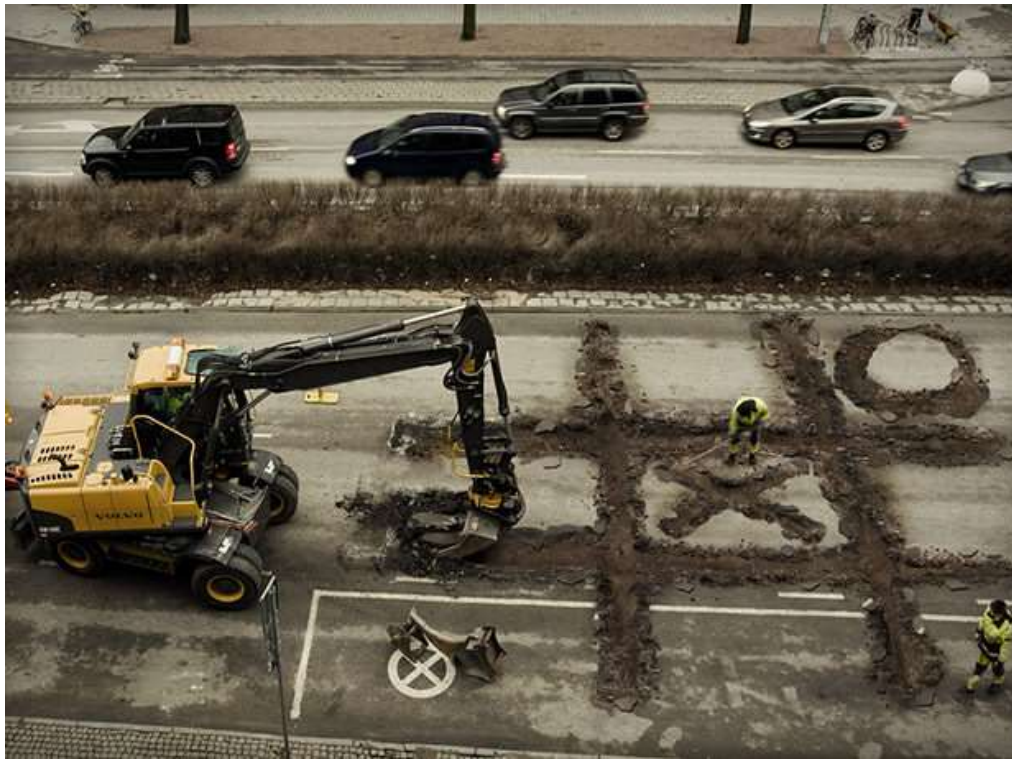
QuoteAddicts

Visual Imagery



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Impossible Dreams



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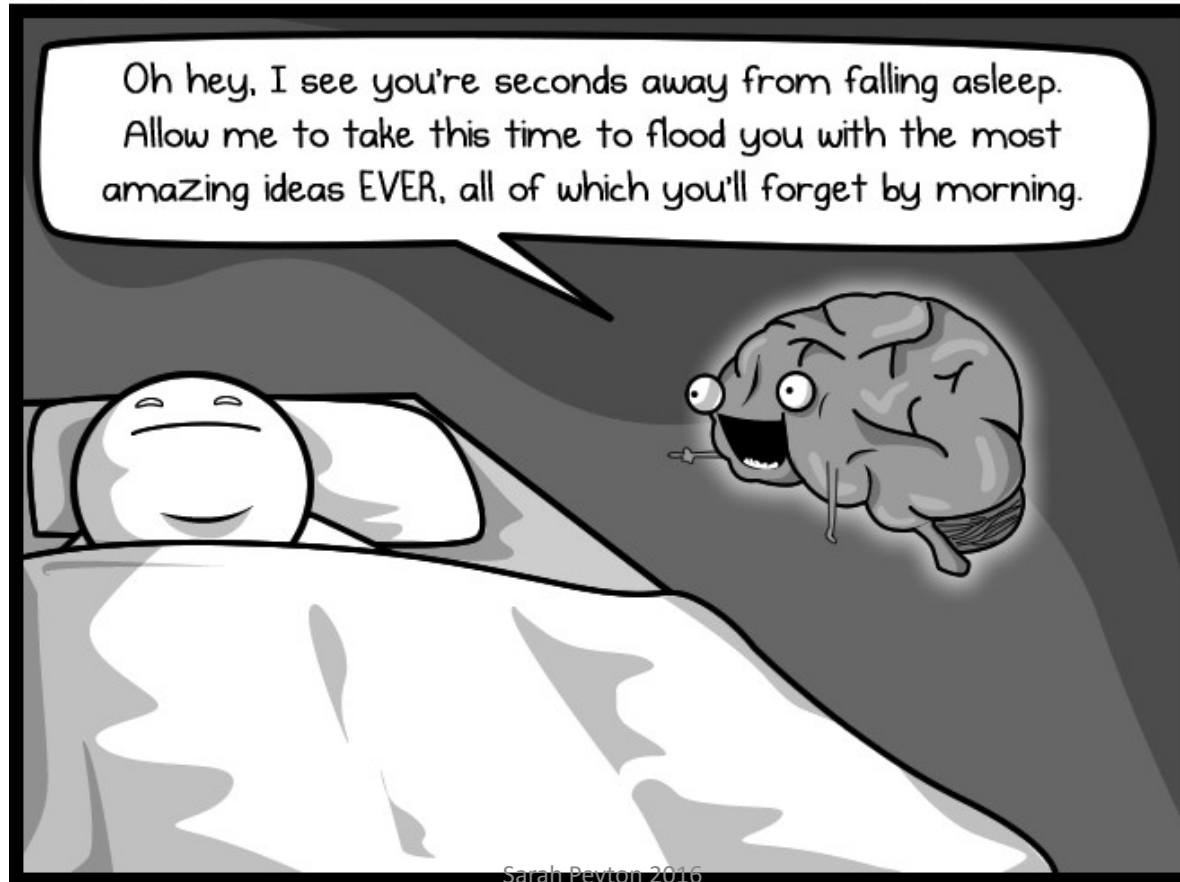
Swear Words



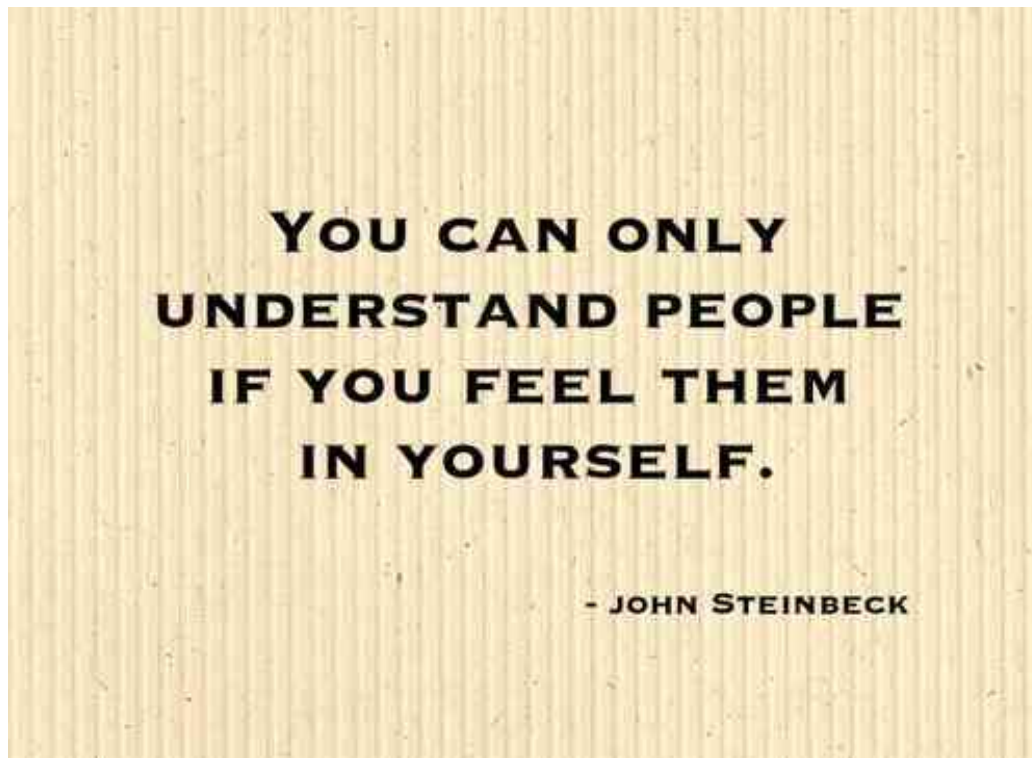
And humor

The Oatmeal

<http://theoatmeal.com>



And when another being joins us by letting us know we are understood,



and these kinds of resonant language are offered as a movement toward our experience, we are shifted out of the static left hemisphere into the fluid right

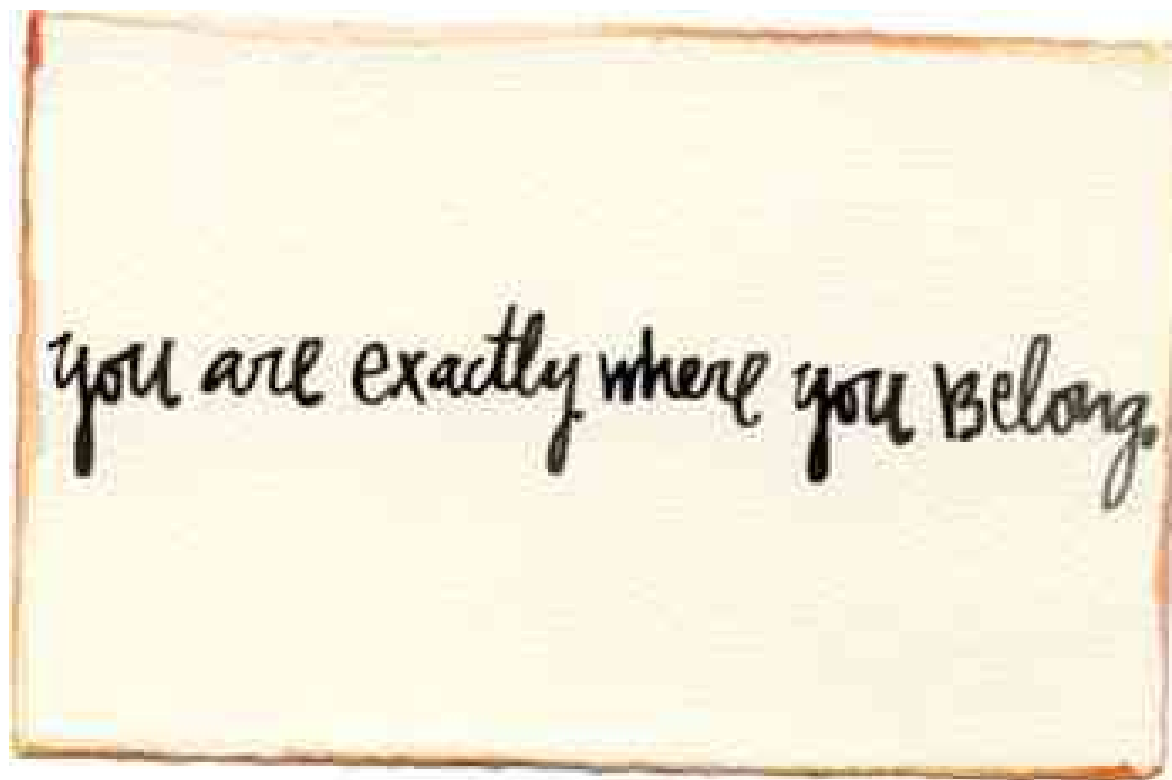


This nourishes our brain and it starts to change. The prefrontal cortex reaches out to strengthen its cradling support of the emotional and uncertain amygdala,



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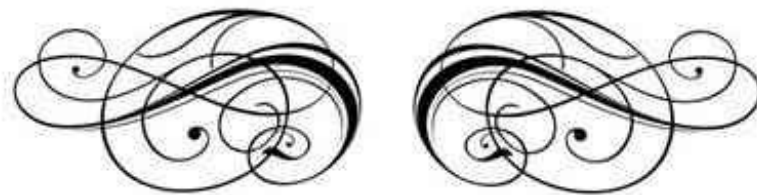
The amygdala receives the beautiful message that we make sense, we matter and we belong



And we can carry the experience of being resonated with as we move through the world

I carry your heart with me...

— E. E. Cummings



On the other hand, because of its left hemisphere bias, language can be intrusive and prevent resonance



When we want to bring words to resonance, we need to have care, as language is largely used to do things, rather than to be things

Watch out for:

- Advice
- Reframing
- Problem-solving
- Telling someone how they feel
- Denying
- Dismissing
- Criticizing

**KEEP SOME
ROOM IN
YOUR HEART
FOR THE
UNIMAGINABLE**

MARY OLIVER

What is Neuroplasticity? How do Brains Change?

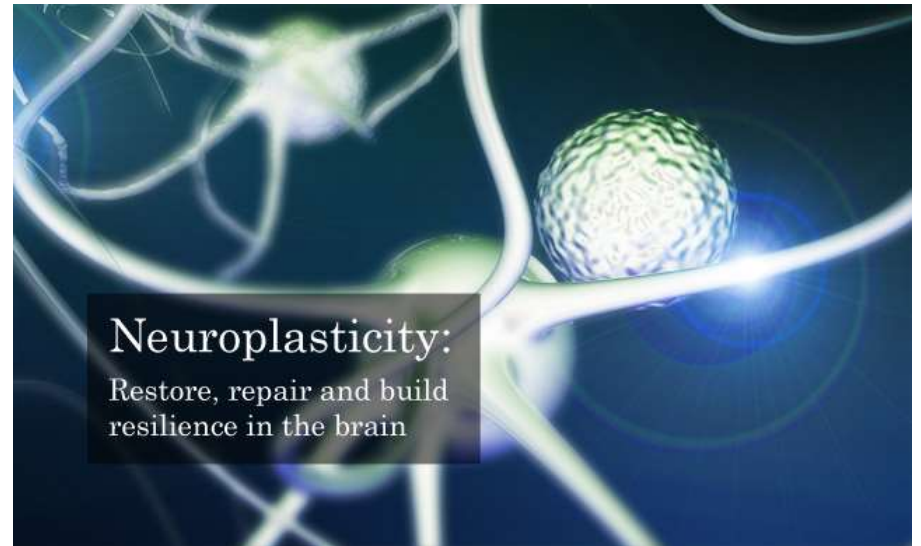
- Experiences as varied as driving a taxi cab, playing a musical instrument, physical exercise, or playing video games change the brain both functionally and structurally



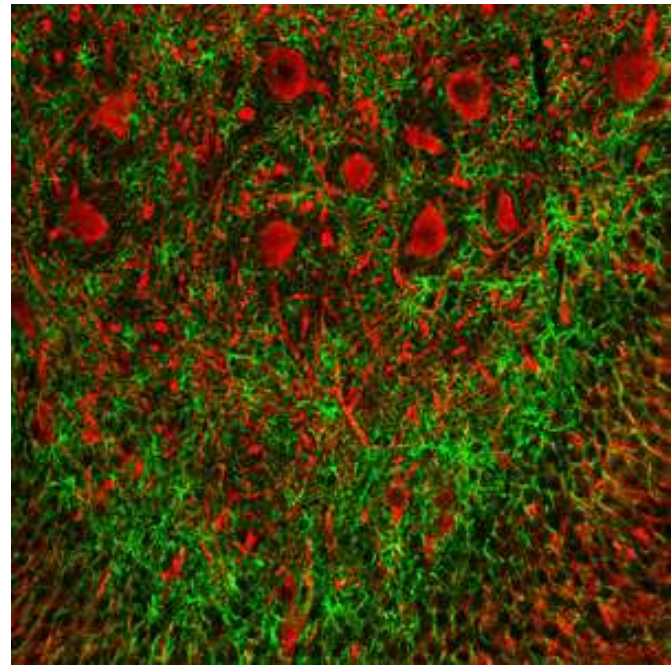
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The five forms of neuroplasticity

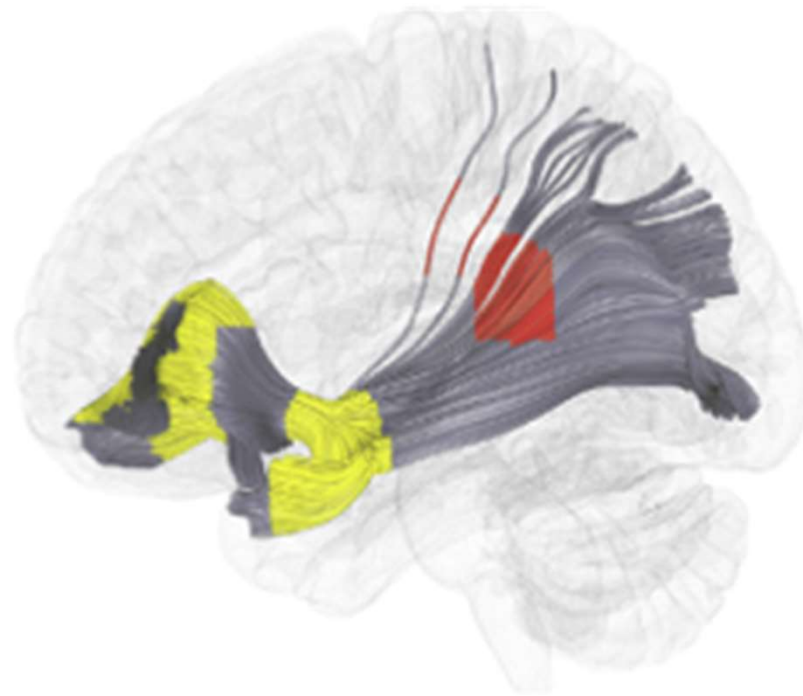
- The growth of new neurons
- The growth/disappearance of new dendrite spines
- The formation of new neural connections and associations
- The strengthening of existing neural connections and associations
- The remodeling of number and density of neurotransmitter receptors in synapses



How does language change the brain?



Our brains change depending on how much exposure we have to other languages



Is NVC a different language?



THE MOTHS

There's a kind of white moth, I don't know
what kind, that glimmers
by mid-May
in the forest, just
as the pink moccasin flowers
are rising.

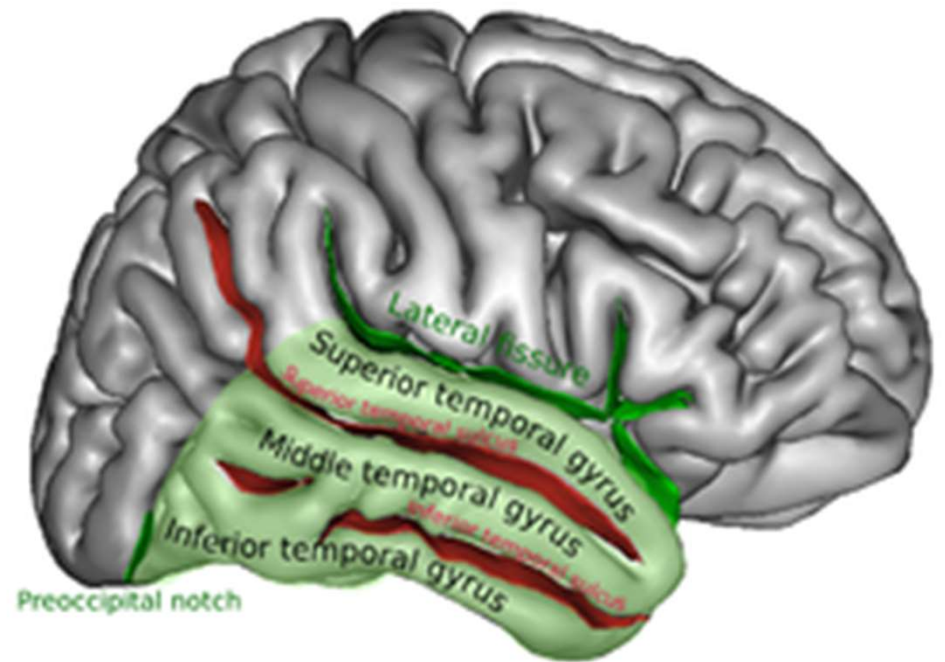
If you notice anything,
it leads you to notice
more
and more.

And anyway
I was so full of energy.
I was always running around, looking
at this and that.

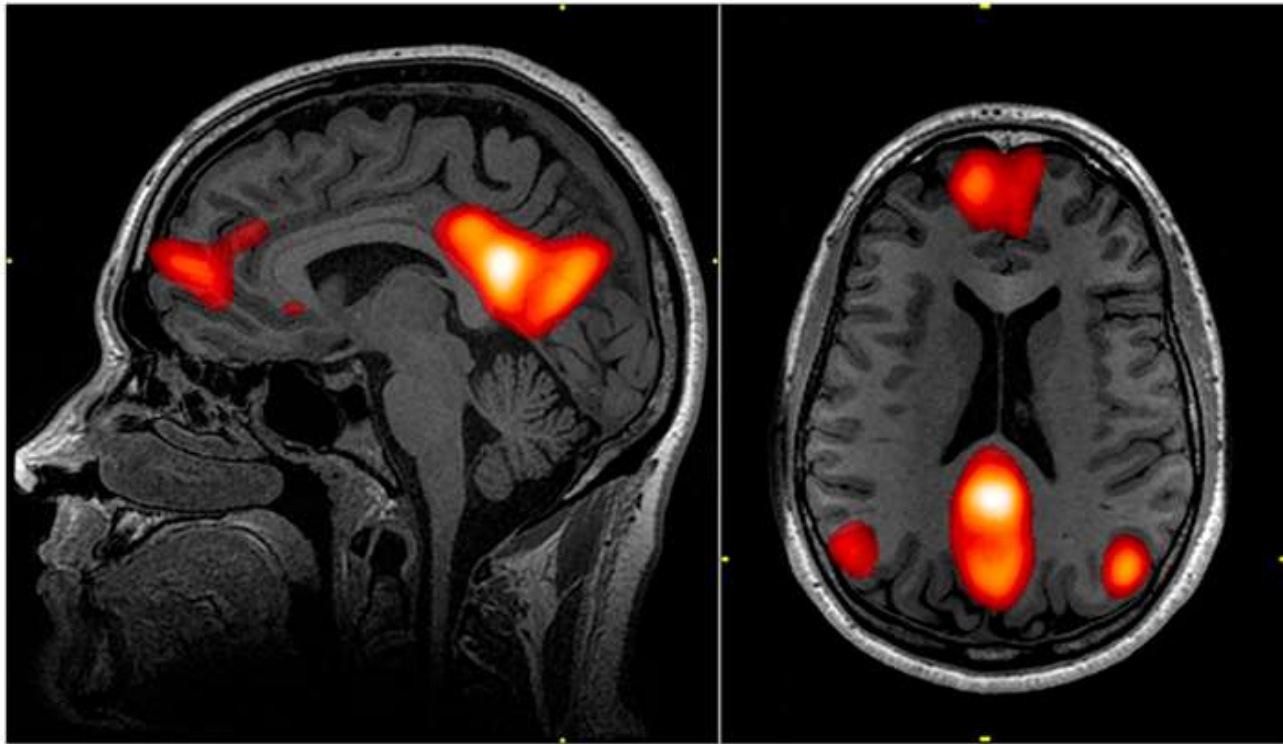
If I stopped
the pain
was unbearable.

If I stopped and thought, maybe
the world
can't be saved,
the pain
was unbearable.

Language and the Default Network



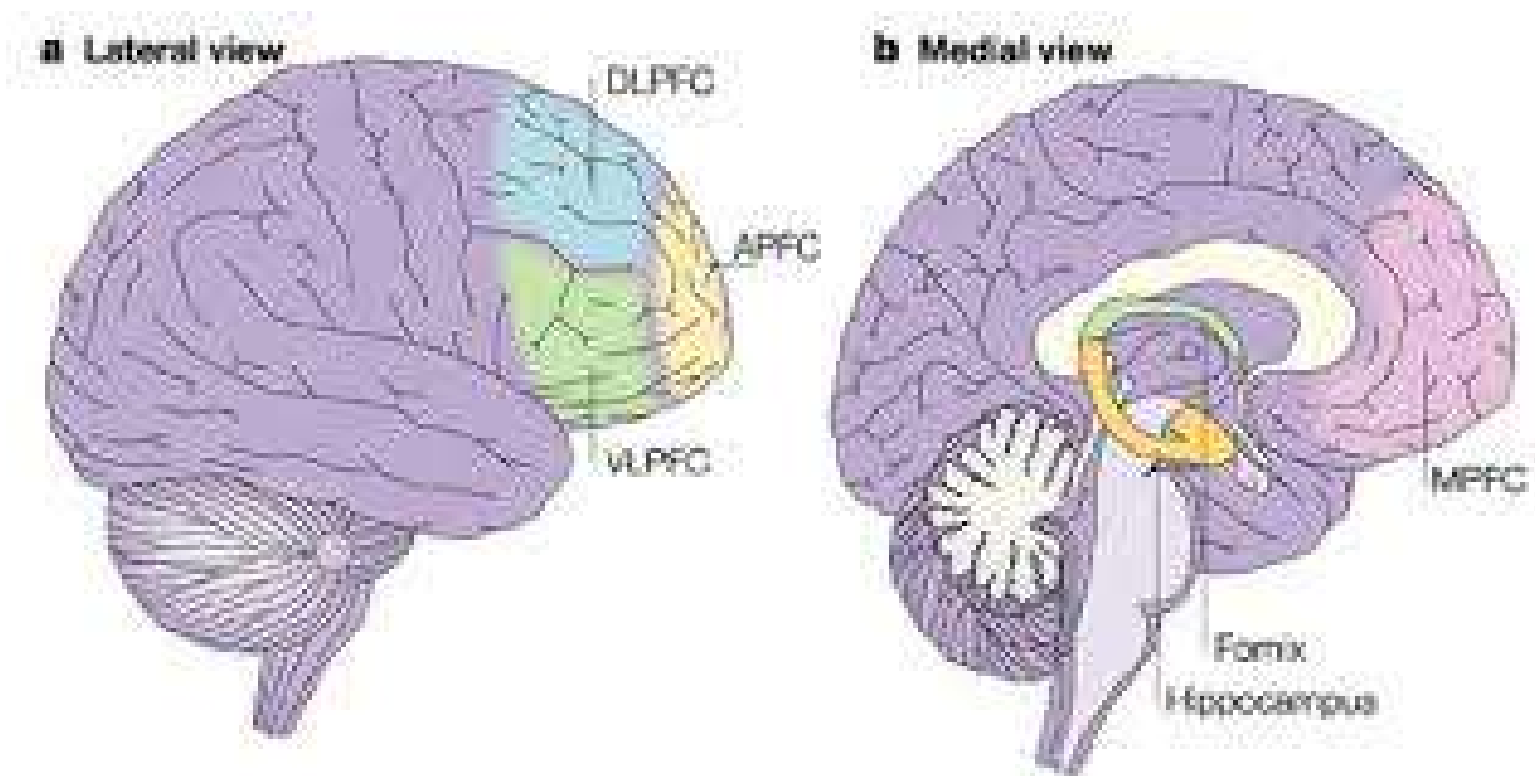
What does our brain do, when we aren't asking it to do anything? The "Default Mode Network," or DMN goes on.



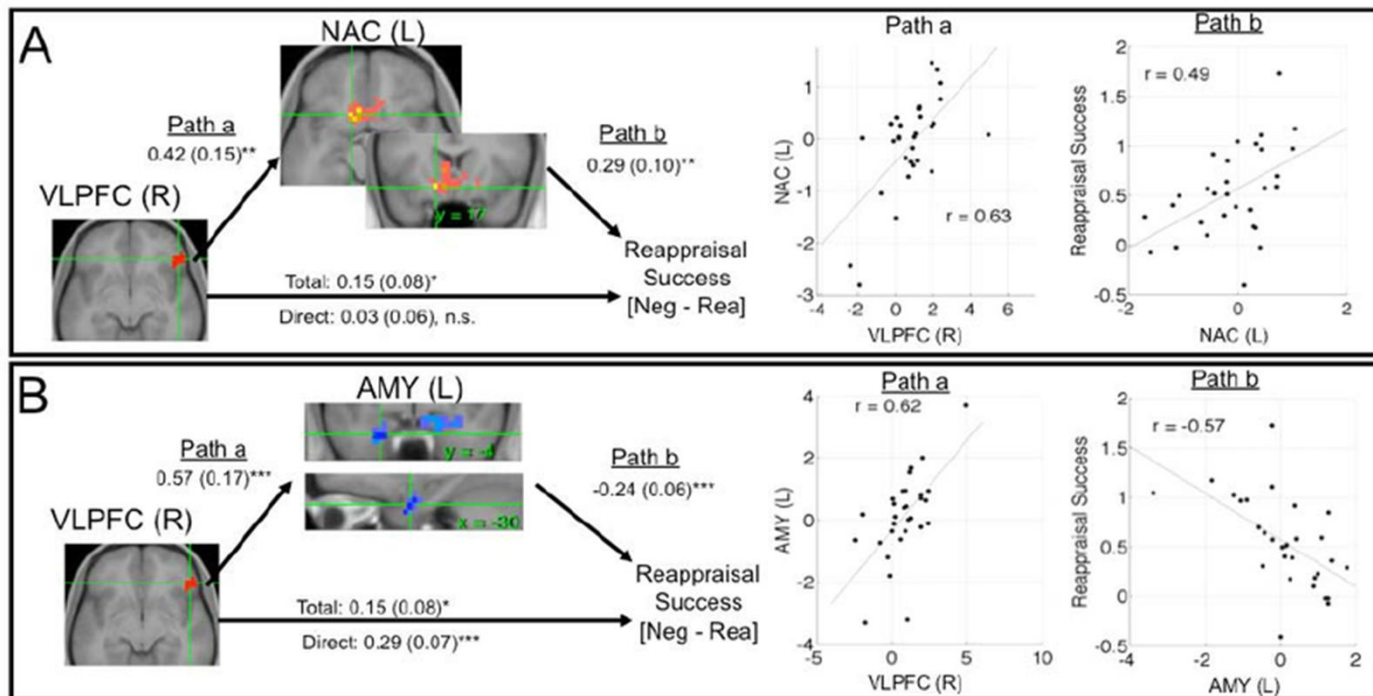
What happens when the default network is working?

- mind-wandering, day-dreaming
- remembering
- ruminating, worrying, reproaching the self, self-criticism
- future thinking
- mental simulation
- theory of mind reasoning
- and creative cognition
- (and possibly our night dreaming as well)

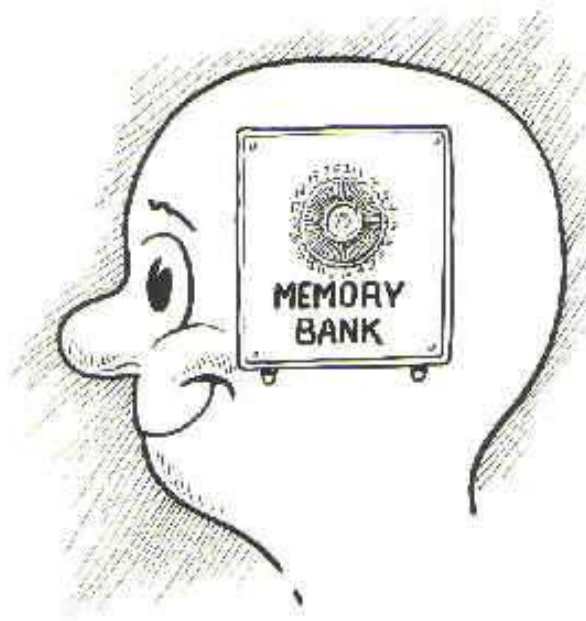
Introducing the **Ventrolateral prefrontal cortex: (VLPFC)** a part of the default network especially important for making decisions to stop doing things and re-orienting attention to perceptual events that occur outside the current focus of attention.



Labeling emotions strengthens the connection between the Ventrolateral PFC and the amygdala, which positively influences the default network and reduces activity of the amygdala (this also happens with mindfulness meditation and reappraisal)



When scientists see the VLPFC activated, they believe that the person is searching their memory of emotions to understand what's happening



When we lose the capacity for language, (as in strokes or injury) we lose access to the default network, and thus to effortless self-regulation



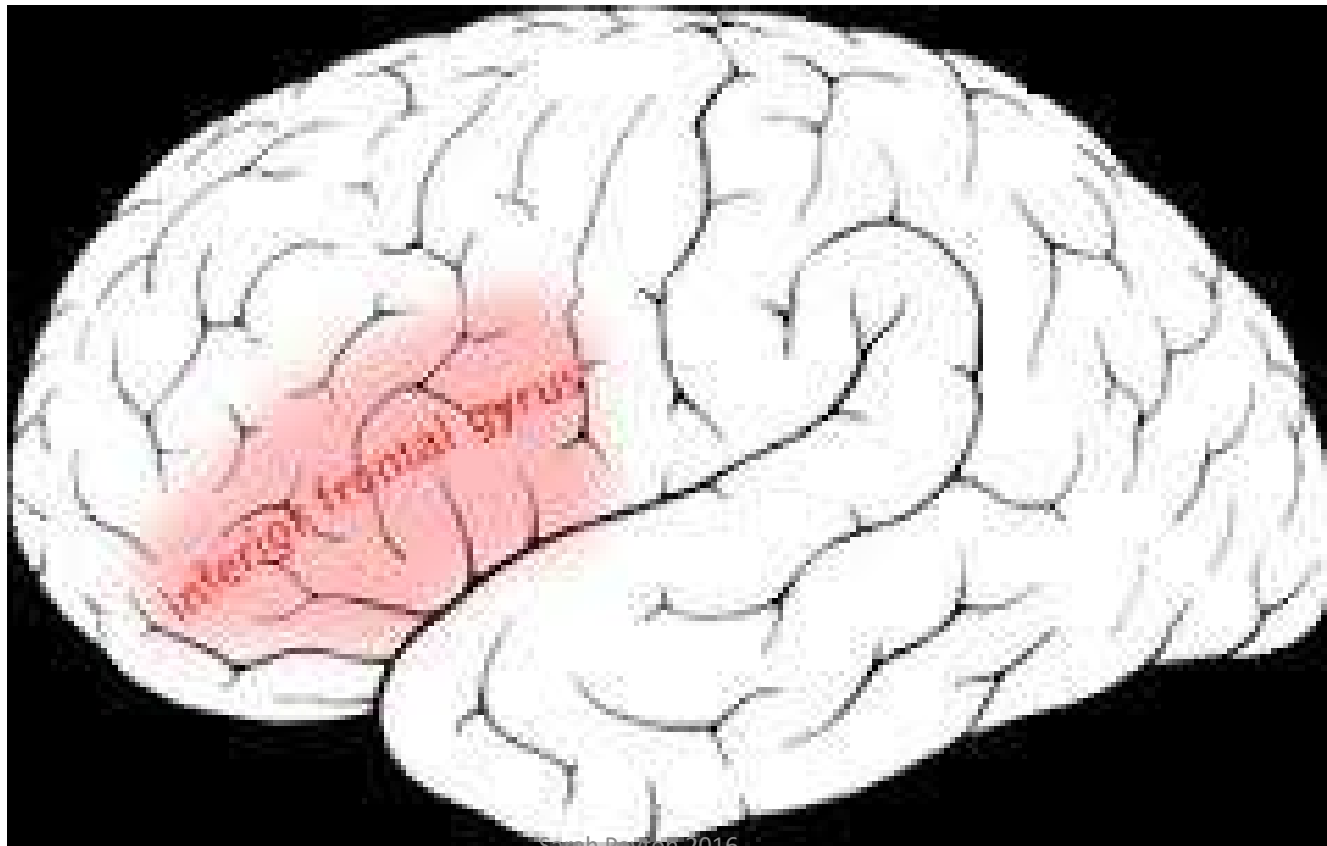
Deaf children have to have inputs other than spoken language to regulate their default networks



What happens when the default network is savage?
 (“disturbances in self-referential processing”)

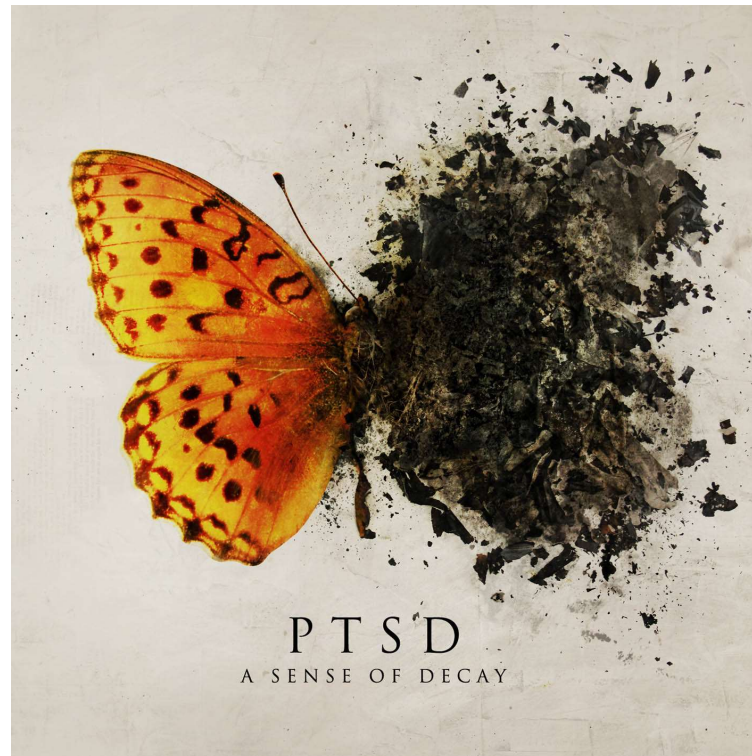


Meet the **Inferior Frontal Gyrus: (IFG)** An area of the **Prefrontal cortex**. Problems with connectivity between this area and the default network lead to a linkage between negative thoughts and interpretations of life and the sense of self.



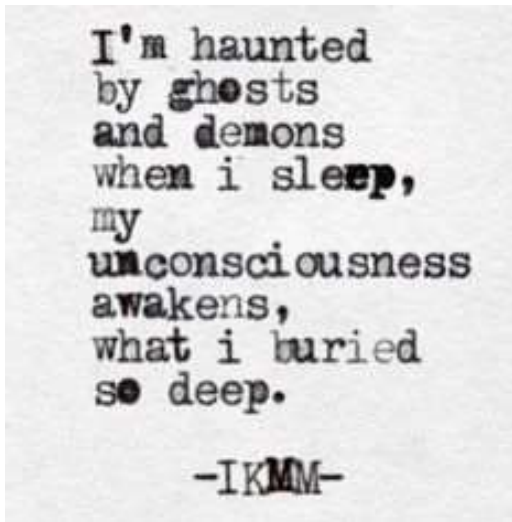
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The IFG's connections can be particularly troublesome when people have PTSD



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Unhealed trauma is the most important factor in the “savage default network”

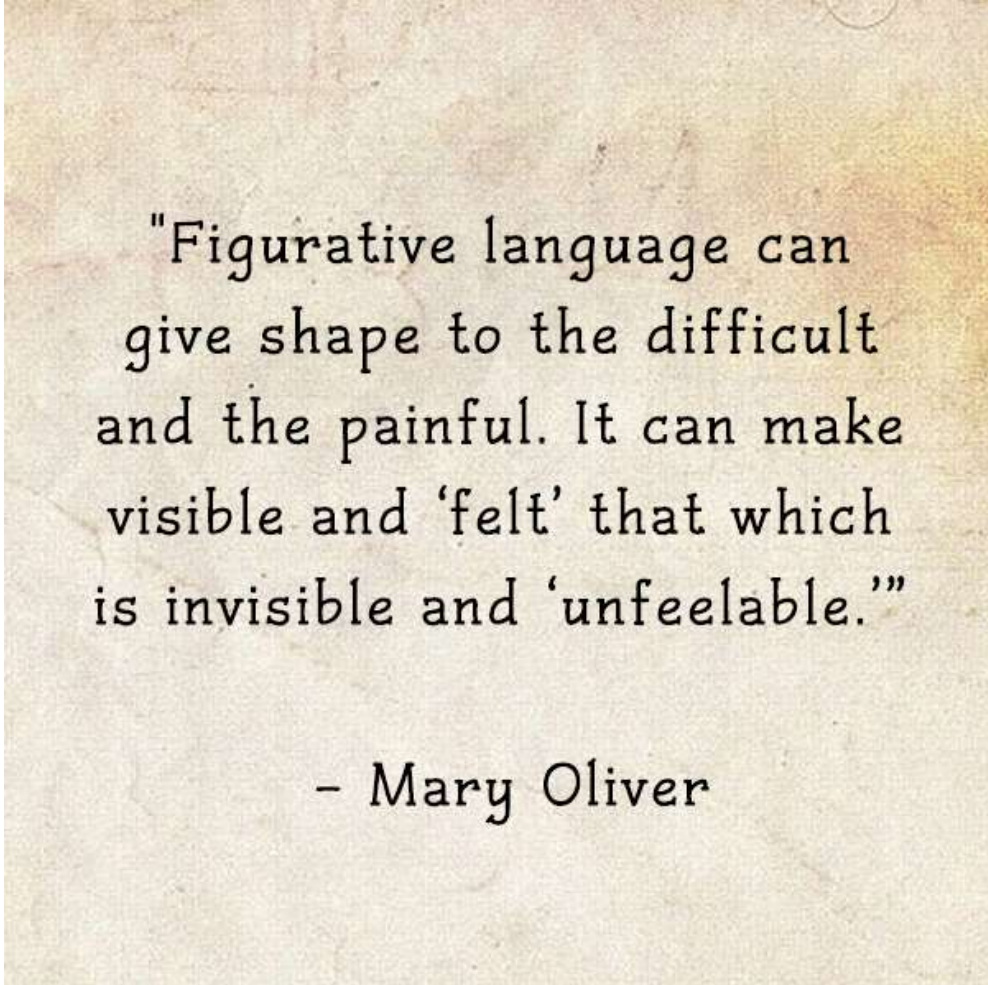


I'm haunted
by ghosts
and demons
when i sleep,
my
unconsciousness
awakens,
what i buried
so deep.

-IKMM-

Emotions and the Default Network

- When we have a benevolent default network, we naturally and effortlessly integrate body sensations and emotions into our understanding of the world.

A quote by Mary Oliver is presented on a rectangular piece of aged, textured paper with a yellowish-brown hue and some faint stains. The text is centered and written in a black, monospaced, typewriter-style font. The quote reads: "Figurative language can give shape to the difficult and the painful. It can make visible and 'felt' that which is invisible and 'unfeelable.'"

"Figurative language can
give shape to the difficult
and the painful. It can make
visible and 'felt' that which
is invisible and 'unfeelable.'"

- Mary Oliver

Self-Regulation and Language



Why do we say, “Name it to tame it?”



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Humans become alarmed when they don't know what's going on



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The amygdala is made to alert, and to start its alarm generation, whenever there is uncertainty about emotion



It particularly responds to visuals, like facial expressions, which is part of the patterns of cascading human nervous systems (i.e. couples restimulating one another during fights)

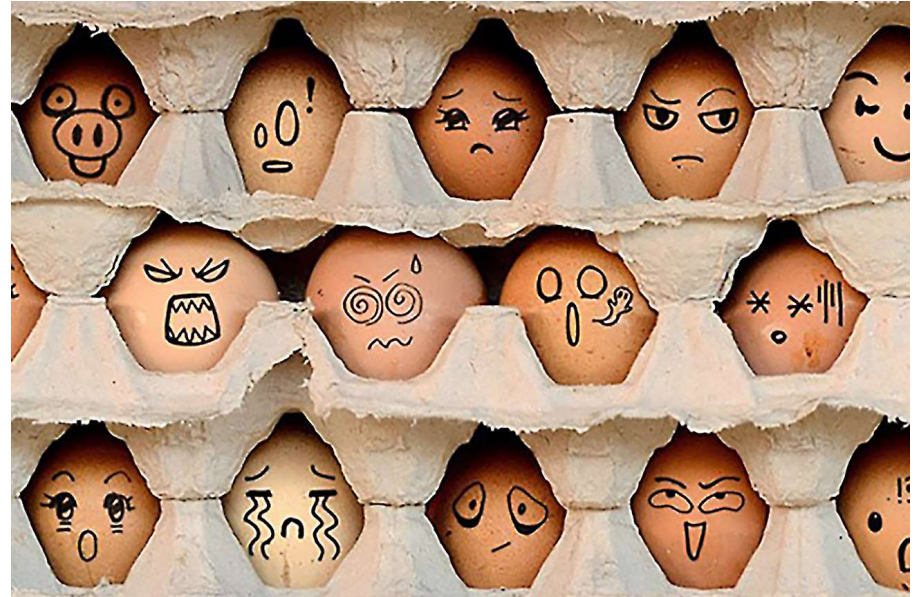


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When we use our words to name emotional experience, the amygdala can relax and release its alarm message



Language helps us identify emotional experience, whether it is ours or another's



Once a person knows what is happening, they can make a response plan, which is calming



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Labeling emotions also decreases the stress response in the whole body, and helps with public speaking anxiety and also with arachnophobia



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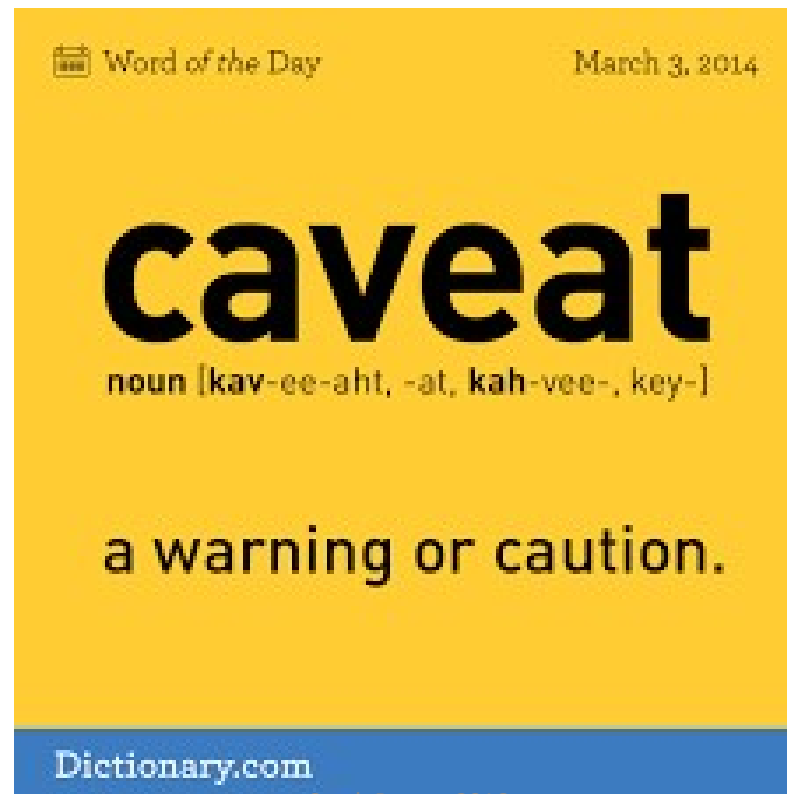


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The words “pleasant” and “unpleasant” are not defined enough to calm the amygdala



(The compilers of the database of studies I am referencing say that the studies do not prove that emotions words regulate emotion, they only strongly suggest it.)



However...the more easily children can identify and name emotional experience, the easier access they have to their attention



I Can Use My Words



And the benefit that language brings in naming experience and supporting attention persists as the children grown older



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The more 5-year olds talk to themselves when taking on a difficult task, the better they do



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The Uses of Sorrow

(In my sleep I dreamed this poem)

Someone I loved once gave me
a box full of darkness.

It took me years to understand
that this, too, was a gift.

Language and Attachment



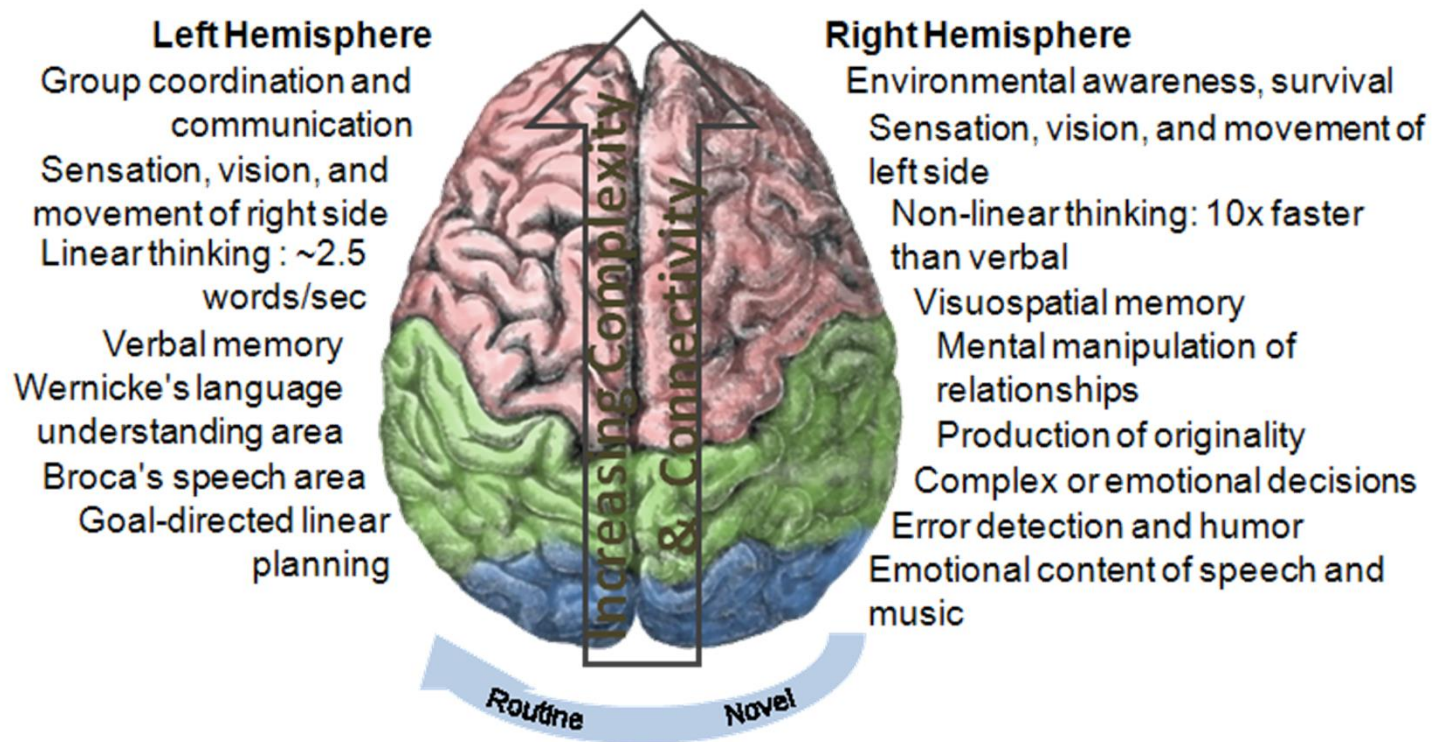
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A quick review of attachment



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Remember, we have two hemispheres



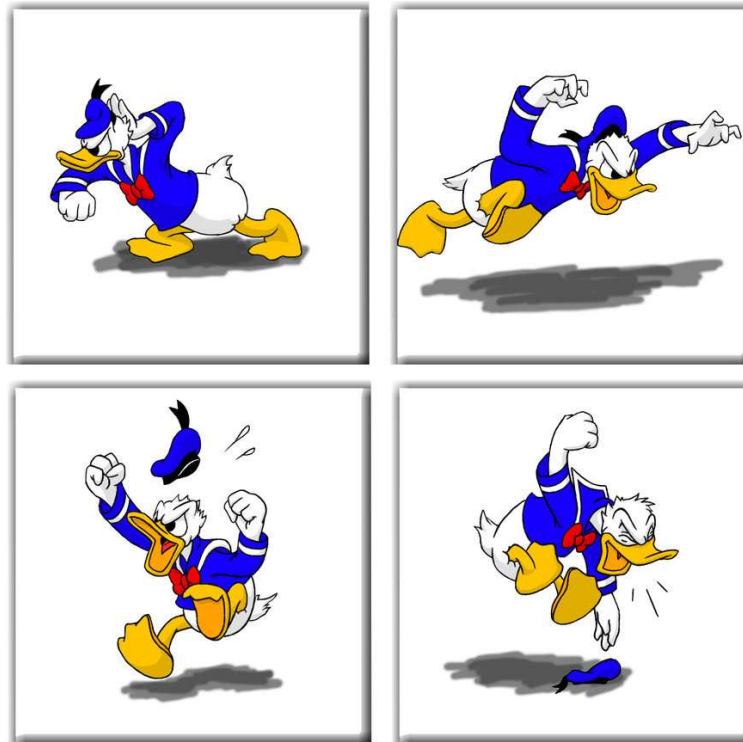
If we're largely in our left hemisphere, we aren't so focused on relationship.



Researchers call this way of being with others:
“Avoidant Attachment”



If we are largely in our right hemisphere
without much self-regulation



Then scientists call this “Ambivalent Attachment”

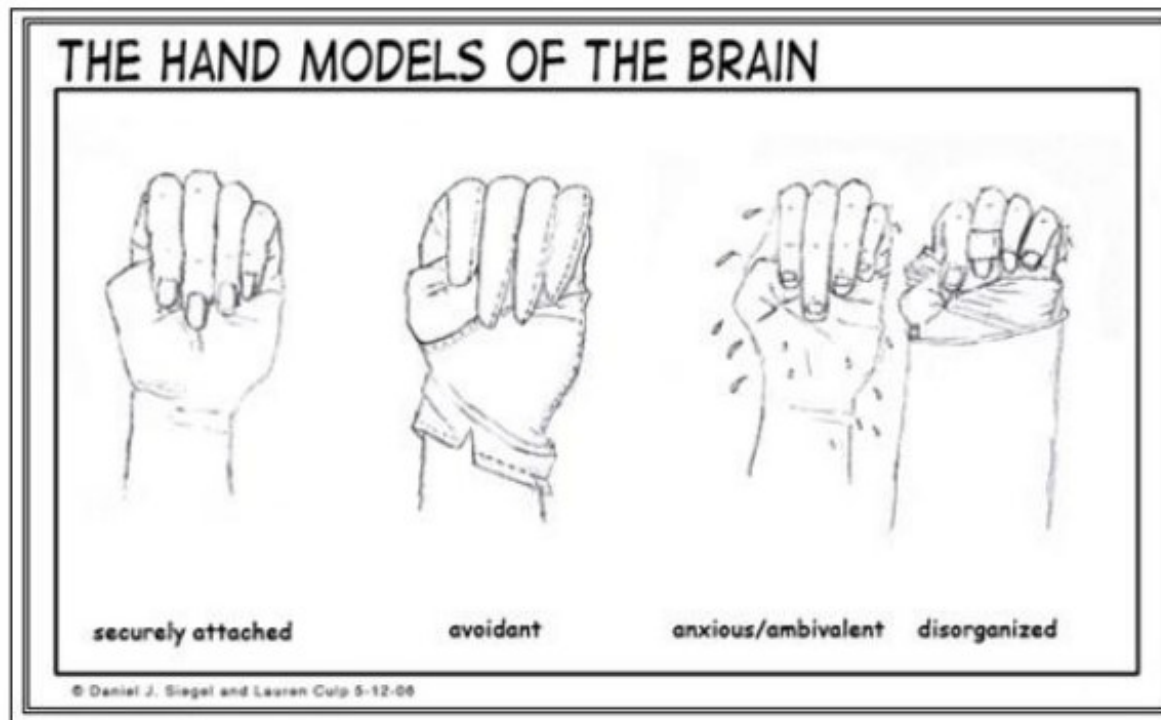


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If we get to have access to both hemispheres with robust and warm self-regulation, we are securely attached.

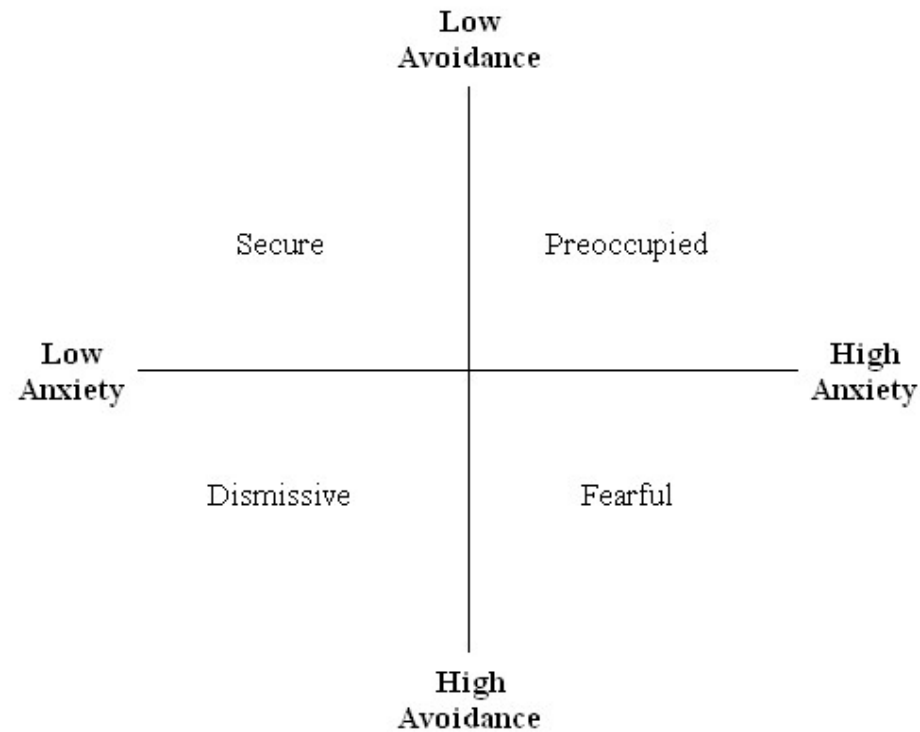


And if we are traumatized in our relationships, this is called “Disorganized Attachment”



Language and Attachment

Each attachment style has its own “semantic system” (way that words come out of a brain patterned by this style)



Dismissive participants were prone to idealization and lack of recall (left PFC)



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while preoccupied participants primarily exhibited anger, blame, and a desire to close themselves off from the past (dysregulated right hemisphere)



And secure participants spoke about the big picture (metacognition) (integrated hemispheres)

		Thoughts of Self	
		Positive	Negative
Thoughts of Partner	Positive	<p>Secure Comfortable with intimacy and autonomy</p>	<p>Preoccupied Preoccupied with relationships</p>
	Negative	<p>Dismissive Dismissing of intimacy Strongly independent</p>	<p>Fearful Fearful of intimacy Socially avoidant</p>

Appendix



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Which hemispheres are dominant for which emotions?

Left Hemisphere

- Happiness
- Surprise
- Irritation
- Approach-related anger

Right Hemisphere

- Avoidance-related anger
- Fear
- Disgust
- Sadness

A representation of the corpus callosum, the fibers that connect the two hemispheres

