

# **The Polyvagal Theory:**

*Demystifying the link between social  
behavior and health*

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# **A Neural Love Code:**

*The body's need to engage and bond*

# Cues of Safety or Danger?

The social, cultural, and legal definitions and expectations of safety and risk often have little to do with how our nervous system reacts!

# Neuroception

- The nervous system's detection of risk in others – *without awareness*.
- Can dampen defensive systems and facilitate social behavior.
- Can promote defensive strategies of mobilization (fight/flight) or immobilization (shutdown, dissociation).

# Faulty Neuroception

Challenges may:

1. Shift physiological and behavioral state
2. Distort social awareness
3. Displace spontaneous social behaviors with asocial behavior or defensive reactions

# **Challenges Distort Social Awareness and Displace Social Engagement Behaviors with Defensive Reactions**

***OR***



# Social Engagement Behaviors Trigger Neural Mechanisms that Promote Health, Growth, and Restoration



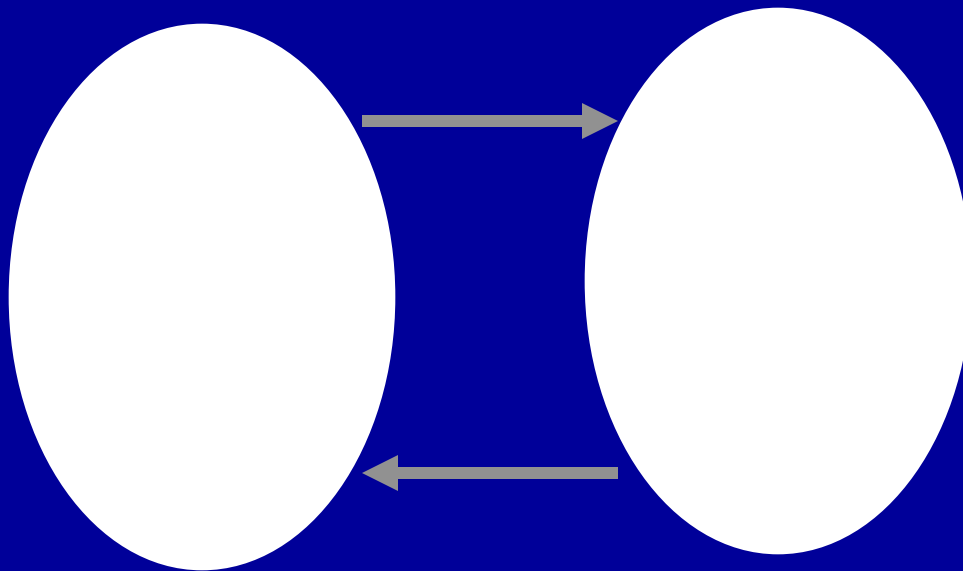
# ***A Neural Love Code: The Body's Need to Engage and Bond***

- A biological quest for “safety” in proximity of another
- A major mediator of mental and physical health
- Explains the health benefits of social support

# People Need People: A Biological Basis for Social Behavior

*Regulators of physiology are  
“embedded” in relationships*

*Myron Hofer, Columbia University College of Physicians and Surgeons*



# **Feature Detectors:**

## **The importance of face-to-face interactions**

# ***A Neural Love Code: Phase I***

## ***The importance of face-to-face interactions***

# ***A Neural Love Code: Phase II***

## ***The importance of physical contact while immobilizing without fear***

# The Neural Love Code

***Social  
Engagement***

+

***Social  
Bonding***

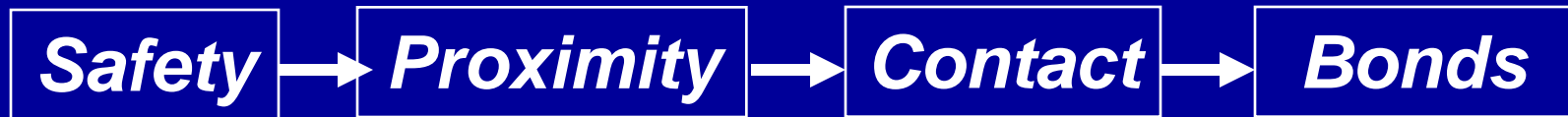
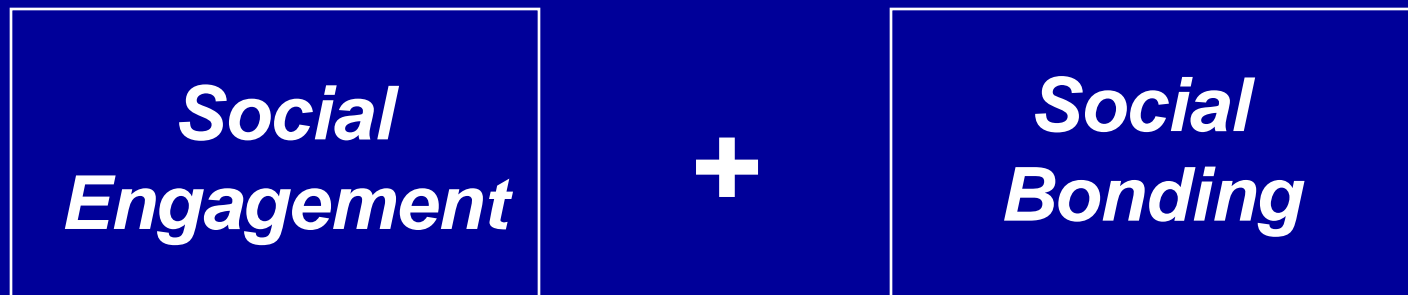
***Safety***

***Proximity***

***Contact***

***Bonds***

# Building “Blocks” of Healthy Relationships

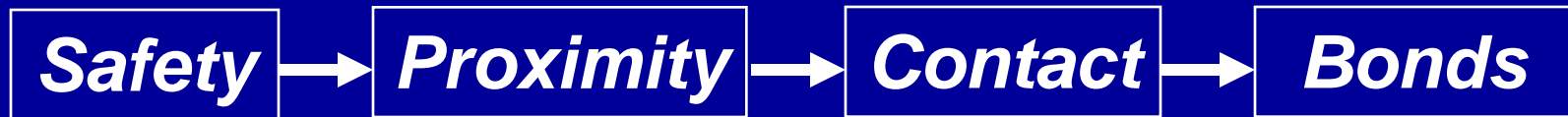




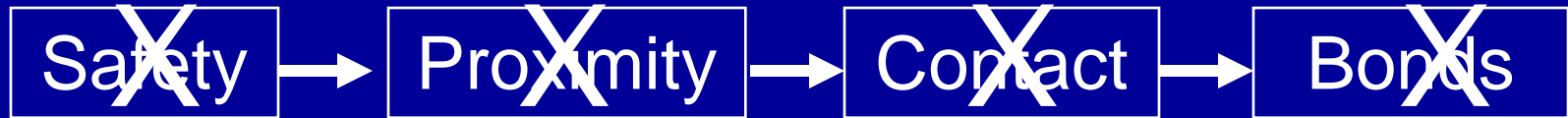
# Features of Mental Health Problems

## Difficulties

1. Feeling “safe” with others
2. Being in physical proximity with others
3. Being touched or touching others
4. Establishing “trusting” social relationships



# Features of Mental Health Problems



What physiological mechanisms mediate social engagement and immobilization without fear?

# Polyvagal Theory: Clinical Applications

- Proposes that therapeutic strategies should focus on turning off defenses
- Identifies the mechanisms for turning on and off defenses.
- Provides insights into clinical strategies to dampen defensive reactions

# *The Polyvagal Theory*

1. Evolution provides an organizing principle to understand neural regulation of the human autonomic nervous system as an enabler of social behavior.
2. Three neural circuits form a phylogenetically-ordered response hierarchy that regulate behavioral and physiological adaptation to safe, dangerous, and life threatening environments.
3. “Neuroception” of danger or safety or life threat trigger these adaptive neural circuits.

# The Quest for Safety:

## Emergent Properties of Physiological State

**Environment**  
*outside the body*  
*inside the body*

**Nervous System**  
*Neuroception*

**Safety**

**Danger**

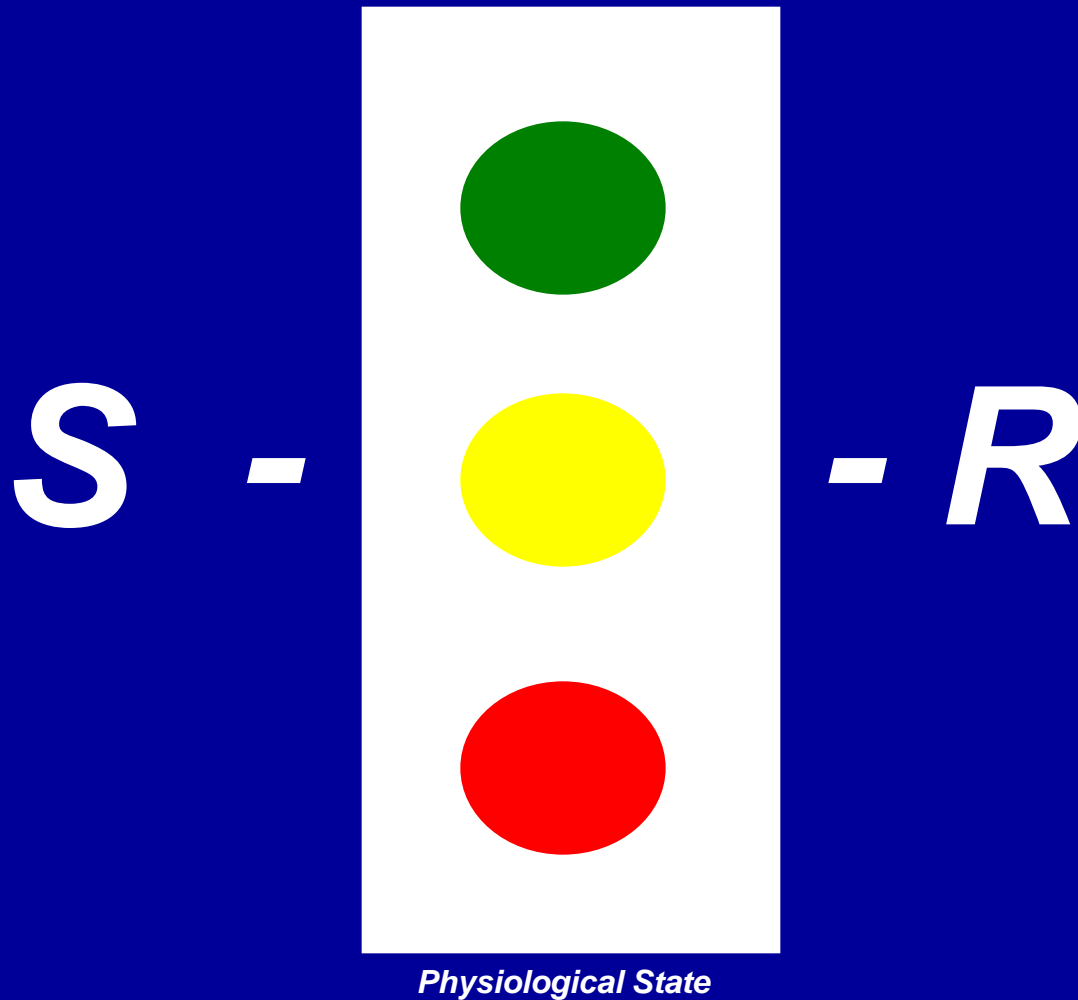
**Life threat**

**Spontaneously engages others**  
*eye contact, facial expression, prosody*  
*supports visceral homeostasis*

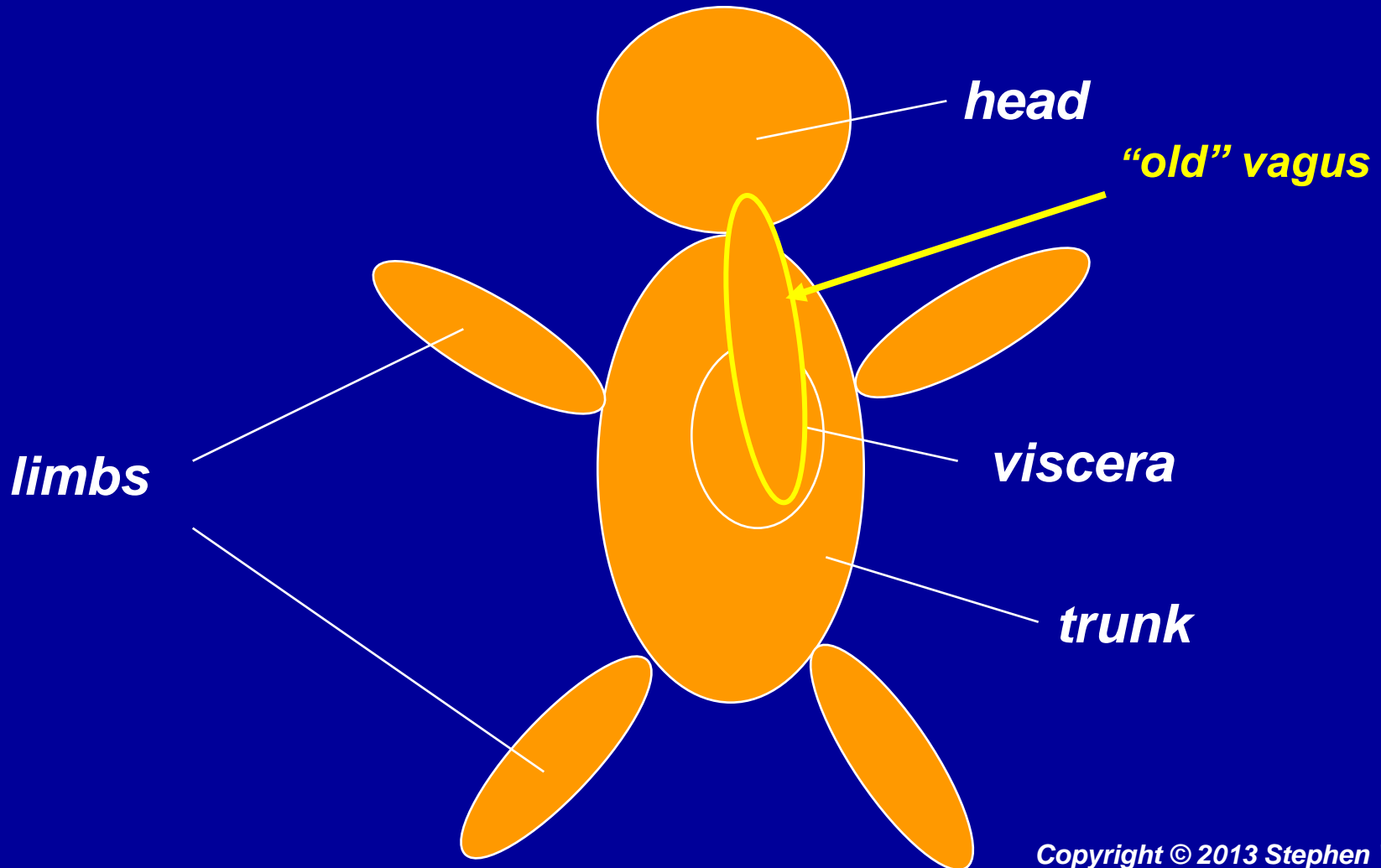
**Defensive strategies**  
*death feigning/shutdown (immobilization)*

**Defensive strategies**  
*fight/flight behaviors (mobilization)*

# *Physiological State Colors our Perception*

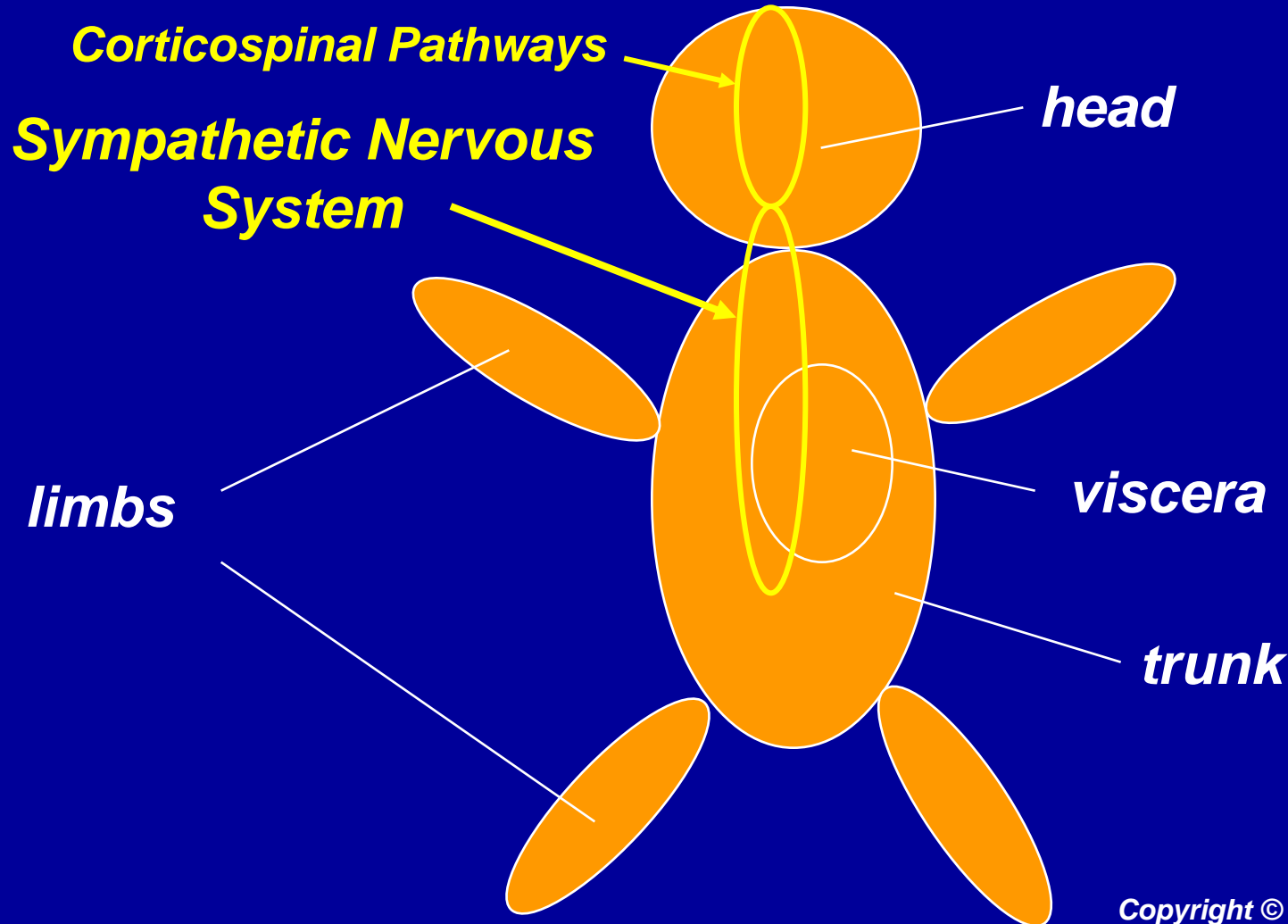


# Phylogenetic Organization of the ANS: The Polyvagal Theory

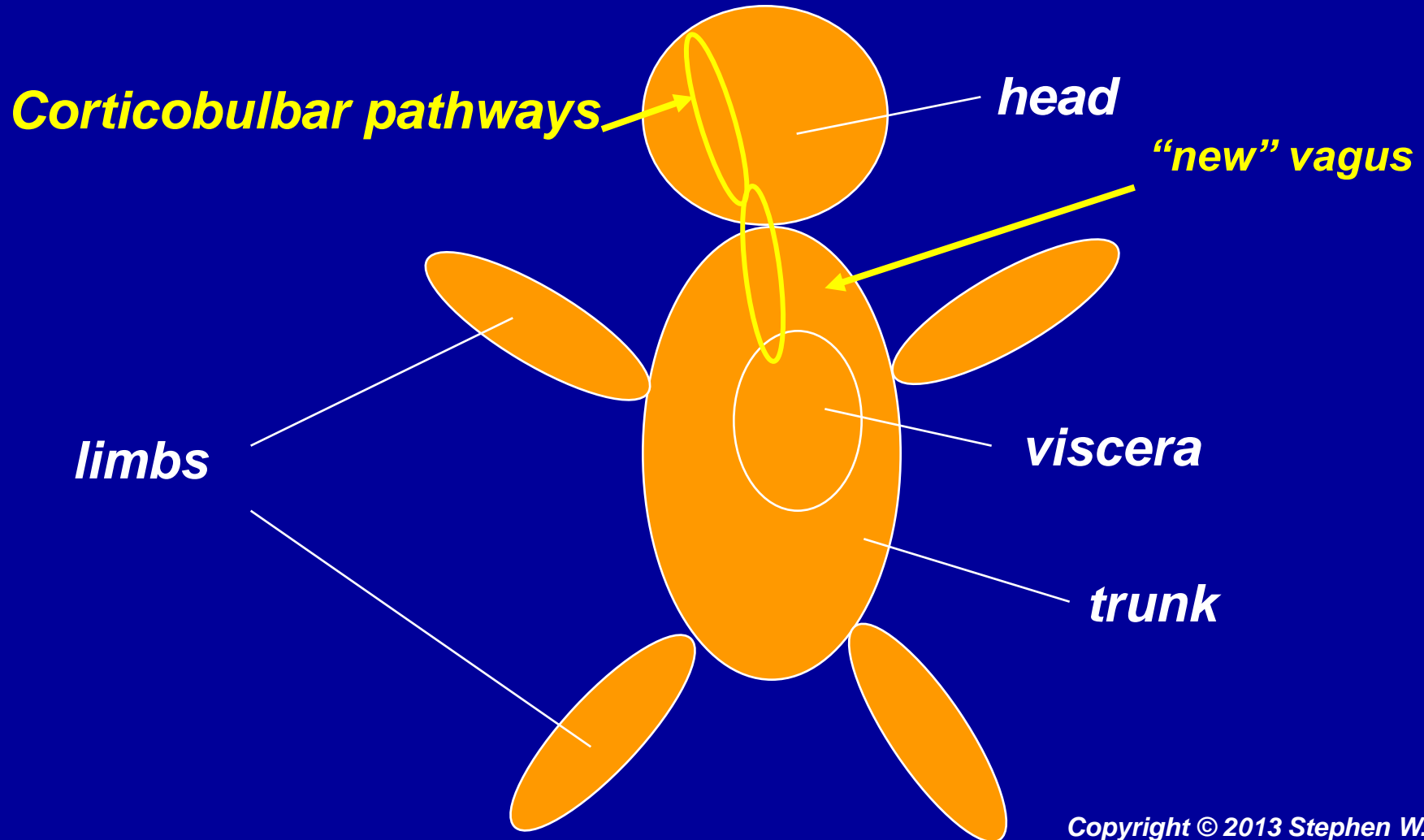




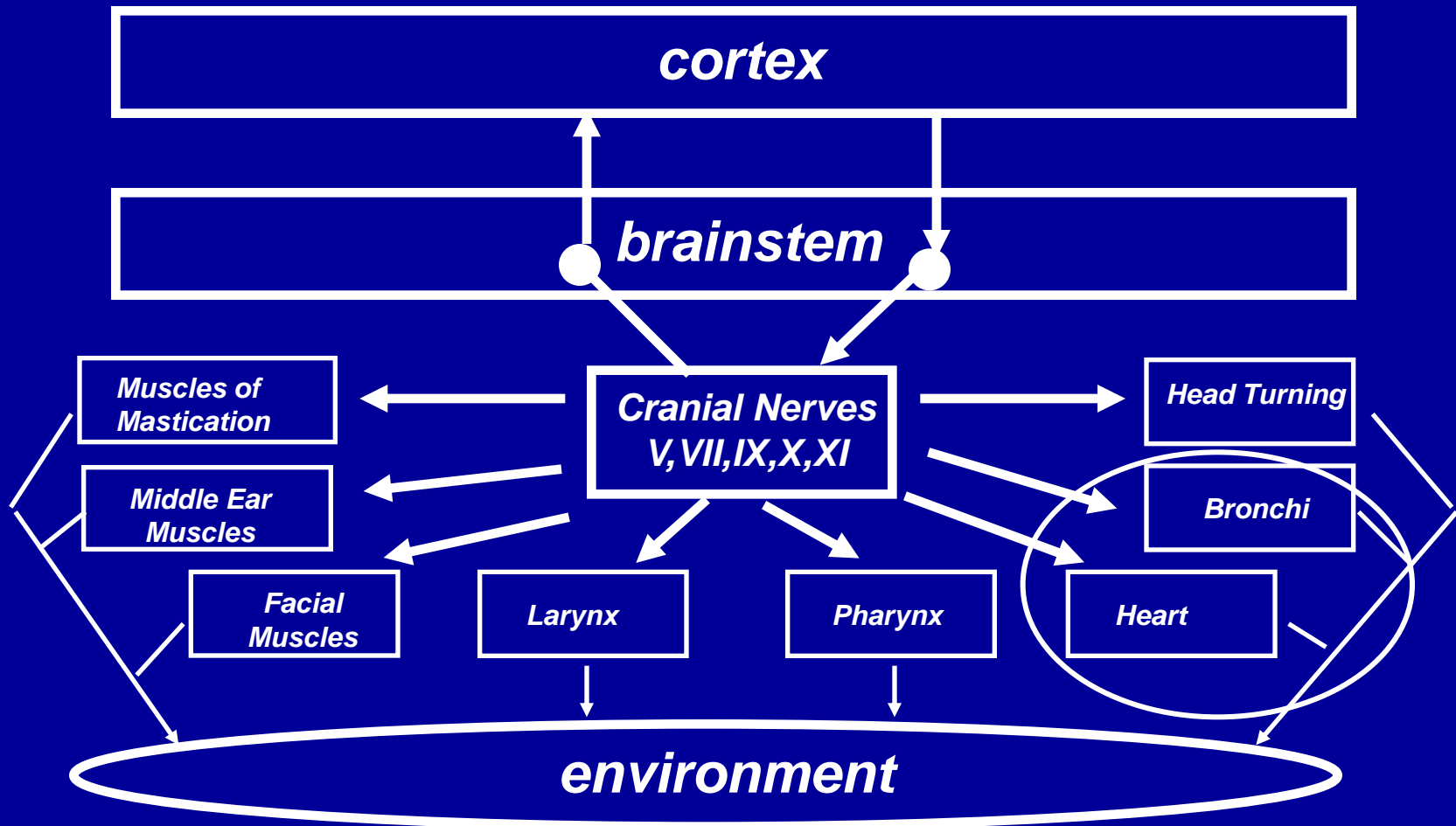
# Phylogenetic Organization of the ANS: The Polyvagal Theory



# Phylogenetic Organization of the ANS: The Polyvagal Theory



# Deconstructing the “*Mammalian*” Social Engagement System



# The Heart-Face Connection:

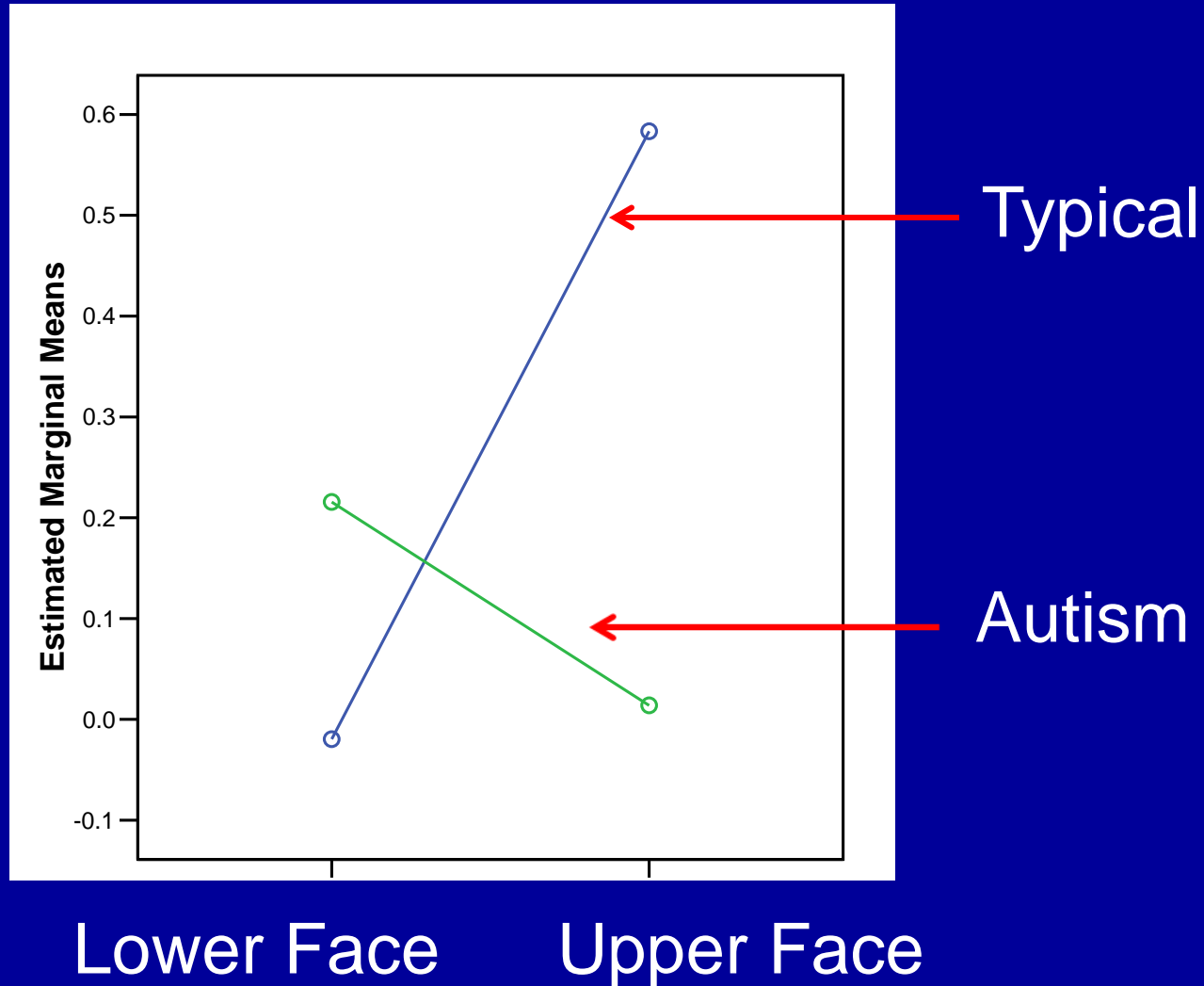
## *A Critical Component of a Social Engagement System*

- In mammals, at birth the bidirectional neural communication between the face and the heart forms the core of a Social Engagement System.
- Metabolic demands, perceived danger, life threat, and illness retract the Social Engagement System resulting in a face that is not “social” and a physiological state (removal of the vagal brake on the heart) that promotes defensive behaviors.

# Social Engagement System: Observable Deficits in Several Psychiatric Disorders

- Prosody
- Gaze
- Facial expressivity
- Mood and affect
- Posture during social engagement
- State regulation
- Sound hypersensitivities

# Autism: Atypical Facial EMG





# Feature Detectors: The importance of the face-to- face interactions

How do we “feel” when there is a violation of the face-to-face interactions?

Does a violation displace spontaneous social engagement behaviors with defensive reactions?



# ***A biological basis for manners?***

# ***Biological Rudeness***

- ***Violation of a “neural” expectancy***
- ***Lack of reciprocity (poor attunement)***

# ***Biological Rudeness***

- ***Is this a feature of several psychiatric disorders?***

# How Our Nervous System Detects Safety or Threat

Feeling safe is a necessary prerequisite before strong social relationships can be established and before social support can be effective in “healing” physical and mental illnesses.

What are the features that enable us to feel safe or become hypervigilant and defensive?

**With whom do we feel safe?**

# Principles to establish relationships are similar to play

- Reciprocity
- Movement and inhibition of movement
- Face-to-face interactions and/or prosodic vocalizations to dampen potential defensive reactions to movements, proximity, and touch
- Play as a neural exercise

# The Look of Love\*

*The look of love is in your eyes  
The look your smile can't disguise  
The look of love is saying so much more  
Than just the words could ever say  
And what my heart has heard  
well it takes my breath away*

*I can hardly wait to hold you  
Feel my arms around you*

\*Burt Bacharach & Hal David

# The Look of Love: A Polyvagal Perspective

*The look of love is in your eyes*  
*[gaze- orbicularis oculi]*

*The look your smile can't disguise*  
*[facial muscles]*

*The look of love is saying so much more*  
*[facial, neck, lip muscles]*

*Than just the words could ever say*  
*[prosody]*



# The Look of Love: A Polyvagal Perspective

*And what my heart has heard*

*[vagal regulation of the heart, middle ear muscles, face-heart connection]*

*well it takes my breath away*

*[vagal regulation of the bronchi]*

*I can hardly wait to hold you*

*Feel my arms around you*

*[immobilization without fear (not restraint)]*

# The Neural Love Code: Biobehavioral Goals

- Safe to cuddle and immobilize
  - Facilitate efficient use of metabolic resources to support health, growth, and restoration
- Safe to mobilize and play
- No need to be vigilant
- To be resilient via the effective use of “social interactions” to regulate physiology and maintain homeostasis

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