

Three Sleep Disorders common among Cardiovascular Patients and their Implications for Bridging the Gap Between Soma and Psyche

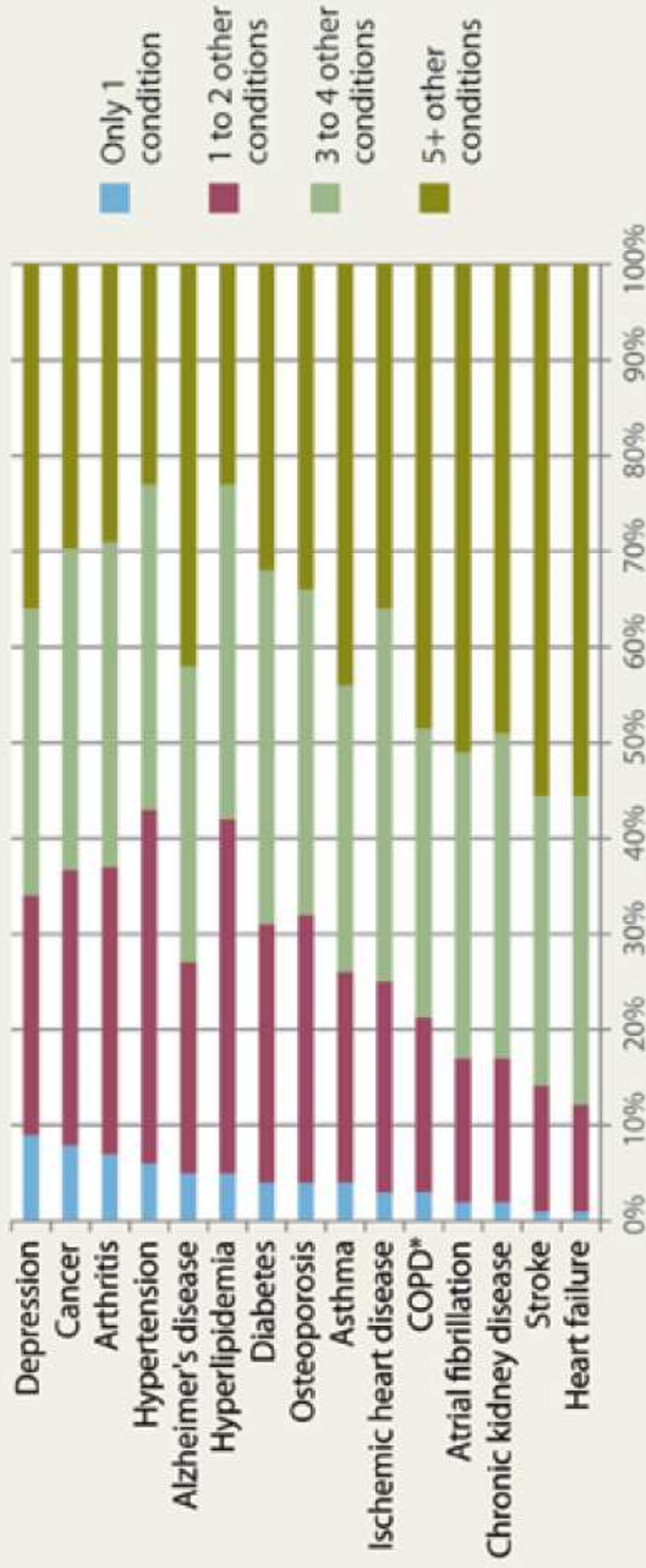


Dr. Jaan Reitav, CPsych, CBSM.
Certified in Behavioral Sleep
Medicine

Clinical and Health Psychologist

Jaan.Reitav@uhn.ca

Figure 3. Multiple chronic conditions among Medicare fee-for-service beneficiaries, 2010



*chronic obstructive pulmonary disease.

Source: Centers for Medicare & Medicaid Services. *Chronic Conditions Among Medicare Beneficiaries*. <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/Downloads/2012Chartbook.pdf>

ANS Dysfunction: Perhaps A Common Final Pathway to Chronic Mental and Physical Diseases?

All major ICSD Sleep Disorders have
underlying ANS disturbances

Most mental health disorders involve
disruption to neural regulation of
the ANS

Many chronic medical diseases have
significant autonomic arousal

Non-Restorative Sleep

Problem is with Sleep Quality, not Quantity:

- Patient sleeps 7-8 hours a night (or more)
- Awakens still feeling exhausted
- Feels fatigued and apathetic during the day

Sleep Physiology:

- Chronically overactive stress system
- Unstable sleep pattern; fragmented
- Signs of adrenal fatigue

Chronic Insomnia Disorder (CID)

A complaint of:

- Difficulty falling asleep (>30 min)
- Difficulty staying asleep (30+ awake min)
- TST <6 hours a night with frequent wakes

Duration:

- 3+ Days per week
- >3 months for diagnosis of Chronic Insomnia

Associated with:

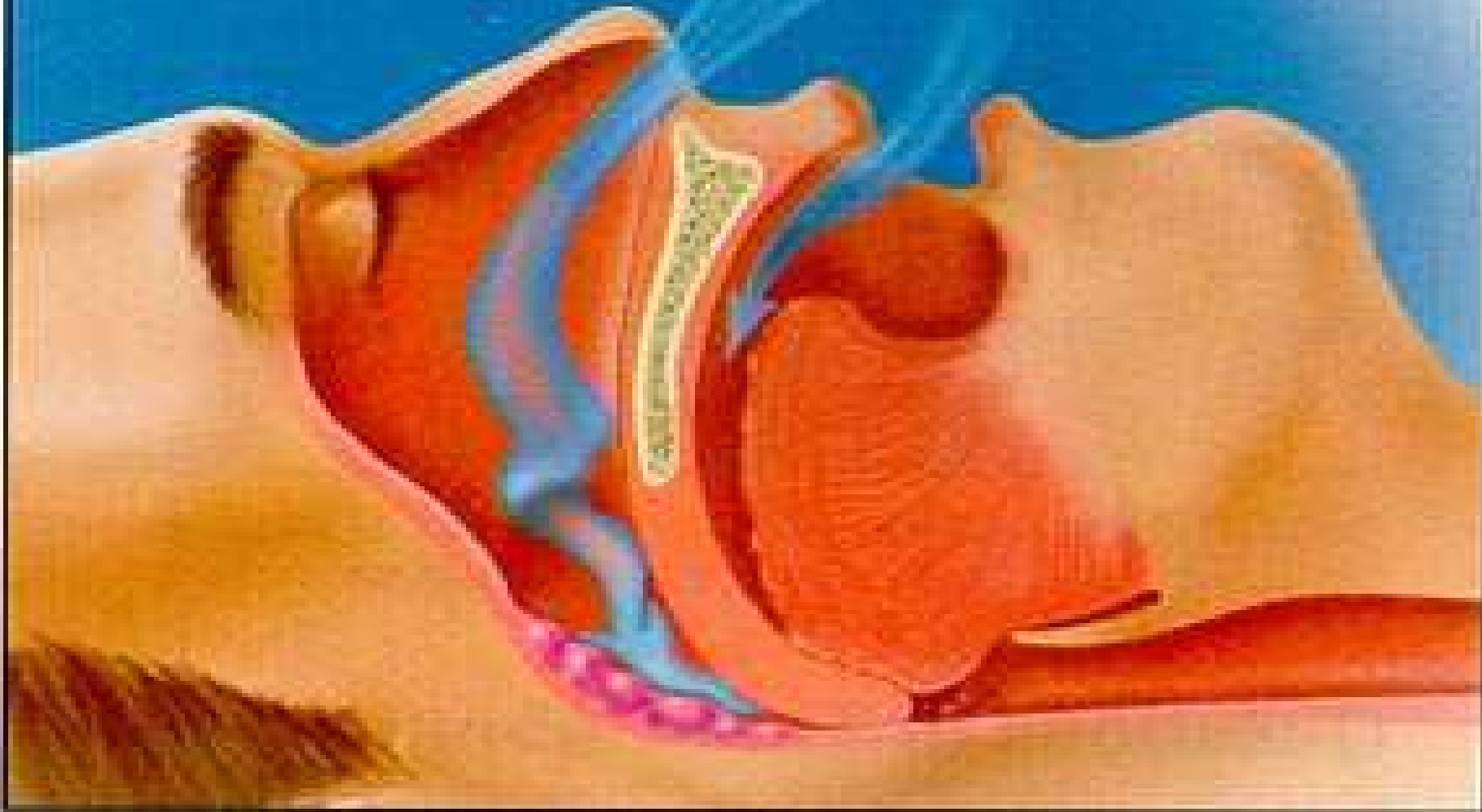
- Distress
- Impaired function during the daytime

Obstructive Sleep Apnea: Causal Mechanisms

1. Obstruction of the air passage at night (due to relaxation of muscles in throat and tongue, uvula can vibrate, etc)
2. Increased risk due to age, obesity, ethnic and congenital factors
3. Sleep position can exacerbate AHI

COMMONEST TYPE: OBSTRUCTIVE SLEEP APNEA

WHAT IS SLEEP APNEA?



During sleep apnea, air flow is completely blocked.

Prevalence of Sleep Conditions

<u>Sleep Conditions *</u>	<u>SAQ</u>	<u>PSG</u>
Non-Restorative Sleep	62%	
Sleep Apnea **	60%	70%
Insomnia	<u>52%</u>	
Any Sleep Condition	<u>92%</u>	

* Sleep Conditions relate to Stress Symptoms

** High OSA Risk group: - only 33% completed SMT
- no change in depression

Risks of Undiagnosed Sleep Apnea

High Blood Pressure difficult to control

Heart Disease & Heart Attack

4x risk of Stroke

Anxiety and Depression

Irregular heart beat

Heart failure

Type 2 Diabetes

Poor control of Diabetes

Glaucoma

Traffic accidents

Poor Job performance

Chronic Insomnia: Medical Consequences

- Hypertension
- Obesity
- Type 2 Diabetes
- Cardiovascular Disease
- Cancer and immune disruption
- Tension headaches
- Mood and anxiety disruption
- GI tract problems
- Neurological symptoms

Insomnia and Stress Hormones

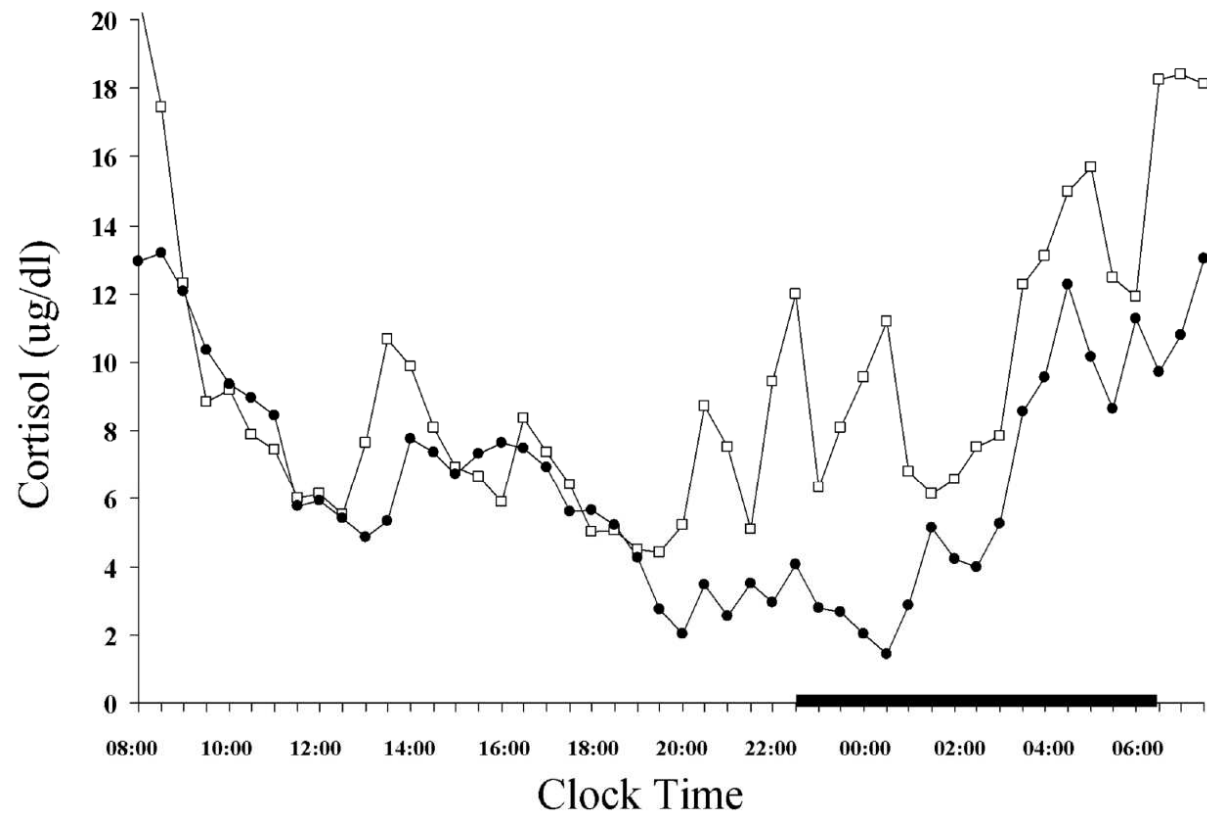
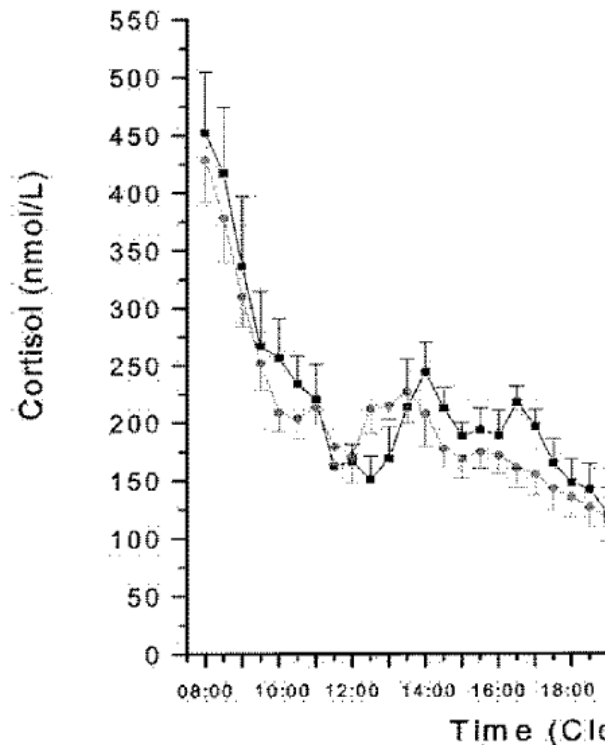


Figure 4.
24-hr circadian secretory pattern of cortisol in insomniacs with low TST (\square) and high TST (\bullet). The thick black line on the abscissa indicates the sleep recording period. Error bar indicates SE. * $P < 0.05$

Basta et al. (2007) *Chronic Insomnia and Stress System. Sleep Medicine Clinics 2(2):279-291*

Insomnia and the Immune System

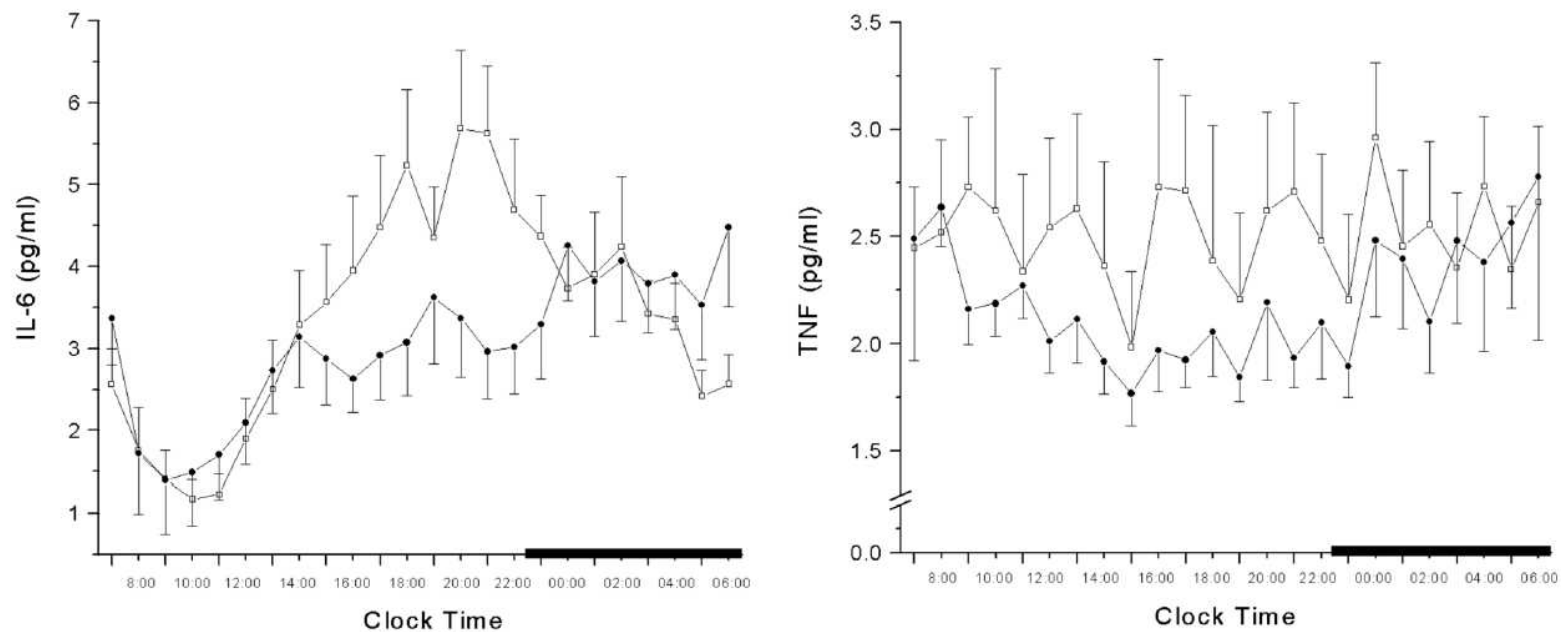
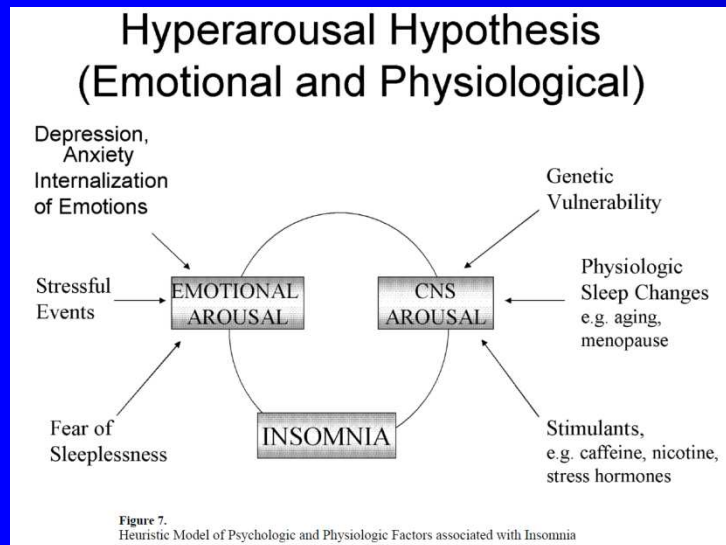


Figure 5.
24-hr circadian secretory pattern of IL-6 (left) and TNF α (right) in insomniacs (□) and controls (●). The thick black line on the abscissa indicates the sleep recording period. Error bar indicates SE. *P<0.05

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Call for CBTi Treatments Targeting ANS Arousal

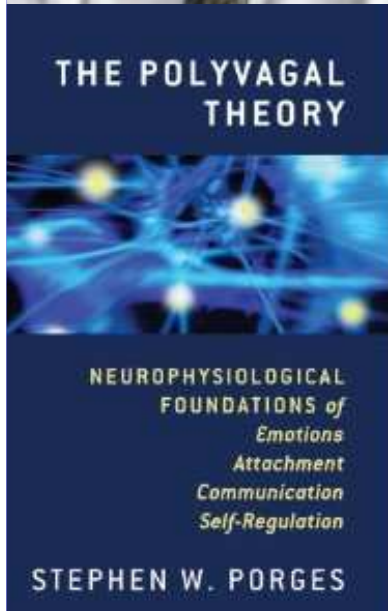


In insomnia objective sleep measures, EEG activity, physiological findings, HPA axis activity and inflammation markers suggests that it *[insomnia] is not a state of sleep*

loss, but a disorder of hyperarousal present both during the night and the daytime."

"The therapeutic approach in insomnia should be multidimensional reducing the overall emotional and physiological hyperarousal and its underlying factors present throughout the 24-hour sleep-wake period."

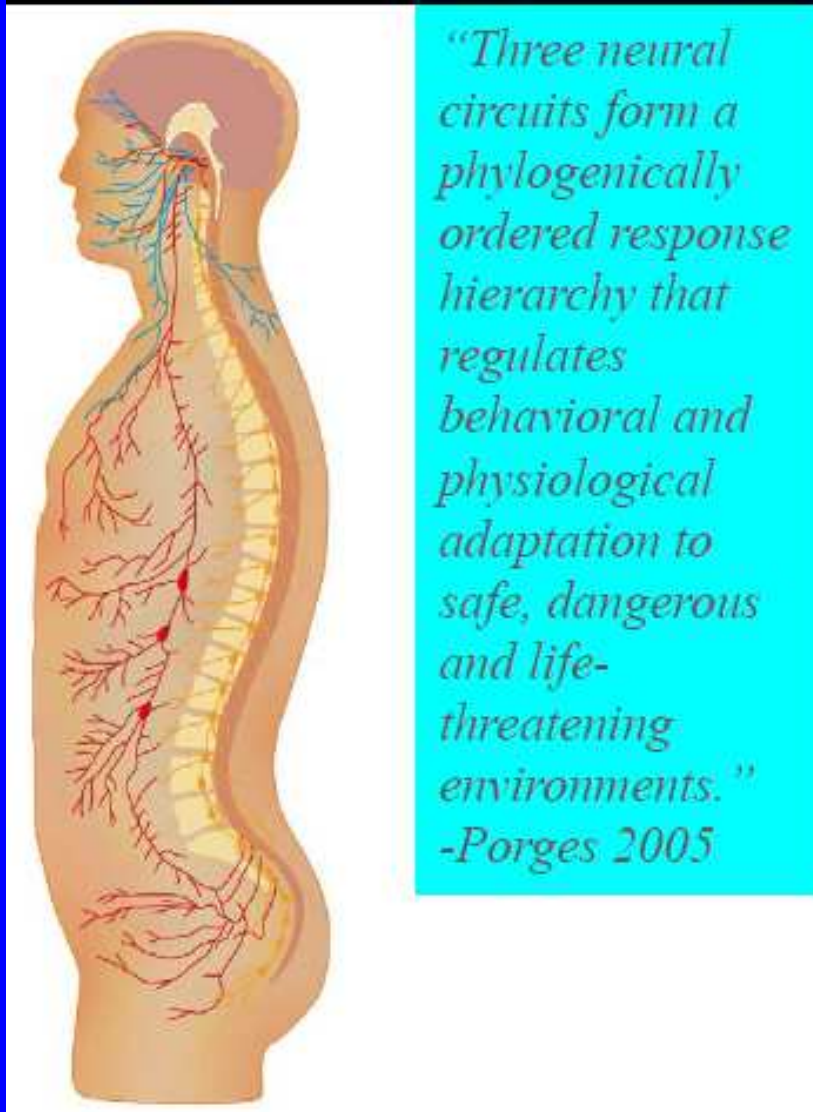
Polyvagal Theory – A Bridge to the Soma-Psyche Bridge



Understand that the Autonomic Nervous System underlies dysfunction of Soma and Psyche and that Polyvagal Theory can contribute novel and effective therapeutic strategies to target this underlying ANS dysfunction:

Neuroception

The Human ANS – 3 Legacy Neural Circuits



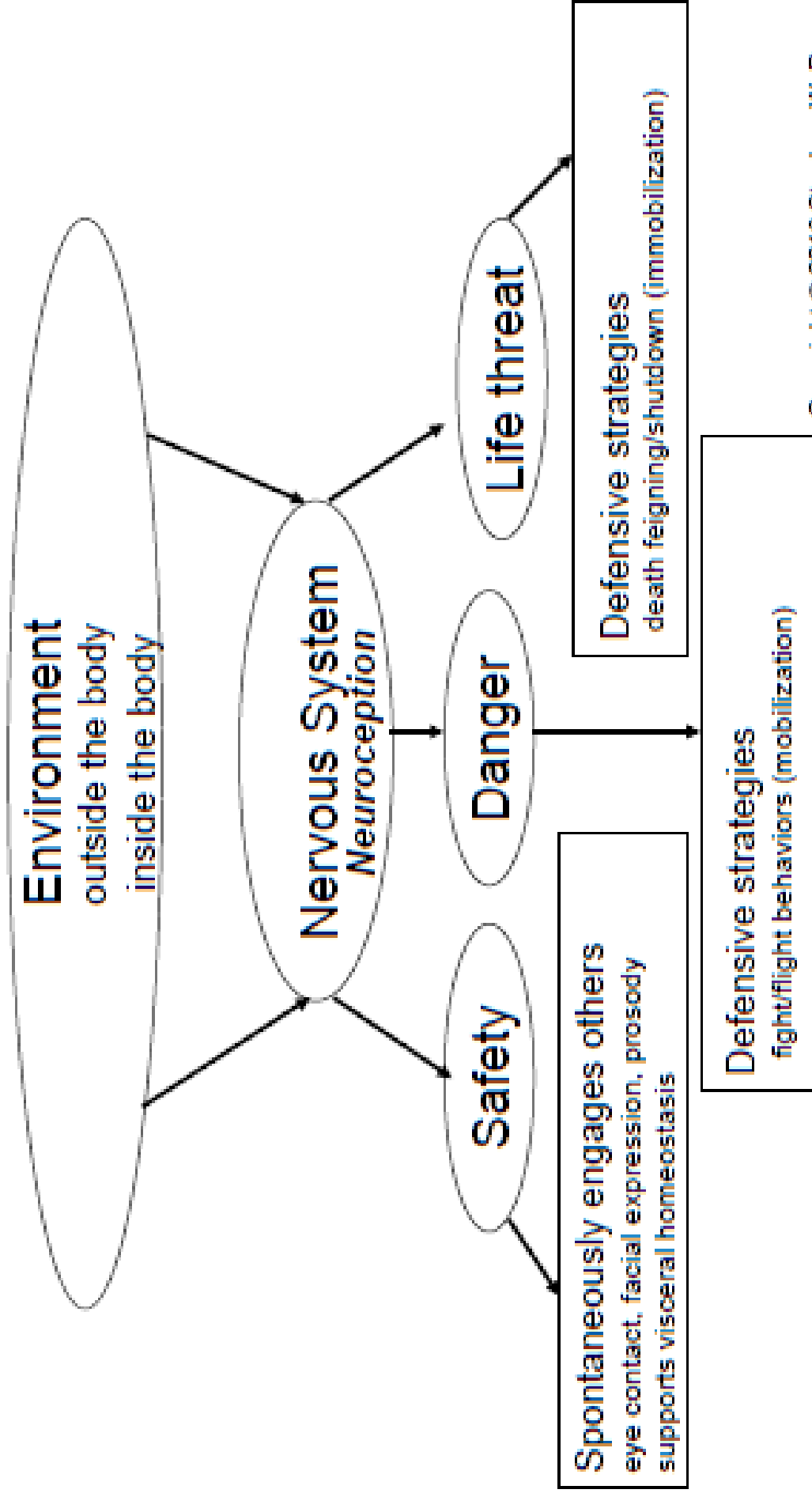
Myelinated mammalian vagus (Ventral Vagal Complex) enables social interactions to regulate physiology and promote health, growth and restoration (sleep) by balancing the unmyelinated vagus and the SNS

SNS mobilization of "challenge" and "fight or flight"

Primitive unmyelinated vagus activating immobilization behaviors

The Quest for Safety:

Emergent Properties of Physiological State



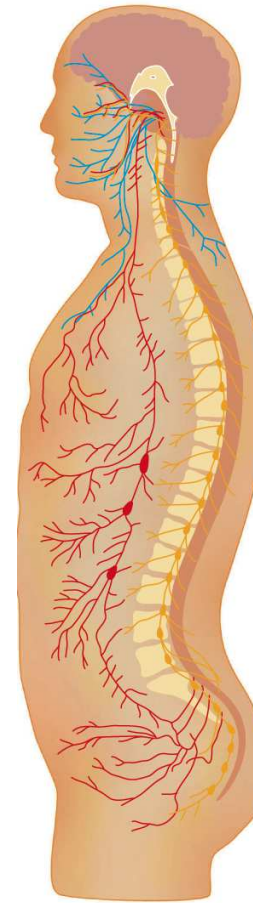
Evolution of the Autonomic Nervous System

“The Ultimate Survival Machine”

Stage One: A primitive passive feeding and reproduction system creating a metabolic baseline of operation to manage oxygen and nutrient-rich blood.

Stage Two: A more sophisticated set of responses enabling mobility for feeding, defense and reproduction via limbs & muscles.

Stage Three: A sophisticated set of responses supporting massive cortical development (i.e., enabling maternal bonding (extended protection of vulnerable immature cortex processors) and social cooperation (language and social structures) via facial functions).



“Three neural circuits form a phylogenetically ordered response hierarchy that regulates behavioral and physiological adaptation to safe, dangerous and life-threatening environments.”
-Porges 2005

Social

- “Love” Transactions
- Social Structures & Hierarchies
- Language
- Empathy
- Contact

Social Engagement occurs via eyes, ears, mouth, voice, touch, facial expression

Sympathetic

- Sexual Climax
- Recreational & Vocational Excitement
- Mobilization (food, fight/flight, sex)
- Daytime alertness & metabolism, muscular activity

Parasympathetic

- Rest & Rebuild
- Meditative States
- Sexual Arousal
- Sleep (4 stages)
- Baseline Metabolism (Heart, Breath, Assimilation)

Neuro Relaxation

Introduction to next generation sleep treatments

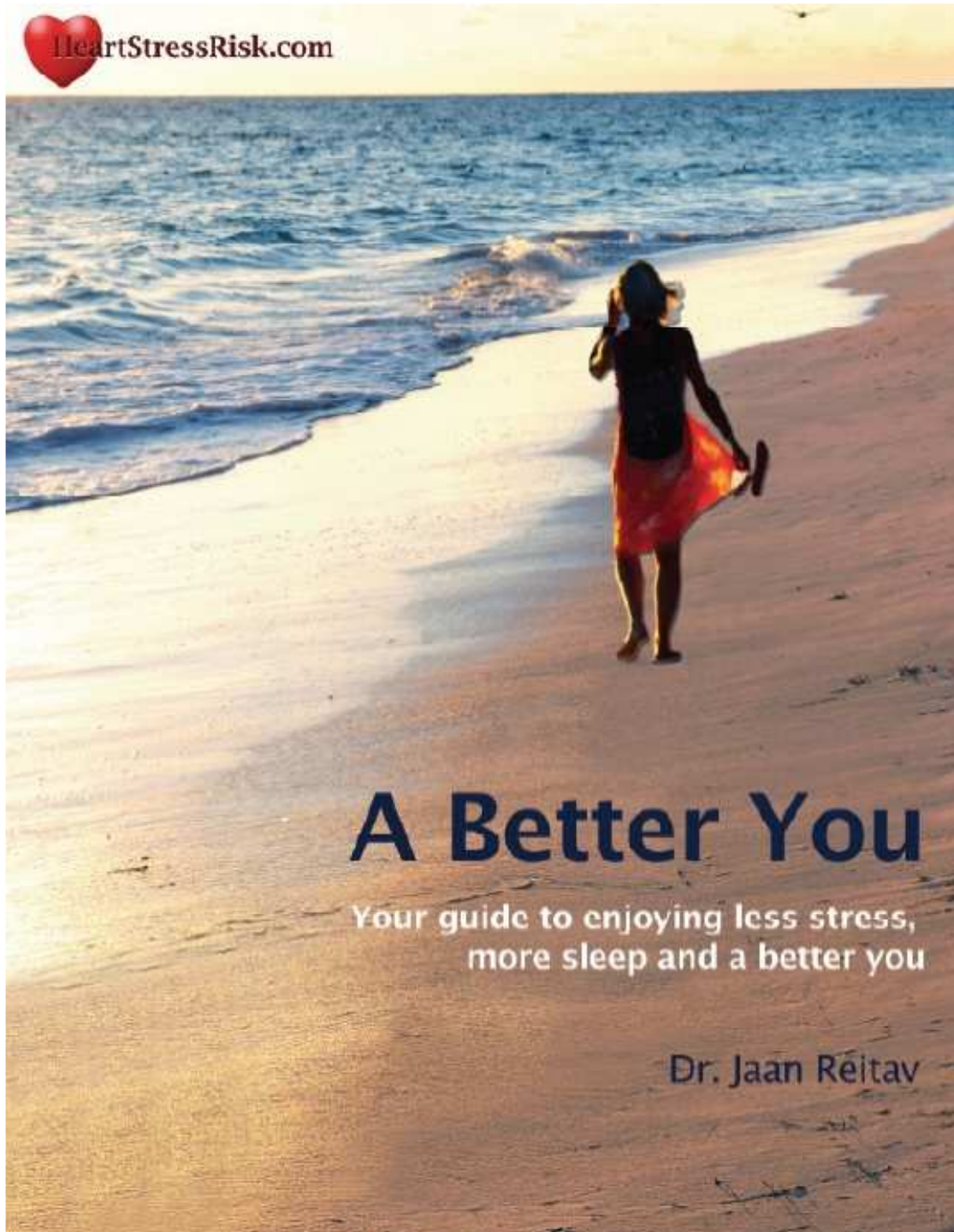
- Paradigm shift: from sleep loss to restoring Autonomic Nervous System (ANS) balance

Based on recent advances in neuroscience:

- Polyvagal Theory (Porges, 2011)
- The Brain's Way of Healing -- Neuroplastic change (Doidge, 2015)



HeartStressRisk.com



A Better You Self Regulation & Social Engagement

Diaphragmatic Breathing

Personal Control

Body Awareness

Restorative Sleep

Mindfulness Meditation

Guided Imagery

Social Engagement

Brain Training for

Resilience

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