The human brain and body change constantly; They are plastic, in the sense of responsive to environmental conditions; including significantly to psychological meaning-making (See Dr. Norman Doidge, *The Brain that Changes Itself*, 2008);
Homeostasis plus adaptability

- Accomplished through the central nervous system - seeks to stay in balance by initiating relaxation when “danger” has passed;
- Metabolism - maintaining blood sugar and blood pressure;
- Repair and regeneration - especially during deep sleep;
- However, the brain and the body adapt biochemically to the perceived state of the environment;
- Perception includes both the sensing of internal and external data picked up by nerves and the meaning the conscious mind makes of what arises to awareness in the cerebral cortex part of the brain;
- This is characteristic of all living systems - they can be seen to reflect their environment
Within one generation: that disease and illness do not present the same ways across cultures;

That different cultural arrangements *affect the nervous system* in different ways;

That the *meaning* that people put onto their experience affects their metabolisms and the state of their immune systems;

That we continue to grow new brain cells throughout our lives;

That the connections possible between brain cells are potentially limitless;

That “genetics may load the gun, but lifestyle pulls the trigger!” (Dr. Pamela Peeke)
Psychotherapy today

- Not only about cognition or behavior anymore but the totality of wellness;
- That to single out mental processes as the only focus of change is artificial and inadequate in the light of the reciprocal influence of physical and mental states;
- We have done “global assessment of functioning” for a long time but there is a new urgency to paying attention to client/patients’ diets, lifestyle habits, and environmental conditions;
- The death of the Western cultural myth of mind/body separation
Multiplicity vs. reductionism

- The mind cannot be *reduced* to the brain - our capacity for making *meaning* transcends or *escapes* the material nature of brain cells and neurotransmitters;
- We see this in *creativity*;
- The present state of our understanding is that we, as well as other living systems, are *not just one kind of thing*;
- That we are enormously complex as beings and *manifest in multiple ways*;
- That our own psychological state has an effect on others (see *mirror* neurons);
- That the *biological and the psychological* dimensions of ourselves are deeply entwined and are not reducible to one another.
Lifestyle and habitual thought intervention

- Evidence for the necessity of a more holistic view of the human condition derives from functional neuroimaging and functional medicine;
- Changes in lifestyle and habitual thought can effect deep biological and psychological change;
- See the work of Dr. Daniel Amen, at www.amenclinics.com
- And Dr. Lissa Rankin, at www.LissaRankin.com
A dynamic spiral of complex interaction

- Ourselves as dynamic (versus genetically determined, for example), very significantly involves meaning-making and the fight, flight-or-freeze response;
- Brain, metabolic, and immune expression, specifically in the form of habituated neural pathways;
- That this is what psychological counseling has been working with all along;
- That this is correlated to if not causal in the bulk of the conditions treated in biomedical practice;
- Which is to say that, as clinical practitioners, whether psychological or biomedical, we are dealing with the stress response in its various expressions (see Amen’s brain scans)
Irony #1: It’s all in your head!

- Counseling client/patients will tell you that doctors have said to them, “it’s all in your head!”
- In fact, yes! Our brains help us make the meaning we assign to any situation;
- And depending on the meaning we have assigned, there are metabolic consequences, especially if habitually negative;
- Psychotherapists and physicians should be working together;
- Example: the hurry disease, and the role of stress in metabolic syndrome;
- Note that wherever the American lifestyle goes, the same chronic illnesses, both psychological and physical, soon follow
A story of how meaning-making shapes the brain: meeting a lion

- Meeting a lion on a bike path;
- Pounding heart and forgetting to breathe;
- Noting *where* it happened, and the conditions: specific parts of the brain paying attention for *future reference*;
- Becoming *hypervigilant* on the basis of *experience*;
- Classic *flight* and *freeze*: the central nervous system under adrenal hormone bombardment
The parasympathetic division of the nervous system: if the lion had been a dog

- If someone had appeared to leash the “dog,” I would have calmed down: my parasympathetic nervous system would have kicked in much more quickly;
- Consider the effect of perceiving oneself under constant threat, for example: the plight of the working poor in our society;
- Ideally, recreational activities, spending time with friends, and especially sleeping restore the nervous system to a healthy baseline of functioning;
- These restorative activities, however, require one more highly significant thing: a positive attitude such as hopefulness, gratitude, and reasons to look forward to the future
Nervous system cascade of effects

Adrenal Medulla
Short Term Stress Response
- Secrete Epinephrine & Norepinephrine
- Physiological Response:
  - Blood glucose levels rise
  - Blood vessels constrict, heart beats faster, blood pressure rises
  - Blood diverted from temporarily nonessential organs to heart and skeletal muscles. Therefore, decreased digestive system activity and reduced urine output.
  - Increased metabolic rate
  - Dilation of bronchioles

Adrenal Cortex
Long Term Stress Response
- Secrete Steroid Hormones
- Physiological Response:
  - Mineralocorticoids:
    - Retention of sodium and water by kidneys
    - Increased blood volume and blood pressure
  - Glucocorticoids:
    - Proteins and fats converted to glucose or broken down for energy
    - Increased blood glucose
    - Suppression of immune system
The tripartite brain
The mammalian brain: the limbic system

- The **amygdala**: stores memories of *emotions* that take the form of connected neural cells and has an attentional bias - *perceived threats*;
- “Repetitive triggering of the stress response makes the amygdala more reactive to apparent threats, which stimulates the stress response, thereby further triggering the amygdala, on and on and on in a vicious cycle”;
- Forms “implicit memories,” meaning *below conscious awareness*;
- Involved in the *chronic anxiety* of many client/patients: depending on their life experiences and the meanings they have attached to them, their state may be divorced from current experience (Rankin, *Mind Over Medicine*, pages 133-134);
The hippocampus: explicit memory

- This part of the mammalian brain “gets worn down by the body’s stress response”;
- Cortisol and other glucocorticoids weaken synapses in the brain and inhibit the formation of new ones;
- In turn, fewer new memories;
- Lack of clarity about the origin of emotions, staying stuck in the past, feeling triggered without understanding why;
- Depression: also leads to the stress response;
- Too much cortisol leads to the depletion of norepinephrine, dopamine, and serotonin, resulting in the classic symptoms: apathy, and lack of pleasurable feelings
Negative emotion

- Enhances the production of pro-inflammatory cytokines;
- Linked to certain cancers;
- Alzheimer’s, arthritis, osteoporosis, cardiovascular disease, delayed wound healing, infection, gastrointestinal disorders, endocrine disorders, and more. . . (Rankin)
The brain: Grand Central Station

- The brain is responsible for *routing, relaying, coordinating*, and *sorting* stimuli or *input* based on the operation of feedback loops;
- These loops are behaviorally and experientially *conditioned*;
- Most of this processing proceeds well below conscious awareness (fortunately for us);
- Awareness on the basis of the cerebral cortex occurs as the last stage of processing, at which point we can also make *decisions* about what has arisen and/or *manipulate* the thoughts and sensations - we can choose to act, attach meaning, etc.
- This ability grows in the course of our maturation from infancy onwards
Thoughts: the stuff of psychotherapy

- With the appearance of the ability for abstract thought, we also become capable of generating our own internal, mental perceptions;
- This is the material that psychotherapists usually work with;
- This material is now known to have its own effects not only psychologically but also biologically;
- In this sense, thoughts are a force (see the work of Dr. Jeffrey M. Schwartz on OCD - “brain lock” - at www.jeffreymschwartz.com);
- A psychotherapist will ask, how are you feeling? But feelings are understood generally to derive from a mental perception.
The significance of the feeling tone: degrees of trauma

- Neuroscientist Dr. Paul MacLean (the tripartite brain): the reptilian, the mammalian, and the primate/higher consciousness;
- Psychological trauma researchers and psychologists such as Dr. Bessel van der Kolk and Peter A. Levine;
- Feelings grow out of the form of people’s experiences, the meaning they make of them, and the age or developmental stage at which they occurred;
- These processes create neural nets that even contribute to people’s stable sense of identity/personality and can last a lifetime;
- the psychotherapist’s task is to help client/patients shed light on their experiences and the meaning or sense they have made of them
“The talking cure” changes the brain and more . . . .

- When we make new sense of our life experience, even just through shedding light on our experience, and when we live differently, our brains and bodies change;

- Recursive, unproductive, negative thinking and the stress response reflected in one’s emotional state can be changed such that new and different neuronal connections grow, producing different hormonal and neurotransmitter cascades;

- These unique and specifically synthesized hormone blends reflect the individual’s biopsychosocial milieu;

- And go on to impact, for good or for ill, the functioning of the immune system
Cyclists and mountain lions: are two cyclists better than one?

- Catching up to my husband on the bike trail, I felt safer and my adrenal reaction subsided, although I’m not sure in fact that two of us would have been a better match against a lion’s attack than one!
- By definition, our psychological states are generally not rational; without self-awareness we tend to live in a sea of emotional reaction;
- Rationality is the last and arguably least accessed function of the brain (despite the Age of Enlightenment)!
- Consider the metabolic and immune system effects then of never feeling safe; the co-incidence of metabolic syndrome and poverty - not only poor diet and lack of exercise but the continuous stress of frightening conditions
Psychotherapy, like many healing arts, is capable of inducing the relaxation response, based on the placebo effect:

- In the presence of a caring, knowledgeable, trusted healer, the client/patient relaxes habitual psychological defensiveness, experiences a reduction of stress hormones, and associates the interaction with the healer as beneficial;

Medical anthropology has observed the behavioral dimensions of this connection for a long time (see Claude Levi-Strauss) and is now in a better position to explain it from a biomedical point of view (see also the work of Dr. Arthur Kleinman, psychiatrist and anthropologist, at ghsm.hms.harvard.edu/person/faculty/arthur-kleinman);

- In the placebo effect, meaning-making and the relaxation response appear together
Healer implications

- The enormous potential of working to become a healing presence;
- Through such practices as meditation, mindfulness, breath work, and tai chi;
- A connection made long ago in Chinese medicine
The work of psychotherapy

- Helping client/patients become aware of how their thinking is affecting their experience of life;
- This experience, as we now know, is not psychological only; it is implicated in every disease state;
- The psychological enterprise should, therefore, be holistic;
- Essentially a teaching mission begun first of all by meeting the client/patient where they are from a completely non-judgmental perspective;
- Listening very carefully for the circumstances of their lives, both inner and outer, and the meaning they are making out of those conditions;
- Careful questioning designed to provoke self-reflection, on the basis of a mutually respectful relationship
Innate healing arises

- When the client/patient feels held and supported, on the basis of not being judged for their condition, their innate healing ability can arise as their awareness expands and they find they have choices;

- In a good client/patient/practitioner match, the relationship itself significantly contributes to the motivation to change;

- Our current understanding of this dynamic appears to have to do with the mitigation of the stress response and the conditioning, expectation, and meaning-making that are part of the placebo effect;

- That none of these factors appear to be reducible to any of the others;

- However, it appears that a client/patient’s view of the world may be the most significant variable and should not be neglected by a practitioner (see the work of Jo Marchant, Ph.D., biologist, geneticist, and science writer, and her new book *Cure: A Journey into the Science of Mind Over Body*).
Irony #2: psychiatry and “real” medicine

- For over one hundred years psychiatry has struggled to legitimize its existence as medicine when now we can say that the most effective clinicians, whether working in the biological or the psychological sphere, have always recognized the apparently mysterious influence of client/patients’ attitudes on their health and well-being;
- We had to see empirical proof, a structure of our culture;
- This is not to say that all the mysteries have been solved - see Jeffrey Schwartz’s descriptions of attention as collapsing the probabilistic field at the subatomic level
Conclusion

- Psychological counseling *changes the brain*, as does any chemical or biological or lifestyle intervention;
- The nature of our relationships with client/patients is itself a very significant variable in their healing, based on the alleviation of the stress response and the placebo effect;
- Let us *model* what we are learning about how the brain and the body, which cannot be separated functionally, are *expressions of our lifestyle and thought world*;
- Let us in this way be a source of *inspiration* and *encouragement* to our client/patients;
- Let us *advocate* for positive, healthy lifestyles and *community* conditions
Dr. Rankin’s Whole Health Cairn