The Biological Brain
or the Psychological Mind?

Robert Walker, M.S.W., L.C.S.W.
Assistant Professor
University of Kentucky College of Medicine,
Department of Behavioral Science and Center on Drug and Alcohol Research
The brain

- The human brain accounts for about 2% of body mass (2-3 pounds) but uses 30% of our calories. It is 80% water, so about we have only about 10 ounces of solid stuff in the brain.

- Every thought, sensation, behavior, motor function, perception, feeling, and mood is a product of neural activity.

- There are about 100 billion neurons in the average adult brain.

- Each neuron has between 6,000 and 10,000 connections to others.
The brain

- Is not the same thing as the mind – the mind is consciousness.

- And the brain runs countless programs that never make into consciousness.

- It works even when we are sleeping and when we are not conscious.

- It is a great multi-tasker.
The mind

- Every single mind that has ever existed is completely unique.

- Even the minds of identical twins will be uniquely different by adolescence or early adulthood.

- Every mind is shaped by experience.
The mind

- Is not the same thing as the brain.

- It is a portion of what the brain does.

- What we think of as mind is really consciousness that can include:
  - Self-aware consciousness
  - Day-to-day thinking and relating to our world.
  - Problem-solving, thinking about our selves, wants and needs.
But we have a dilemma

- Science has given us two massive bodies of research and thinking.
  - One is the science about the brain.
    - Neurons, neurotransmitters, axons, dendrites, receptor sites, etc.
  - The other is the science of our minds.
    - Human agency, free will, the autonomous self, intentionality
But they are totally different sciences that don’t really relate to each other very well
Knowing the mind and knowing the brain

- The brain is tricky – it doesn’t tell us what it is doing.

- We have to use science to know about it.

- But we **do** know our minds first-hand (well, sort-of).
  - We can know what we are thinking
  - We can know what we are feeling
  - We can know what we are doing
Who’s in charge here?

- Most of us don’t feel in control of our brains.
- In fact, we tend to think our brains are in control of us.
- This has huge implications for the use of brain science in addictions.
Why?

- The brain keeps itself a secret.
- It is a hidden power.
- We know it’s there, but can’t feel it at work or see it.
- It’s work is behind the scenes and therefore it seems “mysterious.”
In fact,

- The only way we can know anything about our brains is to read about them.

- We are completely dependent on science to tell us what is going on in there.

- And that is only in a general way – that is, about brains in general – not our particular brain.

- But, with our own minds, we think we are the authorities!!!!
Even with aids...

- With biofeedback we get some information, but again, it is the brain’s output, not direct watching of our brains.

- MRI, fMRI, PET, and SPECT all give us some glimpses into our brains, but you can’t do it yourself.

- AND all of these imaging approaches involve interpretation of data coming in – they aren’t direct observations.
We are stuck

- Two totally different worlds – brain ...
- And mind

- And there are totally different kinds of accountability for what these two are up to.
  - If “your brain” did it, is it really your fault?

- We don’t have this problem with any other part of the body.
So...

- For most of us, “I am digesting my lunch” is really the same reality as “My stomach is digesting my lunch.”

- We readily see parts of our bodies as “us” and can watch them in action or feel them at work.

- And, unless we have automatic arm disorder, we do not think “My arm did this to me.”
Although...

- We do sometimes say, “My brain is wired that way” to explain a weird startle response or some obsessive trait.

- “Or my brain was dead” to explain why we goofed up a test.

- But in most areas of our experience of ourselves we think only of our minds, not our brains.

- Unless we get caught at something!
We don’t say

- “My brain delivered some intense anger feelings yesterday.”
  - We say, “I was really ticked off yesterday”

- Or,

- “My brain was releasing large amounts of oxytocin, giving out warm feelings about that movie we saw.”
  - We say, “I really liked that film.”
We do say...

“I am mentally exhausted” but it actually means..

My MIND is unable to concentrate anymore. I cannot focus my MIND. I don’t want to do this right now.

We are NOT saying the brain is really exhausted because it has no way to tell us it ‘feels’ exhausted.

We can infer that the brain is tired from the fact they we have a distracted mind.
We have to get to our brains through our minds.

But our minds are produced by our brains.

So is it that our brains are talking to our brains?
Well, in Addictions, we have a special dilemma

- If we believe that addiction is a *brain disease* and that it is a matter of neurotransmitters and brain anatomy out of synch.........

- And that it is *not* a product of minds deciding to get high or addicted....

- Then what accounts for commitments to recovery or decisions to enter treatment?
What decides to continue in a life of recovery?

Or, what decides to relapse?

Are these decisions from the mind?

Or more neural glitches in the brain?

Now, hold all of this for a moment.........
Let’s take a side tour for a moment

- We’ve learned where in the brain lots of things happen.

- We know where speech occurs.

- We know where fear and anxiety occur.

- We know where sexual arousal occurs.

- We know where watching a movie occurs.
Where things happen in our brains
So, where’s the addiction going on?

- We can talk about where alcohol or oxycodone is working on the brain – (well, to some extent).
We know some of the regions involved...

- The Nucleus accumbens
- the Ventral tegmental area
- The basal ganglia
- The orbital frontal cortex
And, we can now talk about some of the specific effects of marijuana on the hippocampus and on its glial cells.
But, it turns out...

- These characterizations of neurotransmitter functions are *at best superficial cartoons*.

- We know how to tamper with these neurotransmitters and receptors (with drugs), but are they really at the root of the problem?

- Probably not...... it’s much more complex than that.
It ain’t just neurons....

- Neuroscience continues to find more and more complexities far beyond these cellular structures.
- We’re moving beyond the idea of regional activity
- Plus, our ability to map neural networks has greatly increased.
So, conscious of something is a product of millions of neural interactions across wide regions of the brain.
So, where is addiction???

- It’s everywhere.

- We find traces and artifacts of substance abuse all through the brain – both as ‘causes’ and consequences.

- It is manifest in reduced or changed activity in the frontal lobes, the hippocampus, the amygdala, the anterior cingulate gyrus, the striatum, the locus coeruleus, the VTA and nucleus accumbens – all over the place.
And where is the mind?

- Same place – all over the entire brain.

- So, can we say an ‘addicted mind’ as well as an addicted brain?

- And, if so, what about the differences in these two statements in terms of accountability?
Add some more complexity

- We’ve long known that the brain gives us our minds...

- But now with advances in neurodevelopmental studies we’re seeing that our minds actually give us our brains.
Every mental or physical act requires brain activity.

Every time one reiterates a thought or activity, one strengthens the connections between neurons and neuronal groups.

So, mental exercise actually strengthens brain capacities not unlike physical exercise strengthening muscle groups.
Neural dendritic growth

So, yes, Virginia...

- There is a Santa Claus that can give the gift of improved brains.

- Our minds do not simply run as software on a fixed hard drive or in a fixed operating system.

- Unlike your PC or Mac, every time you run your mental software, you make changes in the hardware.
But, if we resurrect interest in the mind instead of the brain

- We run into that old boogey – the will, one of the foremost products of human minds.

- We all form intentions in what we look at, think about, seek out, and do.

- But we have been coached to discard this idea when considering certain addictive diseases and mental disorders.
Intentionality and disorders

- We have largely divested addictive disease, depression, PTSD, anxiety disorders, schizophrenia, and bipolar disorder of any artifacts of willed contribution.
  - (Let’s be reminded of good old Calvinism and its artifacts on moral judgments.....)

- We now tend to see these conditions as ‘brain diseases’ that arise outside of conscious intentions.
And, in the addictions, we say

- Surrender to a higher power because one cannot will oneself into recovery.

- But what is it that ‘surrenders?’ Does the brain do this or does the mind will surrender?

- In the addictions field we inherit an Augustinian distrust of the human will (and often for very good reasons).
But Intentions *and* blaming are still with us

- Free will is a *social fact* (not a neurobiological fact) that serves three social purposes:
  1. It underpins legal responsibility
  2. It underpins moral/religious blameworthiness
  3. It defines what we mean by an autonomous self

- It is the last of these that we want and not the first two.
- If we hold rigorously to the brain disease hypothesis for these disorders, we tend to diminish the role of mind in recovery.

- If we diminish mind, we may inadvertently be dismissing something very important about the sense of self.

- Remember, it is the self, the mind that has the most to offer in brain growth.

- AA/NA prepares you to do brain growth but neither alone can do it.
Healthy stimulation of mind means restored brain health

- In healthy recovery, we should be teaching the mind to do things that increase brain health.

- Examples
  - More reading
  - Exercise, yoga
  - Social interaction around healthy ideas and activities
  - Memorization
  - Meditation, prayer, contemplation
  - Listening and then talking about what was heard
  - Writing – personal experiences, feelings, thoughts, etc.
Side by Side

Healthy

Drug User
When we use spiritual means of recovery is it brain work or mind?
When we envision alternative worlds and new ways of living, is it our brains or our minds doing the heavy lifting?
Implications for Us

- Perhaps the sciences need more integrated work.

- The study of the mind can inform the study of the brain just as study of the brain has shed light on our minds.

- We need to remember, these two are tied together...

- Our pathetic attachment to ‘evidence-based practices’ does not even begin to scratch the surface of what the new neurosciences are telling us.
Perhaps we need to put the psychological mind back into addiction studies in a new way.

We might begin teaching **brain hygiene** to our minds as a way to coach better brains AND behavioral health.

Rather than trying to treat the brain with external interventions...

We might try to use the mind to restore or grow the brain.
But this raises some old ideas

- If we put our focus on the mind in addictions treatment and recovery...

- We may need a lot more training on how to get the psychological mind and the biological brain in synch for recovery.

- Does this not beg the issue of will and intentions? Perhaps so.....
We need a new science of intentions and will.

It is about the only thing we have any conscious control over...........
Healthy mind practices

Recovered brain health

With better mind-brain awareness, we can begin to see how the one can improve the other and vice versa...... Real recovery!!!!