Neurodharma:
Growing the Deepest Roots
Of the Highest Happiness

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Mind in Life
We can know ourselves in two ways:
• From the outside in, objectively, informed by science, particularly by neurobiology
• From the inside out, subjectively, informed by modern psychology and perennial wisdom

“Neurodharma” is where these two meet.
An Overview of Current Research

Much research on people that psychological practices lead to psychological benefits, presumably via changing their brains.

Much research on other animals that various stimuli lead to many kinds of changes in their brains.

Some research that psychological practices change people’s brains.

Scattered research on deliberate internal mental factors that lead to individual differences in gains from experiences.

“The absence of evidence is not evidence of absence.”
Key Mechanisms of Neuroplasticity

- (De)Sensitizing existing synapses
- Building new synapses between neurons
- Altered gene expression inside neurons
- Building and integrating new neurons
- Altered activity in a region
- Altered connectivity among regions
- Changes in neurochemical activity (e.g., dopamine)
- Changes in neurotrophic factors
- Modulation by stress hormones, cytokines
- Slow wave and REM sleep
- Information transfer from hippocampus to cortex
Think not lightly of good, saying, “It will not come to me.”

Drop by drop is the water pot filled.

Likewise, the wise one, Gathering it little by little, Fills oneself with good.

Dhammapada 9.122
Which Means Changing the Brain
For the Better
Neurons that fire together, wire together.
Have It, Enjoy It
In the Garden of the Mind

1. Be with what is there
2. Decrease the negative
3. Increase the positive


“Being with” is primary – but not enough. We also need “wise effort.”
In these ways, we can develop seven aspects and *factors* of the highest happiness:

- Steadiness
- Warmheartedness
- Fullness
- Wholeness
- Nowness
- Allness
- Timelessness
In the beginning, nothing came.

In the middle, nothing stayed.

In the end, nothing left.

Milarepa
Keep a green bough in your heart, and a singing bird will come.

Lao Tzu
Steadying the Mind
Basics of Meditation

- Good will toward yourself
- Posture that is comfortable and alert
- In the present; aware and letting go
- Stable object of attention
- The mind settling and coming to rest
Mental Factors of Steadiness

• Establishing intention
• Relaxing body and breath
• Warming the heart
• Feeling safer
• Opening to positive emotions
Neural Factors of Steadiness

Intention – Top-down and bottom-up
Relaxation – Parasympathetic NS
Heartwarming – Social engagement sys.
Safer – Calms sympathetic NS
Positive emotions – Steadies attention, reduces “craving”
Warming the Heart
Bring to mind beings who care about you . . . Focus on feeling cared about. . . Take in this experience.

Bring to mind beings for whom you have compassion . . . Receive the sense of compassion into yourself . . . Know what compassion feels like.

Be aware of your own burdens, stresses, and suffering – and bring compassion to yourself . . . Get a sense of caring, warmth, support, compassion sinking deeply into you.
“Anthem”

Ring the bells that still can ring
Forget your perfect offering
There is a crack, a crack in everything
That’s how the light gets in

Leonard Cohen
Resting in Fullness
Our Three Fundamental Needs

Safety

Satisfaction

Connection
Meeting Our Three Fundamental Needs

- **Safety**
  - Avoiding harms (threat response)

- **Satisfaction**
  - Approaching rewards (goal pursuit)

- **Connection**
  - Attaching to others (social engagement)
The Evolving Brain
Pet the Lizard
Feed the Mouse
Hug the Monkey
Coming Home

Peace

Contentment

Love
Being Wholeness
The Parts and the Whole

Suffering is parts struggling with parts. Which includes not accepting yourself fully. Meanwhile, there is always mind as a whole. Mind as a whole simply is, not a problem. When you experience your mind as a whole, suffering falls away.
What helps us experience the mind as a whole?
Self-Focused (blue) and Open Awareness (red)

Ways to Activate Lateral Networks

Focus on the present moment.
Don’t problem-solve, fantasize, or ruminate.
Relax the sense of “me” and “I.”
Widen into a panoramic view.
Rest in “don’t know mind.”
Sense your body as a whole.
Sensing Your Body as a Whole

Be aware of sensations of breathing all over your body.
Pick an area (e.g., chest) and include all the sensations there as a single whole.
Relax and receive sensations.
Gradually include more of your body.
Abide as a whole body breathing.
Receiving Nowness
Enlightenment is to forget this moment and grow into the next.

Suzuki Roshi
Let go of the past, let go of the future, let go of the present, and cross over to the farther shore of existence.

With mind wholly liberated, you shall come no more to birth and death.

Dhammapada, 24.348
Now is the great mystery: infinitely thin temporally, yet containing everything.

Imagine super-slow motion mindfulness of the emergent edge of Now, coming into being as it passes away.
The neural networks of alerting track the leading edge of the windshield of consciousness.

These alerting networks entwine with allocentric networks that support the sense of being one with everything.
If you let go a little, you’ll have a little peace.

If you let go a lot, you’ll have a lot of peace.

If you let go completely, you’ll be completely peaceful.

Ajahn Chah
Letting Go

Rest in a sense of alrightness . . . peaceful, contented, warmhearted.

Be mindful of this moment continually emerging . . . so it’s alright to let go.

Let go while exhaling.

Be mindful of sensations, all experiences changing . . . letting them pass away.
Opening into Allness
The Buddha: “Bahiya, you should train yourself thus: In reference to seeing, there will be only seeing. In hearing, only hearing. In sensing, only sensing. In cognizing, only cognizing.

When for you there is only seeing in seeing, only hearing in hearing, only sensing in sensing, only cognizing in cognizing – then, Bahiya, there is no you in connection with that.

When there is no you in connection with that, there is no you there. When there is no you there, you are neither here nor yonder nor between the two. This, just this, is the end of suffering.”
Blissful is passionlessness in the world, the overcoming of sensual desires. But the abolition of the conceit “I am” – That is truly the supreme bliss.

Udana 2.11
To learn the Buddha way is to learn about oneself.

To learn about oneself is to forget oneself.

To forget oneself is to perceive oneself as all things.

Dogen
Legrand & Ruby, 2009. Psychological Review
As the sense of “self” eases, there is a growing opening into everything.
When we try to pick out anything by itself, we find it hitched to everything else in the universe.

John Muir
How might the sense of oneness manifest in the brain?
Allocentric Framework

Based on more ancient regions of the brain
Being-ness; alrightness already
What it is, independent of “me”; impersonal
Upper visual field
Egocentric Framework

Based on more recent regions of the brain
Doing-ness; goal-directed
Where it is, related to “me”; personal
Lower visual field
The Allocentric/Egocentric Dance

Alternately normally
As one increases, the other decreases
With new stimuli – thus, alerting – allocentric increases briefly, then egocentric response shaped by the hedonic tone
Factors of Allocentrism

Fullness – nothing missing or wrong
Wholeness – wide inclusive awareness
Nowness – alerting, openness
Tranquility – GABA-regulated switches
Recognizing interconnectedness – you’re a local ripple in the vast ocean of causes
Only Allness

Much as the mind is a whole, the material universe is a whole.
The allness that includes every sort of mind and matter is also a whole.
Allness as allness is always allness.
Much as mind as a whole is never a problem, allness as allness is never a problem.
Opening, in Peace

Feeling at ease . . . tranquil and alert
Your gaze or imagination extend out to the horizon and beyond
Experiences flowing, edges softening
Knowing you are lived by everything
Opening into allness
Intimations of
The Unconditioned
What is it that is true?
My mind has reached the unconditioned.

I have attained the destruction of craving.

Dhammapada 11.154
The entire world is in flames, the entire world is going up in smoke; the entire world is burning, the entire world is vibrating.

But that which does not vibrate or burn, which is experienced by the noble ones, where death has no entry – in that my mind delights.

The Buddha
The born, come-to-be, produced,
The made, the conditioned, the transient,
Conjoined with decay and death,
A nest of disease, perishable,
Sprung from nutriment and craving’s cord –
That is not fit to take delight in.

The escape from that,
The peaceful, beyond reasoning, everlasting,
The not-born, the unproduced,
The sorrowless state that is void of stain,
The cessation of states linked to suffering,
The stilling of the conditioned – bliss.

Itivuttaka 2.16
Consider what may be always just prior to the emergent edge of now.

Also consider whether consciousness is necessary for quantum potentiality to congeal into actuality Now . . . continuously, throughout the universe.
Be still
Listen to the stones of the wall
Be silent, they try
To speak your
Name.
Listen to the living walls.
Who are you?
Who
Are you? Whose
Silence are you?

Thomas Merton
Pointing directly to the heart-mind

See your own nature

And become Buddha.

Hakuin
Suggested Books

See RickHanson.net for other good books.

Selected References

See www.RickHanson.net/key-papers/ for other suggested readings.


Suggested References - 2


Supplemental Materials
The Negativity Bias

As the nervous system evolved, avoiding “sticks” was usually more consequential than getting “carrots.”

1. So we scan for bad news,
2. Over-focus on it,
3. Over-react to it,
4. Turn it quickly into (implicit) memory,
5. Sensitize the brain to the negative, and
6. Create vicious cycles with others.
Neural Factors of Steadiness

Intention – Top-down and bottom-up
Relaxation – Parasympathetic NS
Heartwarming – Social engagement sys.
Safer – Calms sympathetic NS
Positive emotions – Steadies attention, reduces “craving”
Neural Substrates of Empathy

• Three *simulating* systems:
  – **Actions**: “mirror” systems; temporal-parietal
  – **Feelings**: resonating emotionally; insula
  – **Thoughts**: “theory of mind”; prefrontal cortex

• These systems interact with each other through *association* and active *inquiry*.

• They produce an automatic, continual re-creation of aspects of others’ experience.
Calming the Visceral Core

- A brief explanation of heart rate variability
- Relax.
- Gently lengthen exhalations . . . As long as or longer than inhalations . . . Then letting breathing be soft and natural.
- Bring attention into the chest and area of the heart.
- Be aware of heartfelt feelings . . . Perhaps love flowing in and flowing out in rhythm with the breath.
Feeling Alright Right Now

• Aware of the body going on being . . . Enough air to breathe . . . The heart beating fine . . . Basically alright . . . Now

• You may not have been basically alright in the past and you may not be basically alright in the future . . . But now you are OK . . . Still basically OK . . . Now

• Letting go of unnecessary anxiety, guarding, bracing

• Reassurance, relief, calming is sinking into you . . . Still basically alright . . . Now
Calm Strength

Calming in the body and mind
Feeling strong
What feels good about calm strength?
Calm strength while aware of others
Calm strength with goodwill for others
Softening All the Edges

Relaxing, abiding as a body breathing
Sensations softening together
Heart softening
Everything in the mind softening together, a single mind process, awareness included
Edges softening between you and everything