What Medical Neuroscience Can Learn from Near-Death Experiences
Clinical and Scientific Perspectives

Robert G. Mays, BSc
Suzanne B. Mays, CMP

www.selfconsciousmind.com

IANDS 2014 Conference, Newport Beach, California
August 29, 2014
Important aspects of near-death experiences
Many triggers of NDEs

- No physiological explanation fits all cases
  - Hypoxia, hypercarbia, administered drugs, etc.
  - Endogenous neurochemical factors: endorphins, DMT, etc.
  - Temporal lobe seizure, REM intrusion, etc.

- No correlation of NDEs with physiological factors
  - Many NDEs occur with no hypoxic condition
  - Many people near death with hypoxia do not report an NDE
  - If hypoxia were the cause of NDEs there would be a strong correlation
  - Same case for all other physiological explanations

Many triggers of NDEs...

- NDEs are not like the experiences reported in proposed physiological factors
  - Nearly all NDErs report...
    - Hyperreal experience: our experience in this realm is the dream
    - The other realm is my “true home”
    - Absolute conviction that we do not die, “I’m no longer afraid to die”
    - The other realm is permeated by unconditional Love and an all-pervasive Light
  - These characteristic aspects are not present in hypoxia, REM intrusion, etc.
- Recent study: no difference in the intensity and content between non-life-threatening NDEs and NDEs occurring with coma

Consistent commonality

• There appears to be a consistent commonality among NDEs, independent of physiological factors
  – *Same* experience regardless of the precipitating situation
  – Physiological causal explanations don’t apply

• What *is* common is the state of consciousness relative to the physical body
  – Sense of separating from the body
  – Experience of being free of physical constraints of the body
  – Transcendent elements consistent with separation (e.g. told must return)
  – Sense of returning to the body
Veridical perceptions

• NDErs report veridical perception of events:
  – During cardiac arrest, while unconscious or in coma
  – From a perspective outside their body
  – Outside the line of physical sight or in a different location

• Reports of apparent veridical perception are nearly always accurate
  – 92% of cases in the NDE literature verified as completely accurate
  – 6% had some errors
  – Only one of the 93 cases was completely inaccurate

Veridical perceptions...

• Numerous cases with third-party verification
  – Maria’s shoe: tennis shoe observed on a window ledge during cardiac arrest
  – Al Sullivan case: cardiac surgeon “flapping” his arms
  – Dr. Lloyd Rudy case: patient observed several unique things while pronounced dead at least 20 minutes
  – 78 verified cases documented in a recent book from NDE researchers in the Netherlands

• Consciousness appears to operate outside the body with no apparent supporting brain function

Shared-death experiences

• A person attending a dying loved one experiences the dying process along with the loved one
  – Unusual, heavenly light and music in room, seeing the person’s spirit leave the body
  – Out-of-body, witnessing the dying person’s life review, tunnel opens, deceased relatives come escort the person
  – Elements very similar to NDEs, including veridical information

Shared-death experiences...

- The SDEr appears to be an objective witness of the process of dying
  - The SDE itself is very similar to the content of NDEs
  - The observed process of the dying person is also very similar to the content of NDEs
  - Is the content of an SDE actually “shared” by the dying person?
    - Note cases of “shared near-death experiences”

Victor Hugo on his deathbed
Mutual corroboration

• NDEs and SDEs are mutually corroborative
  – The SDEr observes the dying person going through the same experiences as an NDEr does — the main difference is that the NDEr returns to life, the dying person dies
  – The SDEr herself also experiences many of the same elements as an NDEr — the main difference is that the SDEr is perfectly healthy, the NDEr may be “near death”

• Other phenomena around death such as “terminal lucidity” are also mutually corroborative with NDEs and SDEs
  – TL occurs in dementia and schizophrenia patients, shortly before death
  – Memory and other mental faculties are suddenly restored and the patient becomes lucid again

Mutual corroboration...

• Raymond Moody and Peter Fenwick both have commented:
  – The phenomena around death appear to be part of a common picture of the mind and brain during the dying process

• We assert: NDEs, SDEs and related phenomena are objectively what they appear to be—they are objective realities
A new hypothesis about the brain and mind
Motivations for a new hypothesis

1. No causal connection between NDEs and physiological or psychological factors
2. Profound, vivid experiences and memory while no brain activity
3. Sense of separating from and returning to the physical body
4. Sense of independence from the constraints of the physical body (no pain, vivid senses and thoughts, no disabilities)
5. Veridical perceptions outside of physical body
6. Corroborative phenomena implying NDEs are objective realities

→ Consciousness appears in certain circumstances to separate from and to operate independent of the brain

→ Consciousness is an objective entity in itself
A new hypothesis

Mind-entity hypothesis – based on NDE phenomena

- The “mind” is an objective, autonomous entity that can separate from and operate independent of the brain

- NDE evidence suggests:
  - The mind-entity can interact energetically with physical processes
  - The mind-entity is the seat of all cognitive faculties including memory
A new hypothesis...

Ordinarily the mind-entity is united with and dependent on the brain.

In an NDE, the mind-entity separates from the body and brain.

Post-NDE: mind and body reunited, with after-effects.

How the mind works

Ordinarily the mind-entity is united with and dependent on the brain.

In an NDE, the mind-entity separates from the body and brain.

The current paradigm

• Brain-production hypothesis
  – Neural electrical activity produces consciousness

• Supporting evidence
  – Neural correlates of consciousness
  – Cognitive impairment with brain impairment

• Deterministic, reductive materialism
  – We are biological robots, determined by the activity of neurons
  – Free will is an illusion

• Fails to account for many anomalous phenomena (e.g. Irreducible Mind)

Five enigmas of consciousness

- Phenomenal experience (qualia) generated by neural action potentials
- Unified phenomenal experience coming from disparate regions of the brain
- Memory is apparently encoded throughout the cortex
- Sense of agency without a “center of the self” in the brain
- Unitary mind or “whole person” despite severe brain dysfunction
Two competing hypotheses

- Both can explain most phenomena of cognition and the “easy problems” of consciousness

- The new hypothesis can begin to explain the five enigmas of consciousness
  - Phenomenal experience (qualia) from action potentials
  - Unified phenomenal experience
  - Memory apparently encoded throughout the cortex
  - Sense of agency
  - Unitary mind or “whole person” despite severe brain dysfunction
Implications of the mind-entity hypothesis

• The human being is a physical body united with a non-material mind

• All cognitive functions (perception, thinking, feeling, volition and memory) occur in the mind

• The mind (or psyche, soul, spirit) is the seat of a person’s consciousness – the “essence” of the person, the “noëtic person”

• The mind interacts with the brain when united with the body
  – Sensory neural activity becomes phenomenal sensations
  – Volitional acts in the mind (to move, to speak, to direct attention) induce neural electrical activity
What can medical neuroscience learn from near-death experiences?
Possible neural mechanisms

Vertical organization of neurons into 6 layers (2.5 mm). Cells in layers 2, 3, and 5 have projections reaching to the surface of the cortex.

Neurons are arranged in “minicolumns”: layer 5 cells are arranged in a central column surrounded by layer 2/3 cells. 80-100 minicolumns make up a “column”. Each column has a specific function in that region of the cortex.

Possible neural mechanisms...

- **Mind-brain interface occurs in the surface of the neocortex**
  - Via the apical dendrite projections of pyramidal neurons
  - L2/L3 neurons – brain-to-mind interface (sensory)
  - L5 neurons – mind-to-brain interface (volition, attention)
Possible neural mechanisms...

• Brain-to-mind interface probably occurs via the propagation of action potentials back through the Layer 2/3 dendrites

• Mind-to-brain interface probably occurs by ion channel openings in Layer 5 dendrites, induced by the mind

---

Implications for neuroscience

• Brain neurons provide an interface between the mind and the body rather than producing consciousness

• When united with the brain, the mind is intimately connected with and dependent on the brain
  – Coming to awareness – Libet: awareness doesn’t happen instantly
  – Coming to decision: volition doesn’t happen instantly
  – The brain holds back consciousness: brain provides resistance to consciousness

• Memory not stored in the brain but in the mind
  – Two-way process: formation and consolidation in the mind, recall – different neural pathways in the hippocampus

Relevance to medical neuroscience

• The patient’s mind is whole despite brain dysfunction
  – The mind can be engaged to apply “mental force” to effect brain plasticity

• Dysfunction in internal neural circuitry: the mind can’t exert its normal influence or receive its normal inputs
  – Example: Parkinson’s disease
  – Example: damage to sensory pathways

• Dysfunction of the mind-brain interface: the mind can’t interface with the cortex
  – Example: inhalation anesthesia (e.g. isoflurane)
  – Example: Alzheimer’s disease (cf. “terminal lucidity”)

Relevance to medical neuroscience...

- Applying the concepts of the autonomous mind and mental force to neurophysiotherapy and neurological rehabilitation

- Neuroplasticity occurs when alternate brain circuits are activated or are developed
  - Reorganization occurs through active experience initiated and directed by the mind
  - Carefully selected mental activity driving specific patient actions to activate specific regions and pathways in the brain
  - The interface between the mind and brain is a critical aspect to effect neuroplastic changes
Relevance to medical neuroscience...

Example: aphasia from damage to left-hemisphere cortical structures

- Speech production and comprehension can be restored by recruiting areas surrounding the damage and contralateral areas
- Recruiting the mind and mental force more effectively could involve:
  - Physical gestures or singing to encourage initiation of speech
  - Exercises that activate contralateral speech regions (via singing, rhythmic pacing, movement)
  - Exercises that activate cerebellar functions (repetitive movements, repetitive speech patterns, repetitive patterns of thought and imagery)
  - Exercises that include observing the therapist making the same movements (“mirror neurons”)
- Transcranial direct current stimulation (tDCS)
  - Excitatory stimulation during therapy can assist the mind to use alternate neural pathways

Gabrielle Giffords 2011 & 2012

Contralateral brain regions

tDCS device
Summary

• NDE, SDE and terminal lucidity phenomena suggest an alternative view of the brain, mind and consciousness

• The mind-entity hypothesis proposes that the mind is an autonomous entity that interfaces with the brain to produce consciousness

• The mind-entity can be viewed as the psyche, soul or essence of the person

• The alternative mind-entity hypothesis may be helpful in...
  – Understanding neurological function and dysfunction
  – Developing or enhancing neurological treatment and therapies
  – Better understanding how consciousness works