



Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad



Special review article

Mindscape: A convergent perspective on life, mind, consciousness and happiness

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ARTICLE INFO

Article history:

Received 8 May 2009

Received in revised form 3 June 2009

Accepted 15 June 2009

Keywords:

- Mind
- Brain
- Consciousness
- Evolutionary
- Psychiatry
- Mood
- Cancer
- Genomics
- Diagnostics

ABSTRACT

What are mind, consciousness and happiness, in the fundamental context of life? We propose a convergent perspective (coupling evolutionary biology, genomics, neurobiology and clinical medicine) that could help us better understand what life, mind, consciousness and happiness are, as well as provides empirically testable practical implications.

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1. Life, mind, consciousness and happiness: a theoretical framework

“It is always advisable to perceive clearly our ignorance”.
–Charles Darwin

What are mind, consciousness and happiness, in the fundamental context of life? Diverse answers have been provided by scientists and philosophers. The answers to date may not be fully explanatory and/or practical enough in nature. We propose that a theoretical framework (Crick and Koch, 2003) encompassing a convergent perspective (coupling evolutionary biology, genomics, neurobiology and clinical medicine) could help us better understand what life, mind, consciousness and happiness are, as well as provides empirically testable practical implications. We perceive clearly our ignorance in multiple fields not accounted for in our approach, but wish to outline it nevertheless as a possible step in the right direction, and a starting point for future discussions and explorations.

2. What is life?

“Simplex sigillum veri (Simplicity is the hallmark of truth)”.
–Latin proverb

We would like to propose, in a hardly original but perhaps more explicit fashion, that life is about reproducing genes (*G*) and providing a proximal (*u*) and general (*U*) umbrella for them, to ensure their survival, propagation and thriving. The necessary and sufficient condition for an entity to be considered alive may be for it to have the capacity to reproduce and propagate parts of self encoded in the genetic material (*G*) (Dawkins, 1978). This definition could include informational entities like memes (Bull et al., 2000) or software viruses, whose genetic material equivalent consists of computer code. However, two additional functions have evolved in most living organisms to accompany the *G* function and provide an umbrella-like protection against adversity. One is local improvement of the (micro) environment (proximal umbrella, *u*), to provide short-term protection to *G* until reproduction and immediate protection to progeny after reproduction. The other is global improvement of the (macro) environment (general umbrella, *U*) to provide long-term protection to *G* and multiple generations of progeny. *G* with favorable *u* and *U* has increased chances of surviving and propagating in the long-term. *U* and *u* may explain altruism in general, and self-sacrifice for extended kin (Silk et al., 2005) in particular.

3. What are mind, consciousness and happiness?

“You do not win battles by debating exactly what is meant by the word battle. You need to have good troops, good weapons, a good strategy, and then hit the enemy hard. The same applies to solving a difficult scientific problem”.
– Francis Crick

We propose that the mind can be viewed as a composite of mechanisms that have evolved to achieve *GuU* objectives. The latest genetic, neurobiological and clinical evidence suggest that normal mental functioning and psychiatric disorders can be classified in three broad and overlapping domains: the anxiety domain, the mood domain and the cognitive domain (Niculescu, 2006) (Fig. 1), somewhat paralleling the archaic Freudian constructs of id, ego and super-ego. The mind works to optimize organism–environment interactions through anxiety, mood and cognition. Psychiatry can provide a magnifying glass for identifying the normal functions of the mind by studying its disruptions, just as the study of transgenic mice is useful for understanding normal gene function (Le-Niculescu et al., 2008). The converging evidence to date suggests that:

- Anxiety is about *reactivity* (Flaa et al., 2007; Hovatta et al., 2005; Zhou et al., 2008) in the face of uncertainty and potential danger—monitoring external environmental changes or internal milieu changes in order to detect dangers to *GuU* in general, with a strong focus on *G*. Thus, broadly speaking, we have two types of anxiety disorders: externally driven (such as post-traumatic stress disorders and phobias), and internally driven (such as generalized anxiety disorders and panic attacks). Past events, depending on their *GuU* salience and the genetic make-up of the organism, can modify the reactivity threshold for response to future stimuli, leading either to sensitization (over-reactivity and anticipatory anxiety) or to tolerance (under-reactivity and emotional numbness).
- Mood is about *trophicity* (Niculescu, 2005), through energy metabolism and cellular growth, reacting to a favorable, stimulating environment by activity and expansion, and to an unfavorable, deprived environment by inactivity and retraction (Le-Niculescu et al., 2009a,b). It is involved in achieving *GuU*, with a strong impact on *u*. Mood is a reflection of the availability of resources in the external and internal environment, and thus permits the

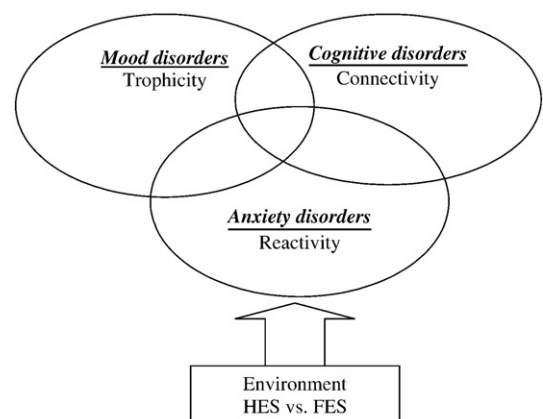


Fig. 1. Overlap and interdependence: Venn diagram.

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