

- **Physical Systems**

The physical systems involve sensory-motor coordination and integration. These systems serve as the foundation for the development and regulation of the emotional systems; our emotions are embedded within the physical system, they affect our physical state, and we feel our emotions as quasi-physical experiences.

- **Emotional Systems**

The functioning of the emotional system affects the organizational state and functioning of all other brain systems. The emotional system is comprised of four primary emotional channels, angry, sad, anxious, and happy. Each emotional channel has three effects, 1) **Signal Function**: each emotion provides particular information about the situation we face in order to guide our responses, 2) **Social Function**: each emotion draws a different type of social response when we communicate the emotion into the social field, and 3) **Brain System Function**: each emotion has a different characteristic impact on the state of brain system functioning.

- **Language and Communication Systems**

There are two aspects of the communication systems, the foundational communication of meaning and the more specific communication of language. Emotional and relationship communication systems arise first and serve as the contextual foundation for the later emergence of language communication systems.

- **Relationship Systems**

There are two relationship systems; the **Attachment** system and a system for **Psychological Connection** in which we feel what the other person feels as if we were having the experience ourselves. The successful functioning of these relationship systems inhibit the anxiety system. Disruptions in either of these systems removes the inhibition they provide on anxiety, causing the anxiety systems to become active. Both relationship systems are inhibited by the emotion of anger, so that when we are angry we no longer care about the other person (Attachment) and we no longer feel what the other person feels (Psychological Connection).

- **Executive Function Systems**

The executive function systems are the higher-order thinking, reasoning, foresight, and planning systems. The executive function systems and the emotion systems cross-inhibit, so that the executive function systems inhibit the emotion systems, and the emotion system inhibit the executive function systems.

- **Motivational Systems**

There are three primary motivational systems, 1) active exploratory learning (fun-play) which is nested within the emotional-physical systems, 2) relationship motivations to restore attachment and psychological connection when these are disrupted, and 3) goal-oriented motivation (work; goal-effort-accomplishment) which is nested within the executive function systems. The relationship motivations always take precedence, and when active will inhibit the full activation of the other motivational systems for active exploratory learning and goal directed motivation.

## Integrated Functioning

In addition to the functioning of each individual system, behavioral and emotional difficulties can emerge from the faulty integration of system functioning.

### Emotion-Somatic Integration

Emotions are rooted in the Somatic system of the body. Disruptions to sensory-motor processing and integration can cascade up through emotional regulation to disrupt higher-order relationship, communication, and executive function systems.

### The Integrating Function of Emotion

Emotional functioning serves as the foundation for organizing and integrating the functioning of all the other component brain systems.

**Relationship:** The Relationship Systems rely heavily on emotional information, such as affection or insecurity, to develop our understanding regarding the **meaning** of relationship features and our position within the social community.

**Communication:** Emotional signals provide context for the Communication System to interpret the **meaning** of the communication.

**Cognitive-Executive Functions:** Higher-order thinking, anticipation, and planning relies on the meaning context provided by emotion, and on the meaning context provided by the Communication and Relationship Systems which rely on the Emotion System to organize the meanings of relationship signals and communication signals.

**Motivational networks:** There are 3 motivational sub-systems; 1) motivations toward Active Exploratory Learning, 2) Relationship motivations, and 3) Goal-Directed Accomplishment motivations. Each motivational sub-system relies on emotional signals to organize the direction and goal of the motivation.

### The Integrating Emotions

The Emotional System integrates the operation of the other brain systems, and among the emotions, the positive emotion of pleasure (the Happy-channel) is the primary emotion of integrated brain functioning. The emotion of pleasure-happy promotes the growth and development of brain networks and fosters their integrated functioning. Anger also integrates brain functions, giving the experience of power, but it does so at the expense of the two Relationship Systems, which anger **turns off** (Attachment - we no longer care about the other person; and Psychological Connection - we no longer feel what the other person feels). Anger also **turns off** the two "weak" emotions of anxiety and sadness.

