

Ripples on the Distant Shore: The Neuroscience of Separation & Non-separation

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Associate Professor

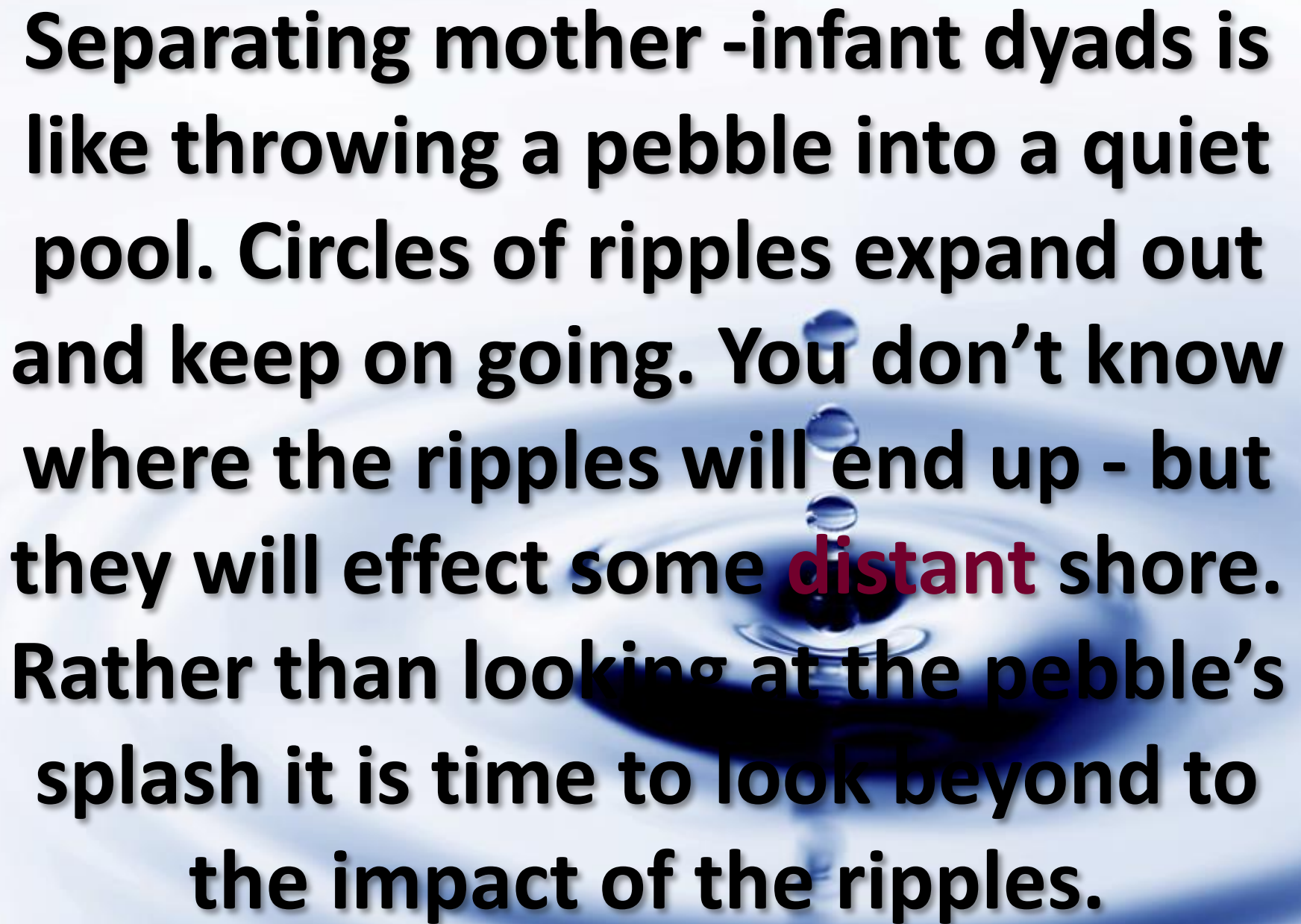
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Separating mother -infant dyads is like throwing a pebble into a quiet pool. Circles of ripples expand out and keep on going. You don't know where the ripples will end up - but they will effect some **distant shore. Rather than looking at the pebble's splash it is time to look beyond to the impact of the ripples.**



The Problem

- **Prevalence of children under 5 with psychosocial problems on the increase 10-21%**
- **Rate of young children whose behavior displays aggression, delinquency or hyperactivity on the increase, as high as 25%**
- **American Academy of Child and Adolescent Psychiatry (AACAP): “crisis” in children’s mental health**
- **Bullying: Repeated aggressive behavior that can present in the form of threats, physical assault & intimidation and involves a difference in power &/or strength.**
- **Attention Deficit/Hyperactivity Disorder (ADHD)**

Costs of Separation

- Slower extra-uterine stabilization^{3,4}
- Frequent crying – separation/ distress⁵
- More acute illness
- Chronic illnesses
 - Obesity
 - Diabetes
 - Cardio-Vascular concerns
 - Systemic Lupus
- Poorer communication skills



Costs of Separation

- Lower intelligence
- Independence rather than interdependence
- Decreased empathy
- Autism
- Attention Deficit Disorders
- Magnified response to stress



Neurobiological Disorders^{6,7}

- **Depression**
- **Chronic-stimulus seeking (Obsessive-Compulsive) behavior**
 - Stereotypical rocking
 - Thumb sucking
 - Self mutilation
 - Hyperactivity
 - Hyper-reactivity
- **Tactile avoidance**
- **Impaired pain and pleasure perceptions**
- **Hypersensitivity to touch**
- **Impaired sexual pleasure & sexual functioning**
- **Alcohol/drug abuse**
- **Dependence & addiction**
- **Social alienation w/ anti-social behaviors**
 - **Violence**
 - **Suicide**
 - **Homicide**



Newborn/Infant Perceptions

A small child cannot think clearly, however he can, from birth and most likely even long before, feel clearly and correctly...If parents are not directly present it signals to a small child a complete abandonment without end.

Abandonment without end is life threatening, he cannot feed himself or defend against threats. The deathly fear is a valid emotion, a real and correct emotion.³

Stephan Nayer, PhD, Passau, Germany



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Rewards or Stress

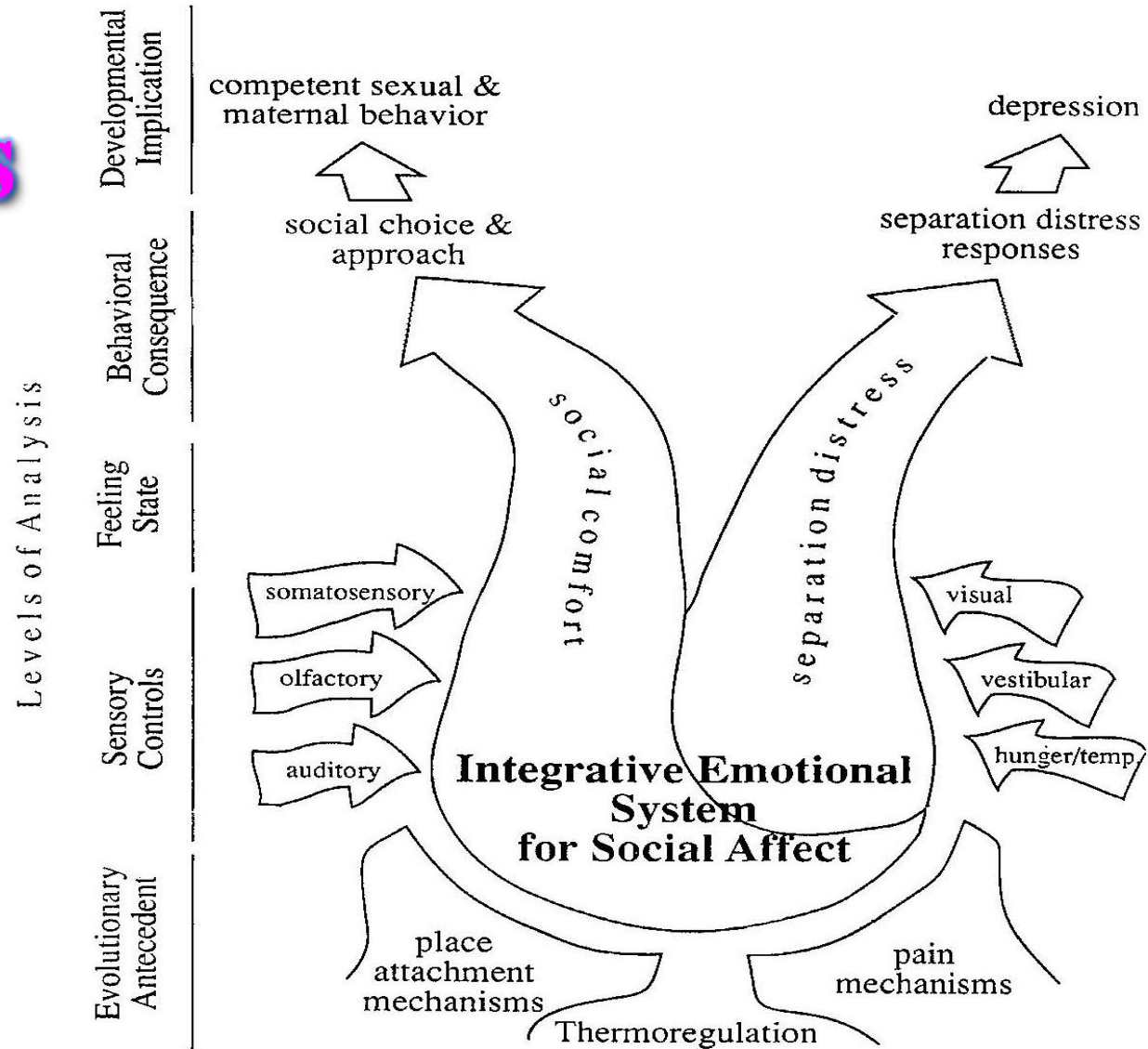
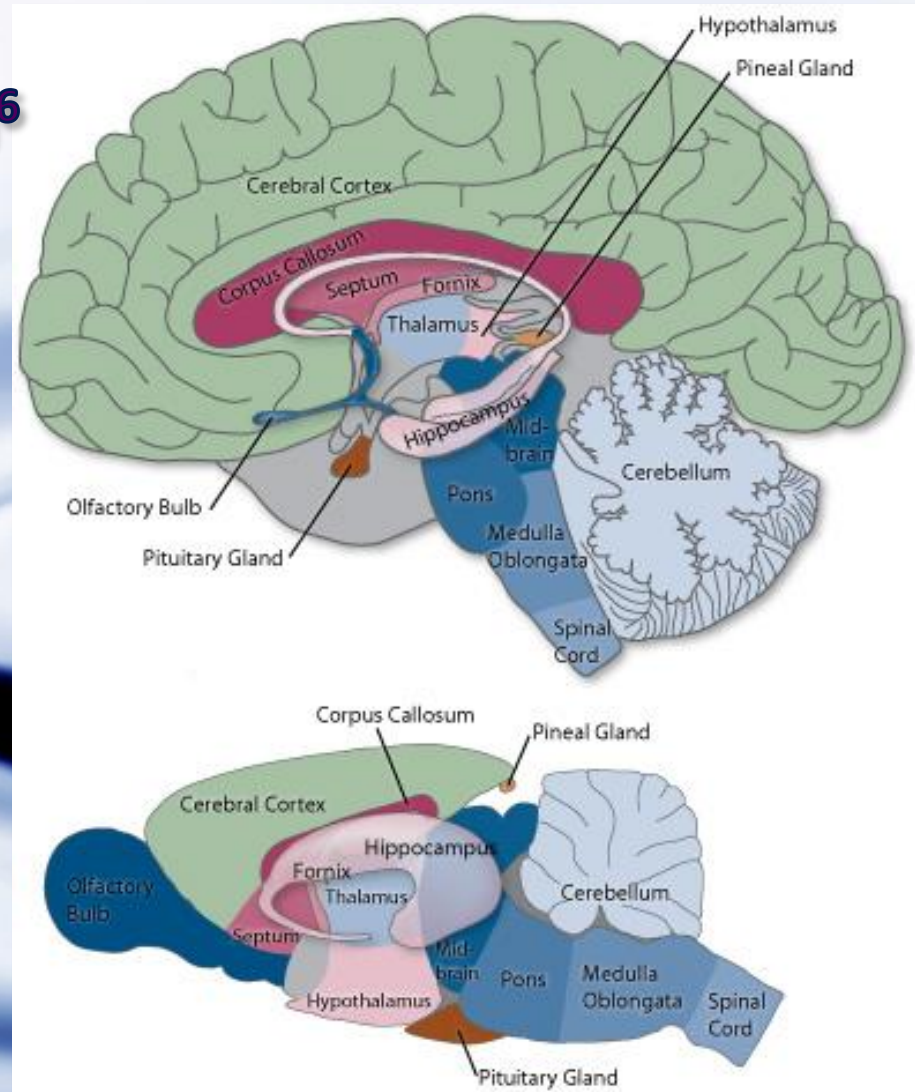


FIGURE 1. A conceptual scheme summarizing the putative nature of a bidimensional integrative emotional system for social affect and the various levels of analysis that can be interfaced with neuroscience approaches. The system mediates separation distress and social reward (e.g., contact comfort) via interaction with various sensory and perceptual inputs. It is suggested that the neural roots of this system go back to brain mechanisms that elaborated pain and temperature perception and place attachment during early phases of evolution. Figure drawn by Brian Knutson.

Primitive & Developed Brain

Subcortical Emotional-Social-Sexual Part of Brain⁶

- Permanent alterations to brain development and function → emotional-behavioral disorders⁶
- More damage occurs with deprivation of pleasure than the actual experiencing of physical, painful trauma⁷



Habitat Consistent Practices

Provide contexts for construction of brain/body systems fundamental to development positive child outcomes

- **Pre-requisites for healthy psychosocial & psychological self-regulation**
- **Absence of problematic behaviors in social contexts**
- **Good communication**
- **Mutually responsive dyadic relationships**

Habitat Consistent Practices

Parenting Practices

- **Responsivity**
- **Breastfeeding**
- **Touch**
- **Maternal Perceived Social Support**



Child Outcomes

- **Prosociality**
- **Behavioral problems**
- **Cognitive ability**



Mother (father) as Habitat

Maternal Contact and Proximity for Infants' Physiological & Behavioral Regulation

- **Maternal milk**
 - **Touch**
 - **Smell**
 - **Voice**
 - **Body heat**
 - **Biological rhythms**
 - **Anxiety management systems**
- **Emotion regulation**
 - **Stress-reactivity**
 - **Social development**
 - **Cognitive development**

