What's On Your Mind? Applying a Neurocognitive Model of Emotion Regulation to Attachment

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What is Attachment?

The attachment system develops from infancy, stemming from our relationship to our primary caregiver. When we feel threatened, we instinctively **seek proximity** to our caregiver. If they are consistently responsive and warm, we develop **secure attachment**. If not, two **insecure attachment styles** develop: **avoidant** attachment and **anxious** attachment. These styles persist through our lifespan, providing models for how we seek comfort and regulate our stress in the future.

Attachment as Emotion Regulation

Mikulincer, Shaver, and Pereg's (2003) model outlined the **hyperactivation** and **deactivation affect regulation** pathways for anxious and avoidant attachment (Figure 1). Hyperactivation strategies *amplify* signs of threat through increased attention and overactivation of arousal areas of the brain (e.g. Amygdala; Tang et al., 2017). Deactivation strategies successfully downregulate like securely attached ones but, requiring more conscious mental energy, *break down with increased cognitive load* (Mikulincer, Dolev, & Shaver, 2007). The distinction between secure and avoidant pathways can be explained if we introduce a neural model from emotion regulation research: *Etkin, Büchel and Gross' (2015) model of emotion regulation* (Figure 3).
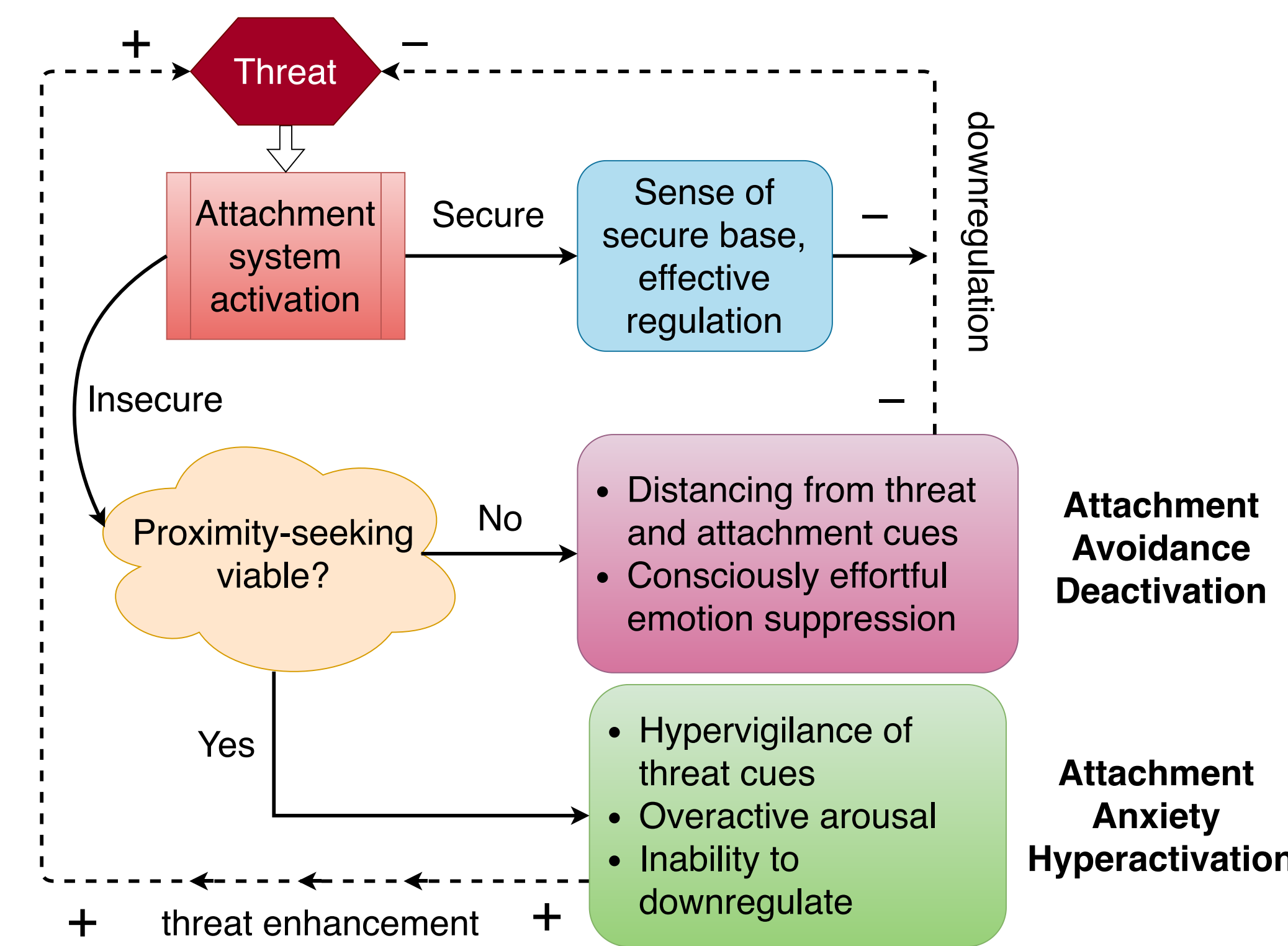
How can we integrate emotion regulation research with attachment?

Figure 1. Adapted from Shaver & Mikulincer (2002).

Figure 2. Patterns of brain activation over a 15s span for emotional reactivity (red), explicit (blue) and implicit (gray) regulation (Ellard et al., 2017). Darker color indicates strongest relative activation.
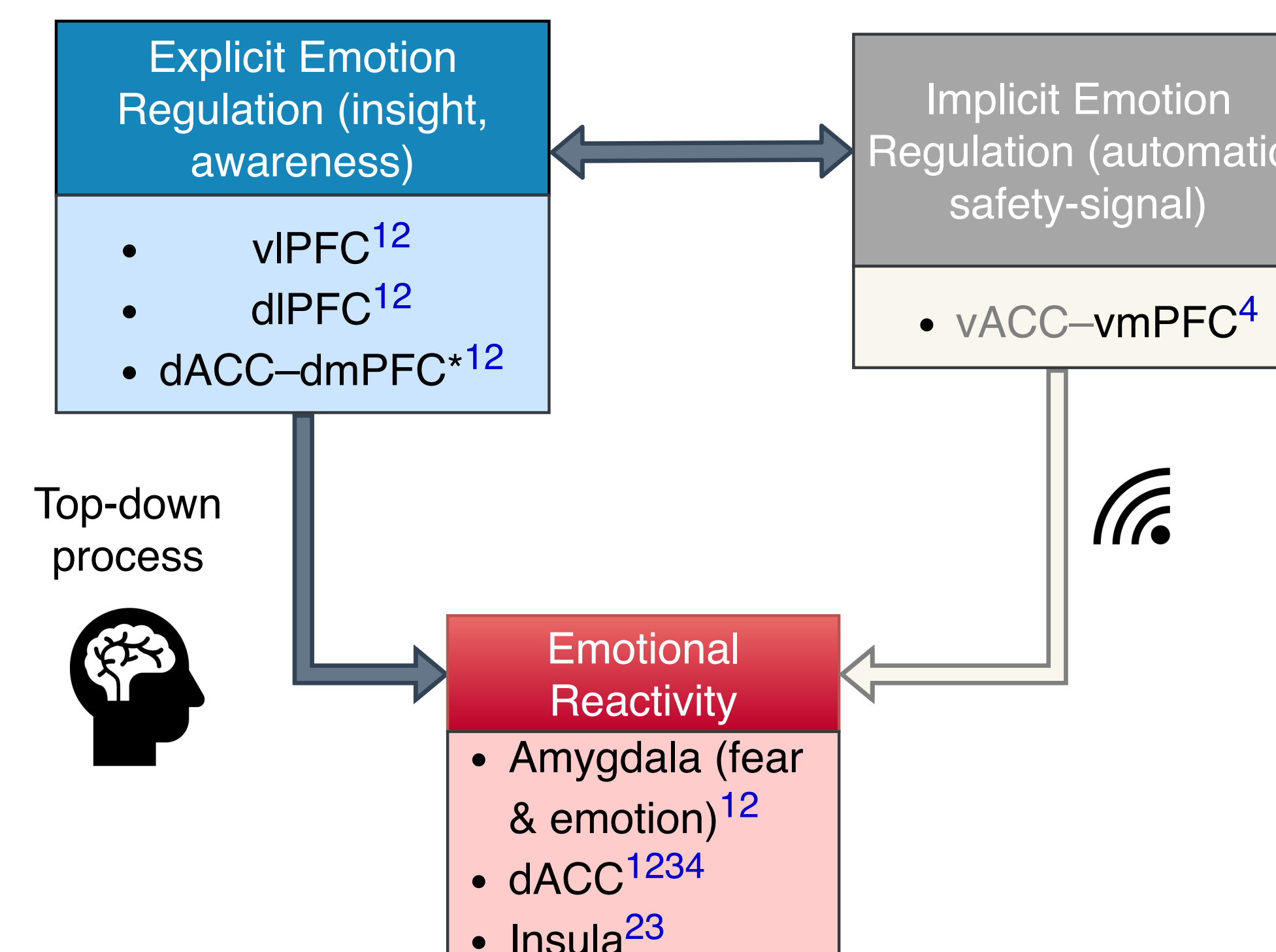

Figure 3. Based on Etkin, Büchel, & Gross' (2015) model b: Model-based regulation. *added component

Bridging the Gap

❖ Attachment research has had little success capturing meaningful differences in neural substrates between avoidant and secure attachment regulation styles, and they have the same behavioral outcomes given low cognitive load (downregulation).

❖ General emotion regulation research has had more success studying parallel affect regulation strategies: worry, suppress, and accept strategies (Figure 2).

❖ Using the model-based regulation model gives a framework for understanding the differences, which is used below to interpret Ellard et al's (2017) findings.

Worry ➜ early explicit emotional regulation (vlFPC) coupled with prolonged heightened emotional reactivity (Amygdala); **consistent with attachment research** (Gillath et al., 2005). vmPFC safety signal?

Suppress ➜ Persistent and strong explicit emotion regulation (vl-, dl-, dmPFC), early insula reactivity. dlPFC is sensitive to cognitive load, **consistent with deactivation pathways** (Murakami et al., 2015)

Accept ➜ later explicit emotion regulation, greater dACC in all stages coupled with dmPFC ➜ executive control & decision making. Slight implicit regulation, potential safety signal (consistent with Eisenberger et al., 2011)

❖ Etkin, Büchel & Gross' (2015) model provides a great opportunity for integration, as it relies on internal working models (e.g. attachment systems) to guide the system.

Future Directions

➢ The connections here are preliminary, and empirical evidence directly connecting attachment regulation pathways to these neural outcomes is still necessary.

➢ Future attachment research may benefit from adapting this model, as it allows for meaningful distinctions.

➢ Follow-up idea: increase cognitive load and measure attachment. Systems relying heavily on dlPFC (e.g. anxious deactivation) may show greater emotional reactivity.