Freud was right about some things. Therefore, usually without directly referencing him, modern researchers are dusting off a few of his previously disparaged psychoanalytic concepts. After a fall, the mighty are sometimes resurrected, or at least propped up a bit. To be sure, Freudian concepts like the unconscious, and libido, look different in the 21st century than they did a century earlier. I will not play with the unconscious here (as far as I know, but with the unconscious, who can be sure?). Instead, I focus on mental energy—a stepchild of libido.

In the Freudian system, libido was mental energy, but it was also primitive, pleasure seeking, and linked ultimately to sexual energy. Today, the sources of our renewable-but-limited mental energy are metaphorically a bit less like a dark force escaping from a well of depravity and a bit more like rechargeable batteries. As we consider the nature of the mental energy from our metaphorical batteries, I shall examine elements we have looked at in other contexts, including blood glucose, brain glycogen, various neurochemicals, and brain structures from the locus coeruleus for basic arousal, to prefrontal cortical areas as sources of self-control. This newer conversation is undoubtedly a lot more realistic than dealing with the Freudian demons, but in the bargain, we miss out on some good old-fashioned prurient excitement.

The process of learning: A review and extension

Learning takes energy
First, I consider in a condensed manner some of the processes required to remember an important event. This account should also serve as a review of several of the brain processes that were described in previous chapters, with the caveat that it misses some of the underlying complexity.
I begin by assuming the occurrence of a novel event of some importance, and thus one worth remembering—perhaps something like learning that AsPurr has gone missing. Because that information flows into the brain via sensory processes, among other sensory-processing structures, that information will be processed by the thalamus. The thalamus will then send somewhat more refined perceptual information forward to various cortical structures, and those cortical structures will endeavor to understand the implications and importance of the event. During that processing, the amygdala will hear from the cortex (and, as noted below, directly from the thalamus too). Thus, the amygdala can embellish the cognitive information with the appropriate emotional tone.

A direct path to the amygdala
It is worth a minor digression to note that Joseph LeDoux (1996) demonstrated that besides receiving thoughtful input from the cortex, the emotional amygdala also receives unembellished perceptual information directly from the thalamus—in his terms, the “low road,” to activation of the emotions of the amygdala. That relatively raw perceptual input from the thalamus allows the amygdala to generate an emotional response more quickly than if it waited for the more refined and thoughtful (we hope) input from the cortex. In the words of a pair of celebrated American car mechanics, the “low road” allows a response “unencumbered by the thought process.”

Such an immediate path to the amygdala undoubtedly allows emotion-connected nuclei in the amygdala to quickly motivate an appropriate behavioral response. If the behavioral response were delayed by cognitive dithering, perhaps some of our ancestors would have become lunch for large predators. However, whereas quick behavioral responses would have been adaptive in a dangerous premodern world, in our modern world with the potential for greatly concentrated destructive power, emotional and behavioral responses should probably await a more nuanced cognitive assessment. However, back to our story about consolidating a memory of the escaped cat.

Arousal of other brain structures
You know the following material, but for review, consider: from various corticolimbic sources, information about the important event will be relayed to the locus coeruleus. Because the event is important or very unusual, the locus coeruleus will send heartfelt and noradrenaline-soaked arousal messages throughout the corticolimbic areas of the