

# **PHYSICAL AND PSYCHOLOGICAL SURVIVAL AS MOTIVES: EXPLAINING ALL ATTENTION AND MEMORY**

**Rebecca C. Curtis**

*PhD, WA White Institute, NY, & Emerita, Adelphi University, Garden City, NY (USA)*

## **Abstract**

“The last peculiarity of consciousness to which attention is to be drawn. . . is that. . . it is always interested more in one part of its object (thought) than in another, and welcomes and rejects, or chooses, all the while” (James, 1890). Gladwell (2005) has documented many effects of unconscious processing in his best-seller *Blink*. But he does not address what happens to threatening experiences. Although researchers have investigated threats related to survival, only recently have they begun to investigate threats to individuals’ identity and their major belief systems. We cannot give everything in our environment conscious attention. The amount of information we can keep in mind at any one time is limited. Like a flashlight on a dark night, the beam of attention is narrow and must also scan the environment (Wachtel, 1967). Sensory processes are selective. Visually, most salient to our attention are stimuli that are novel, unexpected, aversive, and pleasurable. We are particularly attracted to people, places, bodies, and body parts (Kanwisher). Neural pathways are selected in according to the value system. There is consensus that the major value is usually survival. The motivations of physical and psychological survival are often more important than feeling good.

*Keywords: Attention, memory, survival, selection.*

---

## **1. Introduction**

### **1.1. All attention and memory are not conscious**

Consciousness is useful with problems of a non-routine kind (Popper & Eccles, 1977). Edelman (1989) argued that the brain operates according to the same principles that Darwin proposed for species evolution--variation and selection. Overall, research has indicated that people pay more attention to negative and threatening information. Fear-relevant pictures such as snakes have been found to capture more attention than fear-irrelevant pictures, such as flowers. Heightened attention is given to both erotic scenes and scenes of mutilation--suggesting both defensive and appetitive motivations.

Attention appears to "blink" under certain circumstances (Chun & Potter, 1995). People are less likely to perceive other images after threatening and erotic pictures. If the second item is arousing, the "blink" effect is diminished (Anderson & Phelps, 2001). How are we to understand avoidance of threatening experiences? The answer lies in a pre-attentive evaluation system. Research on perceptual defense referred to as the "New Look" and "New Look 2" suggested a pre-attentive evaluative system that led people to take longer to perceive threatening information. Now experimental psychologists have again endorsed the notion of "pre-attentive" processes (Ohman, 1992; Bargh, 2006). with entry into consciousness affected by the relevance of the activated meanings to the goals of a person. Selection affects all attention and memory.

In model proposed integrating contemporary relational psychoanalysis and scientific psychology, we have self-preservation and preservation of meaning as primary human motivations in place of ego instincts and id instincts of sex and aggression. In place of structures of ego, superego, and id we have the experiencing self, representations of actual and ideal self-states, and unconscious aspects of self. More precisely, we have many neural networks that can be activated by external situations or inner urges--conscious control/monitoring functions and mental representations, including those of various selves, some frequently activated, some usually unconscious.

### **1.2. Pre-attentive evaluations for threats – anxiety leads to either over-attention to details or under-attention to details; evaluations select for values and goals**

In place of three different "it's" (id), we have pre-attentive evaluations of relevancy to goals and consistency with already existing representations, responding automatically or with selection for conscious

processing. Because people are motivated not only to sustain life, but also to preserve its meaning, mental organizing processes are motivated by their very nature, with people integrating, ignoring, or inhibiting new experiences both consciously and unconsciously.

Human beings would not have survived in early environments if they let their attention wander from circumstances fraught with a high possibility of immediate danger—death. Still, the quick, evolutionarily “primitive” emotional responses that are not routed through the cortex often prevail when survival is at stake, especially when the risk is very high. Selective processes operate at early, intermediate, and late stages of attention, including those that operate prior to identification (Luck and Hillyard, 2000).

Motives bias interpersonal perception (Maner et al., 2005). When people are made anxious experimentally, they are more likely to see others in stereotyped ways (Stephan & Stephan, 1985). Motives influence perceptions of ambiguous stimuli. If the subject is deprived of food, they (sic) will say ‘I see pieces of meat’ (Pally & Olds 1998, p. 983). It seems reasonable to think that psychological values, such as a favorable self-view, might operate in a similar fashion. Motives and emotions often remain or become activated out of awareness.

That motivation affects memory is demonstrated by research on instructions to remember or forget. The research on directed forgetting and memory has shown that people will forget more of what they are instructed to forget than of what they are instructed to remember (Bjork, 1989; Davidson & Bowers, 1991; MacLeod, 1975; Paller, 1990; Wetzel, 1975). Repressors are also especially good at forgetting if instructed to do so (Myers et al., 1998).

A body of research showing poorer recall for words following threatening words (Kulas, Conger, & Smolin, 2003; MacKay et al., 2004; Raymond, Fenske, & Tavisoli, 2003), suggests that emotional stimuli may receive more elaborate assessment. People are also less likely to perceive other images after threatening and erotic pictures. After seeing a bare breast or a severed limb, however, they had a greater chance of missing the perpendicular image (Chun & Marois, 2002). Blinks in Attention. Attention appears to “blink” under certain circumstances (Chun & Potter, 1995; Raymond, Shapiro, & Arnell, 1992). If two items in a list of fifteen. The experiments regarding selective attention have been used to document the fact that information not attended to is perceived unconsciously. This body of research assumes that attention is selective but that information of “high relevance” will be perceived when it is not specifically attended to (Johnston & Dark, 1986). This work on selective attention has led to a revival of interest in “perception without awareness” (Bornstein & Pittman, 1992; Wegner & Bargh, 1998).

“From the functional, evolutionary perspective, it follows that the burden for the discovery of threat should be placed on early, rapid, and parallel pre-attentive processing mechanisms, which define threat on the basis of relatively simple stimulus attributes” states Ohman (1997, p. 169). Ohman cites LeDoux’s (1994) differentiation of the “quick and dirty” emotional route that bypasses the longer thalamic-cortical emotional route to the amygdala. This processing does not require a full meaning analysis and does not require much contact with memory.

Figure 1. Routes After Pre-Attentive System Evaluates Experiences as Important.

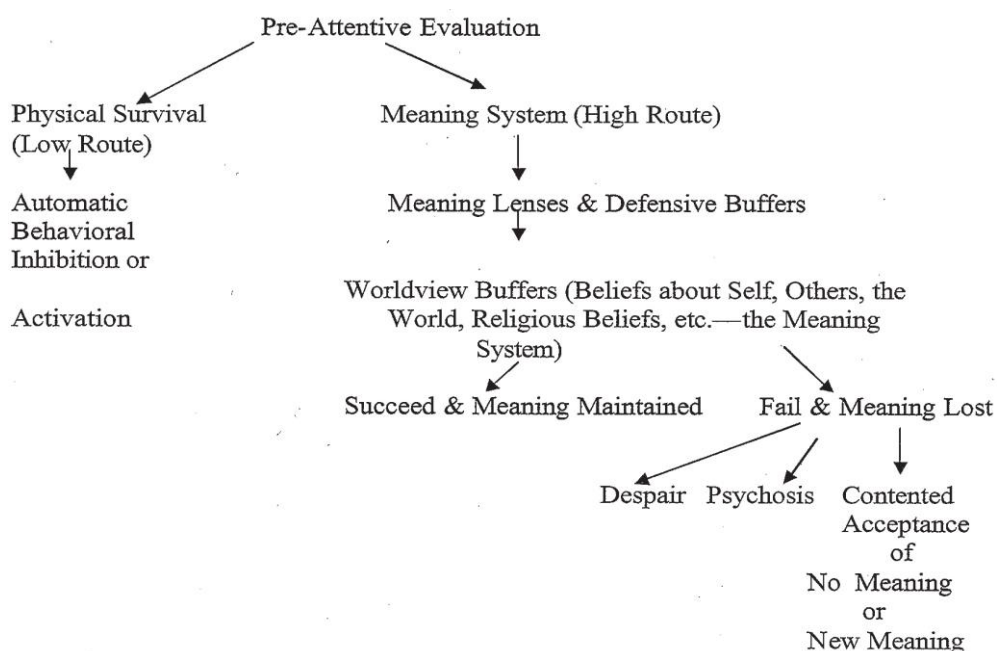
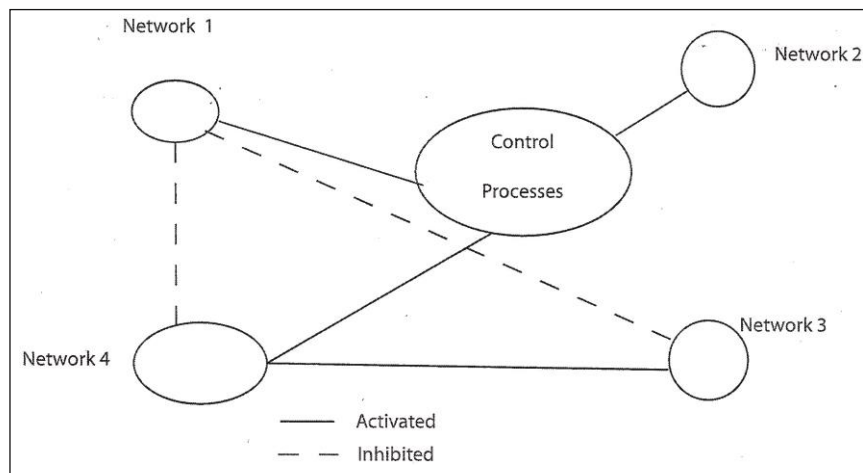


Figure 2. New Model. Associated and Dissociated (Not “Repressed”) Neural Networks including Conscious Control Networks.



Network 3 contains material that is traditionally thought of as repressed—that is, it is incompatible with a dominant (or frequently activated) self-state and actively disconnected from conscious control. Networks 1 and 2 can be activated simultaneously, but networks 1 and 3 cannot be activated simultaneously. Network 4 can be activated by Network 3, but not simultaneously with Network 1. Network 4 is connected directly to conscious awareness and can be activated simultaneously with Network 2. States 1 and 4 are traditionally thought of as dissociated from one another. They each can be activated, but not simultaneously.

## 2. Discussion (conclusions)

Experiences are selected just as surely as are genetic variations. Darwin (1859) stated: “I have called this principle by which each slight variation, if useful, is preserved, by the term Natural Selection.”. Each slight variation of neural connections, if useful, is also preserved (more likely to be activated again) by a similar process of natural selection. A more complete version of this argument can be found in the whole book by Curtis (2009).

## References

- Anderson, A. K., & Phelps, E. (2001). Lesions of the human amygdala impair enhanced perception of emotionally salient events. *Nature*, *411*(6835), 305-309.
- Bargh, J. A. (2006). *Social psychology and the unconscious: The automaticity of higher mental processes*. Philadelphia: Psychology Press.
- Bjork, R. A. (1989). Retrieval inhibition as an adaptive mechanism in human memory. In H. L. Roediger III, & E. I. Craik (Eds.), *Varieties of memory and consciousness: Essays in honor of Endel Tulving* (pp. 195-210). Hillsdale, NJ: Erlbaum.
- Bornstein, R., & Pittman, T., (Eds.) (1992). *Perception without awareness*. New York: The Guilford Press.
- Chun, M. M., & Marois, R. (2002). The dark side of visual attention. *Current Opinion in Neurobiology*, *12*(2), 184-189.
- Chun, M. M., & Potter, M. C. (1995). A two-stage model for multiple target detection in rapid serial visual presentation. *Journal of Experimental Psychology*, *21*(1), 109-127.
- Curtis, R. (2009). *Desire, Self, Mind and the Psychotherapies: Unifying Psychological Science and Psychoanalysis*. London, New York & Landham, Md.: Jason Aronson & Routledge.
- Davidson, T. M., & Bowers, K. S. (1991). Selective hypnotic amnesia: Is it a successful attempt to forget or an unsuccessful attempt to remember? *Journal of Abnormal Psychology*, *100*(2), 133-143.
- Edelman, G. M. (1989). *The remembered present: A biological theory of consciousness*. New York: Basic Books.
- Gladwell, M. (2005). *Blink: The power of thinking without thinking*. New York: Little, Brown and Company.
- James, W. (1890). *The principles of psychology*. New York: Henry Holt.
- Johnston, W. A., & Dark, V. J. (1986). Selective attention. *Annual Review of Psychology*, *37*, 43-75.

- Kulas, J. F., Conger, J. C., & Smolin, J. M. (2003). The effect of emotion on memory: An investigation of attentional bias. *Journal of Anxiety Disorders, 17*(1), 103-113.
- LeDoux, J. E. (1994). Cognitive-emotional interactions in the brain. In P. Ekman, & R. Davidson (Eds.), *The nature of emotion* (pp. 216-223). Oxford: Oxford University Press.
- Luck, S. J., & Hillyard, S. A. (2000). The operation of selective attention at multiple stages of processing: Evidence from human and monkey electrophysiology. In M. S. Gazzaniga (Ed.), *The new cognitive neurosciences* (2nd ed., pp. 687-700). Cambridge, Ma.: MIT Press.
- MacKay, D. G., Shafto, M., Taylor, J. K., Marian, D., Abrams, L., & Dyer, J. R. (2004). Relations between emotion, memory, and attention: Evidence from taboo Stroop, lexical decision, and immediate memory tasks. *Memory and Cognition, 32*, 474-488.
- MacLeod, C. M. (1975). Long-term recognition and recall following directed forgetting. *Journal of Experimental Psychology: Human Learning & Memory, 1*(3), 271-279.
- Maner, J. K., Becker, D. V., Kenrick, D. T., Becker, D. V., Robertson, T. E., Hofer, B., Neuberg, S. L., Delton, A. W., Butner, J., & Schaller, M. (2005). Functional projection: How fundamental social motives can bias interpersonal perception. *Journal of Personality and Social Psychology, 88*(1), 63-78.
- Myers, L. B., Brewin, C. R., & Power, M. J. (1998). Repressive coping and the directed forgetting of emotional material. *Journal of Abnormal Psychology, 107*, 141-148.
- Ohman, A. (1992). Orienting and attention: Preferred preattentive processing of potentially phobic stimuli. In B. A. Campbell, R. Richardson & H. Haynes (Eds.), *Attention and information processing in infants and adults: Perspectives from human and animal research* (pp. 263-295). Hillsdale, NJ: Erlbaum.
- Ohman, A. (1997). As fast as the blink of an eye: Preattentive processing and evolutionary facilitation of attention. In P. J. Lang, M. Balaban & R. F. Simons (Eds.), *Attention and motivation: Cognitive Perspectives from Psychophysiology, Reflexology, and Neuroscience*. Hillsdale, NJ: Erlbaum.
- Paller, K. A. (1990). Recall and stem-completion priming have different electrophysiological correlates and are modified differentially by directed forgetting. *Journal of Experimental Psychology: Learning, Memory, & Cognition, 16*(6), 1021-1032.
- Pally, R., & Olds, D. (1998). Consciousness: a neuroscience perspective. *International Journal of Psycho-analysis, 79*, 971-989.
- Popper, K. R., & Eccles, J. C. (1977). *Self and Its Brain*. New York: Springer-Verlag.
- Raymond, J. E., Fenske, M. J. & Tavassoli, N. T. (2003). Selective attention determines emotional responses to novel visual stimuli. *Psychological Science, 14*(6), 537-542.
- Raymond, J. E., Shapiro, K. L., & Arnell, K. M. (1992). Temporary suppression of visual processing in an RSVP task: An attentional blink? *Journal of Experimental Psychology: Human Perception and Performance, 18*(3), 849-860.
- Stephan, W. G. & Stephan, C. (1985). Intergroup anxiety. *Journal of Social Issues, 41*, 157-176.
- Wachtel, P. L. (1967). Conceptions of broad and narrow attention. *Psychological Bulletin, 68*, 417-429.
- Wegner, D. and Bargh, J. A. (1998). Control and automaticity in social life. In D. T. Gilbert, S. T. Fiske and G. Lindzey (Eds.), *The Handbook of Social Psychology* (Vol. 1, pp. 446-496). Boston: McGraw-Hill.
- Wetzel, C. D. (1975). Effect of orienting tasks and cue timing on the free recall of remember- and forget-cued words. *Journal of Experimental Psychology: Human Learning and Memory, 104*, 556-566.