9.65 December 12, 2001 Conscious and Unconscious Thought: Handout

Note: A corrected version of the Bill Gates problem from Dec. 10 is shown on p. 4.

Most of cognitive processing in the brain is unconscious, in the sense that we are not aware of the processing and cannot reflect or report on it.

For example, visual perception:

We take for granted that when we take action, we don't have direct control.

We are more surprised, however, when some kinds of unconsciousness show up: why?

Implicit memory: e.g., the ability of amnesics (or normals) to show stem completion priming even though they cannot explicitly recall having seen the priming word.

Subliminal perception: (e.g., Marcel and masked priming)

The CSTM hypothesis: Material that is momentarily conscious is quickly forgotten.

Other neuropsychological conditions, in addition to amnesia:

Blindsight:

Visual neglect

Prosopagnosics: GSRs to faces they can't overtly recognize

Alexics (reading problem) They guess better than chance in categorizing tasks like LDT or semantic categorization

Aphasics who supposedly can't understand words may show semantic priming

All these are cases that violate our normal expectation that understanding and awareness are necessary for any further level of processing.

Another example:

Theeuwes, J., Kramer, A. F., Hahn, S., & Irwin, D. E. (1998). Our eyes do not always go where we want them to go: Capture of the eyes by new objects. Psychological Science, 9, 379-385. Task was to look to the single grey among 5 colored circles and detect a small stimulus in the center of that circle. On some trials an additional circle appeared shortly before the eyes moved to the target.

In other cases, there’s a dissociation between (quick) pointing and perception:

What is the role of consciousness in the development of new knowledge? It is likely that conscious supervision or control of thought is necessary for reasoning about a new problem.

Consciousness in relation to **attention**:

Conclusions

OPTIONAL: The (rumored) Bill Gates problem: (corrected version)

A group of 4 people need to cross a bridge to get to the other side. When crossing from the side where they are now, to the other side, they must cross two at a time and stick together; however, after the first pair crosses, someone from the far side must return to escort another across, in all the further crossings. The four people are differentially fast, however: they can cross (either direction) in 1, 3, 7, and 9 minutes, respectively. What is the least amount of time that it will take to get all 4 to the other side?