

UNCONSCIOUS COGNITION: AN INTRO

Features, paradigms, and tests

Luis M. Augusto (in Madrid, Spain)

Unconscious cognition: What?

In the cases where subjects exhibit behaviours that indicate that they possess knowledge but seem both unaware of that possession and unable to verbalize it, we assume that they have unconscious, or implicit knowledge. More specifically, availability of knowledge in the absence of conscious accessibility is what mostly distinguishes *unconscious* from *conscious* (also *explicit*) knowledge. *Unconscious knowledge* refers to knowledge that is revealed by task performance alone, subjects being unaware that they are accessing it, whereas we speak of *conscious knowledge* when subjects are aware of possessing and accessing it (Schacter, 1992). A useful way of characterizing this epistemic

Unconscious cognition: Why?

The postulation of a specifically unconscious kind of knowledge makes sense for many reasons. Firstly, it is quite clear that we are not aware of all percepts being simultaneously processed by our perceptive and cognitive apparatus; at best, we are only conscious of one or a few percepts at a time. Nevertheless, we do not cease acting; we continue to respond to the environment in ways that show that we are knowledgeable of it. This is particularly so in the case of automatized actions, such as driving a vehicle or typing – situations in which one is not at all conscious of these specific actions and yet carries them out with the necessary expertise. To invoke these situations is, however, often a source of much

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It also makes sense, from the evolutionary point of view, that if consciousness is related to later developments in the human species – as it likely is, because apparently only animals possessing the neocortex⁴ (the mammals) seem to be capable of (self-) consciousness (e.g., Eccles, 1992), then an unconscious form of perceiving and learning must have preceded the first steps of human evolution. The hypothesis of a dual visual stream, discussed in detail below, supports this evolutionary view. Humans with lesions in the conscious visual stream, the ventral stream, have to operate on a basis of data processed in an unconscious way by the dorsal stream, earlier in evolutionary terms (e.g., Milner, 1997).

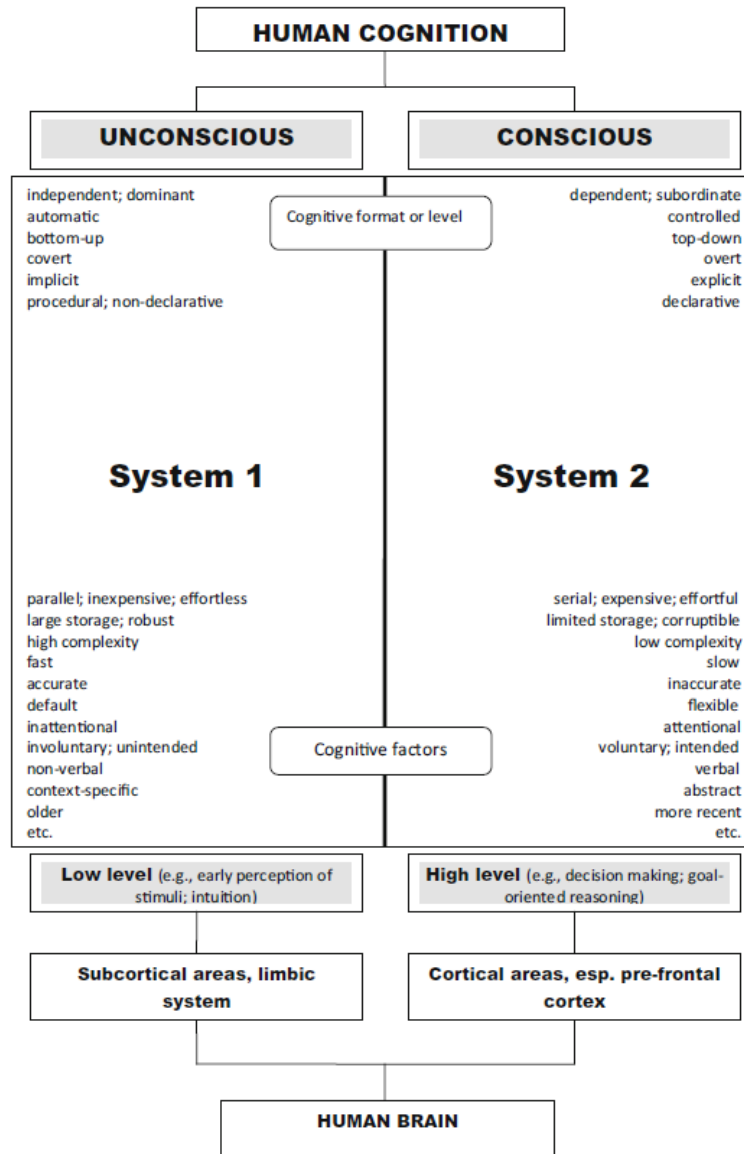
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Finally, we have many reasons to believe that humans begin to construct their knowledge bases, if not in a pre-natal state, immediately post-birth and throughout early infancy. This is a stage of development in which mental life is thought to be, for the most part, unconscious (e.g., babies sleep most of the time; verbal language, apparently intimately connected with consciousness – or some degrees/kinds of it, is mostly absent in early infancy, etc.; for studies in cognition involving pre-natal and early infancy development, see e.g., Fifer et al., 2010; Kisilevsky, Hains, Jacquet, Granier-Deferre, & Lecanuet, 2004; Tarullo, Balsam, & Fifer, 2010).

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Unconscious cognition:

□ How distinct?



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Fig. 1 The dissociation paradigm and the dual-system/-process perspective

Unconscious cognition:

□ Paradigms and Tests

Table 1 The dissociation paradigm: three main frameworks

| Unconscious/Conscious Cognition Dissociation | | | |
|--|--|--|---|
| Frameworks | Qualitative | Quantitative | Computational |
| Focus | The quality of cognitive experience | Numerical data | Black-box processing |
| Motto | "Out of sight, but not out of mind" | "Behavior without awareness" | "We know more than we can tell" |
| General criterion | Contrast/lack of correlation between the subject's (self-)awareness and non-overt or non-introspectable indicators of cognitive processing: actual cognition contrasts or does not correlate with (self-)awareness | Contrast between (purely) statistical rates: values > 50 % (or even just > 0) obtained in tasks of unconscious cognition contrast with statistical expectancy or with (chance) values obtained in tasks of conscious cognition | Contrast between informational availability and accessibility: the output (TP) exceeds the conscious input but is commensurate with the purported unconscious input |
| Main specific criteria: | | | |
| - Mismatch* between intentions and performance | + | + | + |
| - Mismatch** between self-knowledge states (e.g., confidence, expectancies) and performance | + | + | + |
| - Mismatch† between reportability (e.g., detection, explanation) and performance | + | + | + |
| - Mismatch between purely statistical rates (e.g., statistical expectancy vs. performance rates) | - | + | ± |
| Methodology: | | | |
| - Stimuli: | | | |
| neutral | - | + | + |
| emotional valence | + | - | - |
| - Neurophysiological measures (e.g., EEG) | + | - | - |
| - Reaction times (RTs) | ± | + | ± |
| - Forced responses | ± | - | + |
| - First- (e.g., introspection) vs. third-person observation (e.g., brain imaging) | + | - | ± |
| - Direct vs. indirect measures of cognitive processing | + | + | + |
| - Testing of subjective vs. objective thresholds | + | + | + |
| - Comparing purely statistical rates | - | + | ± |
| Significant empirical settings | - Associative learning - Agnosias and other visual anomalies - Priming (esp. in social psychology) - Decision making - Social cognition - Subliminal perception | - Associative learning - Priming - Subliminal perception | - Artificial grammars - Dynamic systems control - Agnosias and other visual anomalies - Sequence learning |

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Table 1

Dissociating awareness thresholds, measures, and tests (*St* = stimulus).

| | | MEASURES | | |
|-------------------------|---|------------------------------|------------------------------|--|
| | | Objective: Discrimination | Subjective: Introspection | |
| AWARENESS THRESHOLDS | Objective: subjects report that <i>St</i> was (not) presented | ✓ | ✗ | Direct: Discriminating responses |
| | Subjective: subjects cannot report that they perceived <i>St</i> | ✗ | ✓ | Indirect: Unreported or unperceived effects |

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Table 4

Representational format implicit vs. explicit with relation to awareness thresholds, measures, and tests (*St* = stimulus).

| | | MEASURES | | |
|-------------------------|--|--|--|--|
| | | Objective: First-order mental states | Subjective: Second-order mental states | |
| AWARENESS THRESHOLDS | Objective: subjects do (not) know that <i>St</i> was presented | Explicit when $D > \text{chance}$ | X | Direct (<i>D</i>): Discriminating responses |
| | Subjective: subjects do not know that they know that <i>specific St</i> <i>information</i> was presented | X | Implicit when $I > \text{chance}$ | Indirect (<i>I</i>): Unreported or unperceived <i>St</i> <i>information</i> |

Augusto, L. M. (2016)

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