



Review article

Lost in dissociation: The main paradigms in unconscious cognition



Luis M. Augusto

University of Barcelona (Visiting researcher), Barcelona, Spain

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ABSTRACT

Contemporary studies in unconscious cognition are essentially founded on dissociation, i.e., on how it dissociates with respect to conscious mental processes and representations. This is claimed to be in so many and diverse ways that one is often lost in dissociation. In order to reduce this state of confusion we here carry out two major tasks: based on the central distinction between cognitive processes and representations, we identify and isolate the main dissociation paradigms; we then critically analyze their key tenets and reported findings.

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E-mail address: luis.ml.augusto@gmail.com<http://dx.doi.org/10.1016/j.concog.2016.04.004>

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1. Introduction

We have long suspected that there is (far) more to our mental life than we are conscious of (see, e.g., [Ellenberger, 1970](#)). Evidence abounds that points in this direction: for example, we often reach conclusions and find solutions to problems without actually being aware of the reasoning processes, and we frequently cannot tell what knowledge basis we draw from when making important decisions and judgments, such as judging faces or investing our hard-won money. Today, we have the scientific means to approach this hypothesis, and investigation into this field now permeates the whole of psychology and cognitive science. In fact, more than sufficient contributions are today available to constitute a sub-discipline of unconscious cognition (see [Augusto, 2010](#)).

The study of unconscious cognition has grown in importance and more and more fields became interested in its many facets, such as knowledge management (e.g., [Bennet & Bennet, 2008](#)), education (e.g., [ECU, 2013](#); [Sun, Mathews, & Lane, 2007](#)), medical care (e.g., [Sabin & Greenwald, 2012](#)), consumer behavior (e.g., [Dijksterhuis, Smith, van Baaren, & Wigboldus, 2005](#)), the law (e.g., [Casey, Warren, Cheesman, & Elek, 2012](#)), artificial intelligence (e.g., [Schank, 2009](#)), and even finance (e.g., [Taffler & Tuckett, 2010](#)). However, it has also become more complex, namely with respect to dissociation, of which there is today a plethora of paradigms.

In practice, in an obvious way, *dissociation* appears to be the right approach to study both consciousness and unconscious cognition (*the dissociation logic*; [Timmermans & Cleeremans, 2015](#)). It is largely at the basis of the highly influential *dual-process/system theories* that postulate an architectural—and often evolutionary—dissociation between the overall unconscious System 1 and the conscious processing of System 2 ([Evans, 2008](#); [Kahneman & Frederick, 2002](#); [Stanovich, 1999](#); see also [Sherman, Gawronski, & Trope, 2014](#)).

The fact of the matter is that those approaching the field of unconscious cognition are often “lost in dissociation,” because a unifying theoretical and methodological framework is largely missing and there reigns terminological and conceptual confusion. The very concept of dissociation has motivated some important caveats (see [Augusto, 2013](#)), and criticism has fallen on the double-process/system theories (e.g., [Evans, 2008](#); [Evans & Stanovich, 2013](#)), as well as on the criteria, thresholds, measures and testing methods in unconscious cognition (e.g., [Fisk & Haase, 2005](#); [Reingold, 2004](#); [Timmermans & Cleeremans, 2015](#); see Section 2.2). Under closer scrutiny, many claimed dissociations lose their clean-cut character, sometimes to the point of effacement. Briefly, confusion still reigns.

In order to alter this state of affairs we here carry out a double major task: based on the central distinction between cognitive processes and representations, we identify and isolate the main dissociation paradigms, and we proceed to analyze them critically with respect to their key tenets and reported findings. While the former task is expected to contribute both to settle some major terminological and conceptual issues and to reduce the number of dissociations in the literature, the latter will hopefully motivate a more cautious usage of the claimed dissociations, at least until further work is carried out addressing the main issues here exposed.

2. Dissociating conscious from unconscious cognition

2.1. The notion of dissociation

As would be expected, after centuries of a deeply rooted philosophical tradition equating cognition with consciousness (e.g., [Brentano, 1874/1973](#); [Descartes, 1644/1983](#); [Locke, 1690/1959](#)), the scientific hypothesis that humans often—or more often than not—think without being aware of their own thoughts, and often without being capable of becoming so, profoundly agitated western cultures at the end of the 19th century. Nevertheless, the idea took root, and the notion that there was a *dissociation* or *splitting of consciousness* making for a *double consciousness* or *self*, shared by psychopathologists and early experimental psychologists alike (e.g., [Binet, 1890](#); [Breuer & Freud, 1895](#); [Sidis, 1898](#)), became pervasive and influential in early 20th-century psychology and psychiatry.

To be sure, not many today still speak of *doubles*, but most contemporary research in the field of consciousness is grounded on the presupposition that consciousness and awareness must be investigated by following theoretical guidelines and by applying experimental methods that might reveal how conscious and unconscious cognition *dissociate* (e.g., [Timmermans & Cleeremans, 2015](#); more generally: [Overgaard, 2015](#)).

Paradigms in unconscious cognition all aim primarily at *falsifying the null model*, i.e., the model according to which there is no unconscious cognition. The general aim is to show that when one analyzes cognitive output from experimental subjects in face of a given input, there is far more to it than they are aware of or than is directly observable in behavioral terms. Unconscious cognition is thus invoked to account for this mismatch and conscious and unconscious cognition are said to dissociate.

The notion of dissociation here at play is to some extent different from the *dissociation of function* that lies in the foundations of (cognitive) neuropsychology (e.g., [Coltheart, 2001](#)). In the field of unconscious cognition, one speaks of

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