

## Is Deliberation without Attention of Unconscious Thought Sufficiently Supported with Neuroscientific Evidence?

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### ABSTRACT

The unconscious-thought theory has been proposed to be a way of thinking which works differently from conscious attention but with higher capacity that caters better to a complex decision-making process. A study on deliberation-without-attention effect hypothesis was carried out which lends support to the formulation of the above theory. This commentary addresses the limitations of the study procedures and the unconscious-thought theory in terms of poorly defined concepts and distinctions from conscious thought, underexplored neural representation of unconscious thought and confounders which could have influenced participants' judgment of their decision-making outcome. Further exploration of theory should consider possible association between unconscious thought processing and priority access to long-term memory content based on the theory's principle of high capacity working power compared to conscious thinking.

**Keywords:** Unconscious thinking; Cognition; Attention

### INTRODUCTION

The study by Dijkterhuis et al. which examined a deliberation-without-attention-effect hypothesis led the authors to the conclusion that participants who did not engage in conscious thought on decision-making were better able to make satisfying product choices that involved many as opposed to a few number of product aspects [1]. In a follow-up paper, the authors went on to propose the theory of unconscious thought which expounded the hypothesis further to include the principles of capacity and bottom-up-versus-top-down that highlighted the opposite strategies of conscious and unconscious thought processes [2]. Both the study and theory of unconscious thought challenge the assumption that attention and conscious thinking contribute a major part to our decision-making process and that such is needed to produce positive outcomes. Nevertheless, they are not less subjected to challenges and limitations based on the principles which the authors introduced to emphasize their validity. The authors of these studies and subsequent follow-ups argue for the basic tenets of the unconscious thought theory (UTT) in that unconscious thinking without deliberated attention following a presentation of complex group of choices would lead to greater satisfaction of decision outcome compared

with simpler choice-making tasks [3]. In order to create the condition of unconscious thinking, which is a fundamentally ambiguous and near unattainable operational variable based on the proposed concept, the authors came up with a measure of a certain time interval of distraction during which the study participants were assigned to engagement in an unrelated task following the presentation of simple and complex choices. The extent to which such condition of distraction is robust and adequate to meet the criterium of an interval of full unconscious thinking, a questionable cognitive state or process which is already vaguely defined by the UTT, is left to be debated. Not surprisingly, there has not been any empirical evidence of a neuroscientific basis being performed to attest to the fundamental principles of the UTT. The question of whether a more widespread activation of brain regions of comparison between a distracted and undistracted condition mind state prior to simple and complex choice-making tasks has not been addressed and tested to assess the tenacity of the UTT. Should future brain imaging studies be minimally supportive of the theory implying or arguing for greater recruitment and activation of relevant brain pathways associated with the themes of the choices presented for decision-making in addition to those necessary for performance of an unrelated task of distraction,

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the theory would demonstrate inadequate neuroscientific evidence for a debatable psychological theory that is more suited to explain optimal choice selection and decision making practice instead of a comprehensive brain functional state and intent that contribute to an actual evidence-based pattern of thinking, i.e., an unconscious processing of thoughts that is constantly active in spite of a distractive or non-distractive task at work. Moreover, on what basis of measure can we use to determine whether an unconscious thinking is an inherently active state or functional process and the neural correlates necessary for its maintenance and utility? Future empirical support to address such questions would help further strengthen the validity and value of UTT.

## DISCUSSION

Unconscious thinking as a process with higher capacity and works in a bottom-up sequence is not specifically defined whether it covers a single, selected few or encompassing function(s) of attention, perception, cognition and memory. The author simplified the concept by associating consciousness with deliberate attention even though it can span a wide range of processes such as perception and working memory. On the other hand, we can ask the question of wherein regions of the brain lie the neurochemical processing of unconscious thinking? The relevant neuronal signalling and underlying mechanisms that are assumed to be involved received little coverage in the reasoning basis for the theory of unconscious thinking. The vague neurobiological representation of unconscious thought processing fails to define a distinct boundary between itself and the counterpart of conscious attention, or whether such distinction of neural region concentration exists at all. When we are to consider that more than one neural network of the brain often work in parallel at any time while we function, it is even more difficult to achieve the distinction between conscious and unconscious thinking because of the less clear-cut definition of 'thinking' by the authors and the question of the specificity in time of when the process of thinking crosses over from the conscious to the unconscious realm [4]. There is also a subtle implication that we can be thinking consciously and unconsciously at the same time which does not go in concert with their opposite bottom-up-versus-top-down strategies and the study's manipulation of conditions [1].

Intuitively, if deliberate attention is the distinguished aspect between conscious and unconscious thinking, there can also be theoretical counterparts of undeliberate attention and the middle ground of subconscious awareness. Attention is closely tied to awareness and in designating attention as the independent variable for the study [1], we are restricting the flexibility of the interplay between attention and awareness which contribute to perception and cognition as well. Awareness may and may not involve intentional focus and task engagement, which makes it more difficult to isolate from deliberate attention. In the first part of the study, the unconscious thinking condition that was set up engaged participants in a distractor task of solving anagrams for 4 minutes. While this is a reliable method of task focus and involvement, it is questionable whether the participants could fully disengage themselves in 4 minutes from the awareness of

the choice-making task and information of product options that were given beforehand. How would the outcome differ should participants be told about the different products but not questioned on their choices until after the distractor task was completed? This strategy could be attempted to decrease both the deliberation of attention and awareness to a greater degree. The utilization of a brief music or video clip in place of a simple task engagement as a distractor could further explore the effect on multiple channels of consciousness. If we are to define a strictly unconscious mode of thinking, we should make attempt at addressing every component and nature of processes which falls under the 'consciousness' category instead of capturing a single aspect of deliberated attention.

Lastly, it could be pointed out that the judgement on the results of participants' product choices after decision-making can be subjective and influenced by the personal preference of the participants who made the choices themselves in the first place. Confounding factors that could have a post-decision influence could be personal biases or the likelihood that we are more attuned to positive aspects in memory after a break of distraction in which we performed very positively on an easy anagram exercise. On the other hand, they could moderate the flow of information between conscious and unconscious pathways, should they be well-defined in the relevant regions of the brain.

## CONCLUSION

Based on the above-mentioned challenges and limitations to the hypothesis and theory of unconscious thinking, it is hoped that they can be addressed in future to refine our understanding of the authors' concept so that practical applications can be explored. The theory has room for improvement and revision and the potential to be beneficial in educational assessments and lifestyle management. Just as our brain holds unlimited capacity for long-term memories, it would be worth considering how this important aspect and function correlate with high-capacity unconscious thinking. The authors subtly implied that unconscious thought works in the "shadow background" of conscious deliberate attention. However, they did not specify the principle of mechanism which oversees and selectively allocates access to relevant content in memory, as well as whether there is a priority order between short-term and long-term memories. This leads to further questioning of a likely privileged access of unconscious thinking to long-term memory content. Another area that has yet to be addressed by Dijkterhuis and Nordgren is whether the energy reserve allocation to conscious attention processing, e.g. in the prefrontal cortex region, could have taxed resources and contributed to its lower capacity working power, while such allocation is not demanded and utilized by unconscious thinking, thus sparing the overall cerebral glucose and oxygen supply to work on other non-attention-related processing tasks. Future functional imaging of unconscious thought processing in progress can be useful to test this possibility.

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