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Can the Unconscious Mind be Persuaded? An Overview with Marketing Implications

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ABSTRACT

Communicating directly with consumer's unconscious thought is believed to enhance the effectiveness of marketing strategy. The current application of neuroscience in social science studies including marketing reinvigorates the interest in this topic. Thus, this article serves as an overview of the development of knowledge of unconscious communication and persuasion. Although there are some evidences to support the ability to communicate directly with unconscious thoughts and possibility to manipulate the processing of information by the unconscious mind by using subliminal cues, the reliability and validity of these findings are questionable. Inherited weaknesses in neuroscience tools, inappropriate research methodology, and alternative explanations of causal relations are among some threats to the value of current findings. Implications for marketing managers and academic researchers in this uncertain situation are also provided.

Keywords: Unconscious Thought, Neuroscience, Marketing
JEL classifications: M31, D87

1. INTRODUCTION

In 1957, James Vicary announced his success in employing subliminal message to communicate unconsciously with movie goers to convince them to buy soft drinks and popcorn. This subliminal message was sent to the movie goers' minds at the level below threshold of awareness, and so their minds received the information without being aware of this communication process. However, his claim turned to be a hoax (Karremans et al., 2006). Five decades later, the research on unconscious thought and subliminal messages still continues to receive a lot of attention from research scholars and practitioners (Giattino et al., 2017; Karam et al., 2017) because understanding the unconscious thought process and using subliminal cues to communicate with consumers are believed to enhance the effectiveness of marketing strategy (Theus, 1994; Broyles, 2006; Elci and Sert, 2017).

Typically, the decision-making process is controlled by two thought processes; conscious and unconscious (Wokke et al., 2011). Conscious thought comprises cognitive processes, which a consumer is aware of and can observe his mental and emotional processes; while unconscious thought functions outside his awareness (Gao et al., 2012). Unconscious thought is not the same as intuition; even though both intuition and unconscious mind deal with the ability to understand something rapidly, without employing conscious reasoning. Intuition thought process tends to be random and unpredictable, while unconscious thought is more goal-oriented. According to the unconscious thought theory, the unconscious mind possesses a relatively larger capacity than the conscious mind. This ability allows the unconscious mind to apply an optimal decision process by utilizing all important factors and weighing them according to their importance (Dijksterhuis et al., 2006). Conscious thought, on the other hand, has a small capacity and hence only allows for simplified decision-making activities like when factors such as brand name, design, and price are considered while buying a pair of sneakers. Thus, in complex decision-making such as purchasing a house or car with several variables to be evaluated, a buyer will make a better decision if he allows the unconscious process to take control (Dijksterhuis et al., 2006). However, many studies fail to confirm the prediction of this theory concerning the superiority of unconscious mind (Huizenga et al., 2102). Unconscious thought is not superior to conscious

process in integrating all important factors in decision-making. These contradictory findings are not to deny the existence and influence of unconscious thought in the process of making choices. Indeed, they acknowledge the presence of unconscious decision process and its role in consumer decision process (Vlassova et al., 2014).

Recently, unconscious information processing has received a lot of attention from studies in various branches of psychology (Brooks and Stein, 2014), partly due to the adoption of more advanced neuroscience tools such as electroencephalogram (EEG) and functional magnetic resonance imaging (fMRI). These techniques are useful in uncovering information, which a typical research survey cannot obtain; i.e., sensitive information, which consumers do not want to reveal, and unconscious behavior, which consumers are unaware of or do not realize has influenced their perception and behavior (O'Connel et al., 2011). Sensitive or threatening information comprises, for example, smoking behavior, racial opinions, and sexual preferences. Respondents know the answer but do not want to reveal it, being afraid of social unacceptance. Unconscious behavior is more intriguing for academic scholars, as is seen that the number of studies on unconscious decisions is outpaced than those on conscious mind (Baumeister et al., 2017).

The objective of this review is to summarize the current knowledge of unconscious influences on decision-making process and behavior, as well as to overview the process in which the unconscious study is conducted, assessing its validity. In the literature search, an overview of the whole research process on unconscious thought is not found. Existing reviews were published two decades ago (Theus, 1994; Charles, 1996) or are intended for readers familiar with the area of study (Krishna, 2012; Kuldas et al., 2014) or cover only the findings (Bargh and Morsella, 2008) causing the reader to be unable to evaluate their trustworthiness and usefulness. Moreover, the content in academic neuroscience sources is complex due to extensive use of technical terms and research techniques different from traditional research methods. Thus, this article serves as an overview for non-neuroscience researchers and marketers interested in this branch of knowledge. Various aspects of research on unconscious mind are present in order to assist a reader in assessing the quality of findings in this area. In doing so, the article starts from introducing various tools in gauging unconscious thought, examining the research methodology to communicate and measure it, and investigating major brain areas associated with a specific thought. Findings on the influence of unconscious stimuli on information processing of brain and behavior, as well as implications for marketers and academic researchers are also discussed.

2. NEUROSCIENCE TOOLS

Broadly speaking, tools in investigating activities of the brain are classified into those measuring outside reflexes and inside reflexes (Roth, 2013). The outside reflex methods include, for example, skin conductance, facial coding, and eye tracking. Without observing internal brain activity these tools measure outside reflexes, which are assumed to have their origin in the brain. However, they are not considered as totally reliable (Wang and Minor, 2008; O'Connel et al., 2011), since outside reflexes can be caused by factors other than the intended stimulus. The inside reflexes approach is more accurate by using equipment such as EEG, magnetoencephalography (MEG) and fMRI to tap activities of active neurons. When a neuron is inactivated, the inside of membrane is negatively charged and its outside is positively charged (Nguyen, 2017). If it is activated, the cell membrane changes from a negative charge to positive charge. This electrical exchange produces an electric field that can be overserved on the entire human head (Wen and Li, 2006). After this exchange, neurons do not have internal reserves of energy in the form of sugar and oxygen, so more energy is needed and brought through a process of the hemodynamic response. This process is relevant to the rapid delivery of blood to active neuronal tissues. Blood releases more oxygen to active neurons than to inactive ones (Huettel et al., 2009). A blood cell with oxygen is non-magnetic, while a blood cell without oxygen is magnetic. Based on these activities of several hundred million neurons, neuroscience tools record either magnetic activity from blood flow or electric activity from the exchange of negative and positive charges in the brain. Each tool has different advantages and limitations (Bercea, 2009). The detail of widely used inside-reflex tools in academic research is elaborated below.[1]

2.1. EEG

EEG is a scanning tool used for recording the electrical activity generated by the brain by attaching electrodes on a subject's scalp to scan any subtle changes in electrical rhythms originated in the brain (Morin, 2011). The EEG containing 16 or 32 electrodes is often used in academic research (Pipitwanichakarn and Wongtada, 2017). Generally, EEG provides good temporal resolution but poor spatial resolution. It provides high precision of a measurement of brain activation with millisecond precision (temporal or time resolution), because the equipment directly measures neuronal activity and is sensitive to millisecond changes in neural processing. However, the EEG signal records the electrical activity at a distance from the source generator, and so the signals are distorted by the heterogeneous conductivity properties of different head tissues. This causes it to have poor spatial resolution. High-density EEG (HD EEG) is an updated form of EEG, which can gather more accurate brain activity information. Surrounding the subject's whole head with 256 electrodes, HD EEG provides better and more accurate imaging of brain processes. The costs of EEG and HD EED are within reach of academic researchers causing them to be widely used (Pipitwanichakarn and Wongtada, 2017). The cost of HD EEG is approximately US$25,000, while the research-grade EEG is priced in the range of US$1,000–US$25,000 depending on the number of available electrodes for each device, and other additional features of hardware units (Farnsworth, 2017).

2.2. MEG

Using very sensitive magnetometers, MEG maps the brain activity by recording magnetic fields caused by electrical currents occurring in the brain. The helmet-shaped machine detects, records, and

1 A review of all neuroscience tools is available at Anatomy of methodologies for measuring consumer behavior in neuromarketing research, www.lcbr-online.com/index_files/proceedingsemc12/12emc023.pdf.

analyzes the magnetic field of a subject's skull to determine the source and strengths of relative activity in different brain regions (Miller et al., 2008). While MEG and EEG have excellent time resolution, MEG has a superior spatial resolution from directly measuring neuronal activity (Morin, 2011). However, when compared with fMRI, MEG is more expensive but less precise in identifying the location where the brain activity occurs. Using the machine requires a specialized shielding room to eliminate the magnetic interference found in an environment. The cost of MEG equipment and the magnetically-shielded room is approximately US$ 2 million, making this technique highly expensive for most researchers (Ray and Bowyer, 2010).

2.3. fMRI

fMRI measures the oxygen level of blood circulation in a particular region of the brain. From this detection, fMRI produces activation maps, which show active sections of the brain involved in a particular mental process (Bercea, 2009). To map brain activity, which changes continuously, fMRI samples various parts of the whole brain at different points in time and generates brain mapping, which is an average across time of brain activity. The fMRI process in merging of data across time results in low temporal resolution (Sukel, 2016). On the other hand, it provides better spatial resolution by detecting increased blood flow to pinpoint the brain location with greater activity. The fMRI is one of the most popular methods to measure activity in the brain because it is non-invasive and easy to use with experimental subjects (Bercea, 2009). However, this equipment is expensive at the price between US$500,000 to US$ 3million (King, 2014). Since fMRI has low temporal resolution, researchers rely on other methods like EEG and MEG to gauge the temporal dimension of brain activity.

3. DATA COLLECTION METHOD

The process of conducting research on unconscious thought is similar to neuroscience techniques for conscious thought. Depending on research questions and objectives, neuroscience tools are selected to be best suitable for answering questions and meeting objectives. As previously described, EEG provides better temporal solution but fMRI generates superior spatial resolution. A typical neuroscience study uses approximately 15-20 subjects from a specific group to obtain internal validity (Bercea, 2009). Participants who take medication or have brain injuries are filtered out to avoid data bias and are prepared before the observation. Depending on the machine used, the specific information of brain activities is gauged, analyzed and interpreted. In addition to this typical process, the study relevant to unconscious mind has to consider additional techniques in accessing unconscious thought and selecting specific brain region to observe.

3.1. Unconscious Stimuli

In contrast to consciously-perceived stimulation, unconscious stimulation is relatively weak with low intensity (Bargh and Morsella, 2008). Subliminal presentation is accomplished by employing a brief stimulus of <50 ms, followed by a masking procedure (Breitmeyer et al., 2007). Such procedure is a technique for reducing invisible stimuli (Stein and Sterzer, 2014). There are various techniques in rendering stimuli visibility such as backward masking, interocular suppression and continuous flash suppression. Backward masking is the reduction of the visibility of one stimulus by a mask (e.g., uniform flash of light, random-dot noise) presented after this stimulus (Breitmeyer and Öğmen, 2006). Interocular suppression is when one eye is shown a stationary image, while the other eye is shown a constantly changing visual pattern to reduce the visibility of a stimulus shown to the other eye (Lin and He, 2009). For continuous flash suppression, one eye views rapidly flashing high-contrast, contour-rich patterns, while the other views a stationary stimulus with moderate contrast (Tsuchiya and Koch, 2005).

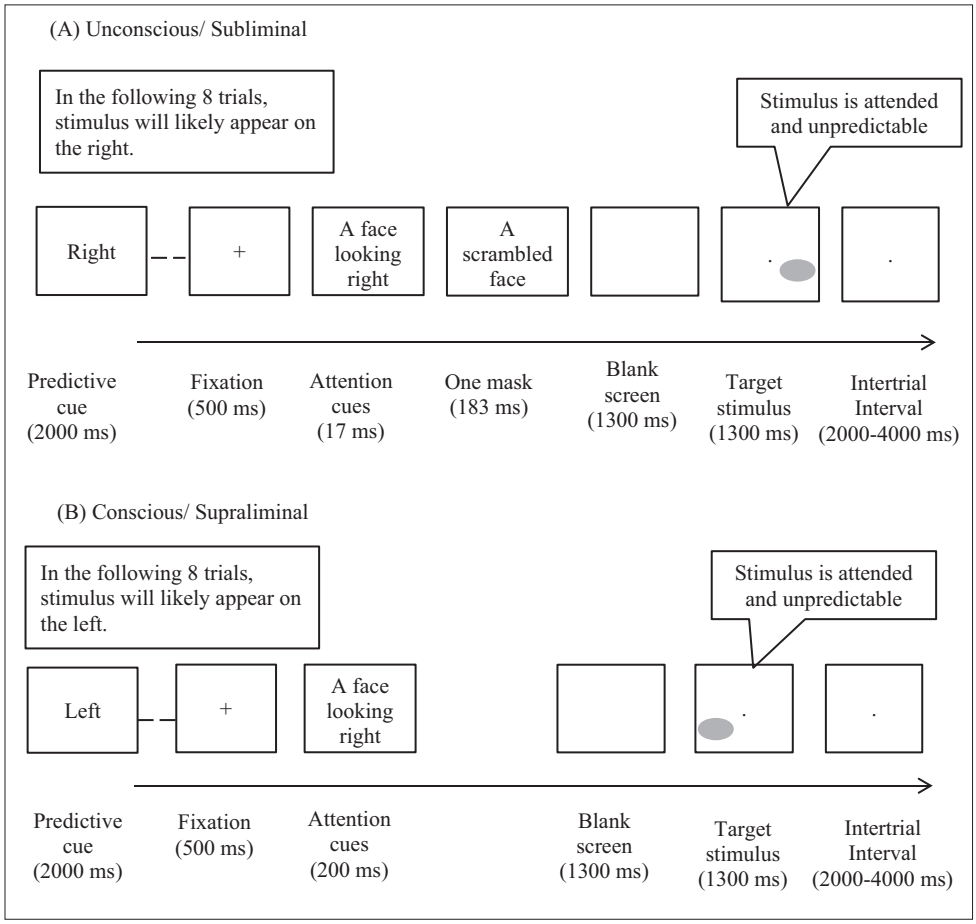
The study of Ran et al. (2016) is used to demonstrate the difference between two experimentations; unconscious process versus conscious process (Figure 1). In their experimentation, participants are scanned by fMRI while performing a task on direction identification. The task consists 72 blocks of 8 trials or 576 trials for each participant. In each block, there is a prediction cue indicating the likely position of the target stimuli in the subsequent block. The words "left" or "right" or "neural" are used as cues. The "left" cue signifies a 75% chance that the target stimuli will appear on the left, while the "right" cue indicates a 75% likelihood that the stimuli will be on the right. The "neutral" cue is unpredictable, since the chance that the target stimuli will appear on either side is the same.

At the beginning of each trial, a black fixation cross appears for 500 ms on a blank screen (refer to Figure 1). Next, a young man's face with his eyes looking either left or right is used as the attention cue. On unconscious blocks, the attention cue is presented for 17 ms before showing a backward mask (183 ms) to block conscious perception of the first stimulus. On conscious blocks, the attention cue is shown for 200 ms without the backward mask. These unconscious and conscious blocks are shown randomly to a participant. After viewing a blank screen for 2000 ms, a grey circle appears for 1300 ms in either the left or the right of the participant's visual field. Next, the screen is empty for 2000–4000 ms allowing time for the participant to respond to the direction of the stimuli (a grey circle). They are told to press a designated key on a keyboard as rapidly and accurately possible when they see a grey circle. Half of the participants select the "1" key on seeing the circle appearing on the left of the screen and the "2" key on seeing it on the right side. The other half is informed to use an opposite key arrangement, i.e., "1" when the circle shows up on the right and "2" on the left. After each subliminal block, the perception of the unconscious cue is validated by asking participants whether they see any human faces on the computer screen and notice the direction of his eye graze.

3.2. Memories

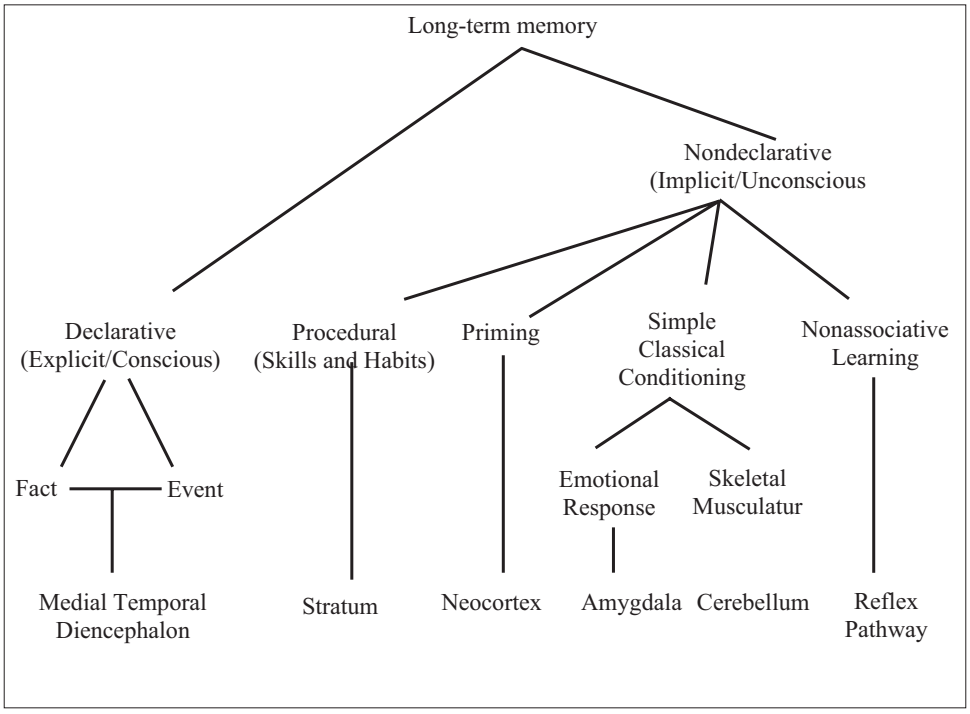
The brain stores different types of memories in different regions. In order to study specific memories, particular brain regions have to be activated and observed. Generally, memories have two major forms; declarative versus non-declarative (Kandel and Siegelbaum, 2013). Declarative memory is the information explicitly stored and recalled (Figure 2). It is classified further into episodic (event) memory and semantic (fact) memory. Event

Figure 1: Experimental paradigm of unconscious versus conscious cues



Source: Adapted from Ran et al. (2016)

Figure 2: Long-term memory systems



Source: Kandel and Siegelbaum (2013)

memory is a unique memory of a person's past experiences, which occurred at a specific time and place such as first trip abroad or attending a close friend's wedding. Semantic memory is associated with the memory of general facts and common knowledge like color, food, cities or social customs. The frontal and temporal cortex areas are main areas involved in semantic memory use, while hippocampus is relevant to episodic memory.

Non-declarative memory or implicit memory is unconscious memory, which is classified into procedural, priming, simple classic condition, and non-associative learning. Priming refers to prior exposure to a stimulus influencing subsequent behavior without one's awareness (van Praet, 2014). For instance, upon viewing something yellow, a person is likely to answer "banana" when subsequently asked to name a fruit. Procedural or skills and habits memory is stored in the striatum. Priming memory stored in neocortex is concerned with perceptual identification of words and objectives. Simple classic condition relates to learning a new behavior from a process of association where two stimuli are connected together to form a person's new acquired response. Classic condition learning is classified further into emotional responses and skeletal musculature. Stored in the amygdala, the conditioned emotional response is a specific learned behavior as seen in the case of fearing of a dog from pairing the dog with being bitten by one. The information of skeletal musculature or skeletal muscle reflexes is stored in the cerebellum. Finally, non-associative learning is when a person does not pair a stimulus with a behavior. For example, when a child is repeatedly being scolded, he may react initially from the fear of being punished. After he experiences this several times and there is no punishment, the child becomes less responsive to the scolding.

Although specific long-term memories are stored in particular locations, different sections of the brain work in concert in retrieving a specific memory. For example, the neural mechanisms of episodic retrieval processes include recovery processes, control processes and support processes (cabezalab.org, 2011). Accessing memories stored in hippocampus and rhinal cortex is associated with medial temporal lobe. The control process is relevant to generating a description of target memories before recovering and evaluating the accuracy and appropriateness of recovered memories. This process is associated with prefrontal cortex. The support processes are associated with prefrontal cortex and posterior parietal cortices.

4. INFLUENCES ON COGNITIVE SYSTEM

The influence of unconscious information processing on behavior or in triggering cortical activity is found even though these activities are previously viewed as the function of conscious cognition (Wokke et al., 2011). Unconscious stimulus has been observed to be influenced by simple information processing such as temporal and spatial attention to high-level cognitive functions, such as planning, inhibitory control and problem-solving. The description below provides some research findings to demonstrate that subliminal cues can affect cognitive process at various levels of decision-making process from paying attention to specific cues to selecting a specific option. That is, the subliminal stimulus may be to exert its influence on human thought in various levels ranging from manipulating what we see to what we do or not do.

4.1. Temporal and Spatial Attention

Subliminal priming can affect both temporal and spatial attention (Schubert et al., 2013). Temporal attention refers to a process in allocating brain resources to attend to a specific task in a given moment in time (Babiloni et al., 2004). Spatial attention is the ability to direct attention to a location in space. That is, when a person looks at a scene of a playground, his attention is drawn to few important pieces of data from that playground. The study of Mulckhuyse et al. (2007) is employed to show how the study of the influence of subliminal cue on spatial attention is conducted. In their study, participants are seated in front of the computer screen and are instructed to fix their eyes at a marked dot or cross at the middle of the screen. Next, a pointing arrow cue is present for a very brief duration. After the cue disappears, a circle used as the target stimulus shows up either on the left or right of the screen. The participant is instructed to respond to the target as soon as he sees it. Both valid and invalid cues are presented across trials. In valid trials, the circle is shown in the area as specified by the cue. For instance, if the cue is an arrow pointing to the right, the circle appears on the right. Conversely, in invalid trials, the circle is presented on the opposite side indicated by the cue. Their finding indicates that attention can be captured by subliminal spatial cues without a participant's awareness (Mulckhuyse et al., 2007).

4.2. Decision-making

Unconscious stimuli leads to bias responses even when participants make their own choice between alternatives (Schlaghecken and Eimer, 2004; Klapp and Haas, 2005; Kiesel et al., 2006; Parkinson and Haggard, 2004; Ocampo, 2015). For instance, the study of Mladenović et al. (2016) tests whether respondents will change their preferences under the influence of unconsciously exposed images and important messages. Prior to the experimentation, participants are asked to identify their preferences by choosing one from two choices of various pairs of products, including a pair of banana or orange. Without being aware, their preference of the fruit (banana versus orange) is recorded. In the experimentation, they are exposed to subliminal images and messages contrary to what they preferred. Participants who preferred banana are divided into two groups; the first group receives subliminal image of apple and the second group unconsciously sees a message "Have an apple". Likewise, among participants who preferred orange, one group is exposed to subliminal image of banana and another group to a subliminal message "Have a banana." These images and messages are subliminally inserted into a film. The control groups watch the same film, but without subliminal images or messages. Their results show that unconscious exposure of the material has impact on changing preferences of fruit.

4.3. Inhibitory Control

Inhibitory control of behavior is an extreme form of cognitive influence in its ability to cancel a planned or already initiated action. This cognitive process is believed to be associated exclusively with consciousness (Morein-Zamir and Meiran, 2003). However, an unconscious stimulus might also be able to influence inhibitory control processes as seen in the study of van Gaa et al.

(2008). A masked go/no-go task is used in this study to demonstrate the effect of unconscious stimuli on the processing of inhibitory control. Participants are instructed to respond immediately on seeing a go signal and restrain their response on seeing a no-go signal before the go-signal. They found that unconscious stimuli could affect whether a task would be executed or withheld (van Gaa et al., 2008).

5. CRITIQUES

Even though the knowledge of the influence of subliminal stimulus on decision-making has progressed rapidly, reliability and validity of its findings are questionable. An invalid finding may be caused by employing an inappropriate methodology in studying an unconscious thought process or by interpreting findings without considering alternative explanations.

5.1. Methodology

Findings in this area are filled with contradictory results. For example, while the study of Mladenović et al. (2016) concludes participants can be influenced by subliminal message to switch from their preferred fruit, the study of Košíková and Pilárik (2012) shows that unconscious communication does not affect the selection of four mugs. These contradictory conclusions may be due to different techniques in setting up experimentation. Notably et al. (2012) use a masking technique, while Mladenović et al. (2016) do not. A masking technique is a procedure ensuring a cue is not perceived by the conscious mind. In fact, studies on unconscious thought must establish conditions under which conscious experience does not occur and demonstrate that a stimulus is perceived unconsciously (Overgaard and Timmermans, 2010).

Newell and Shanks (2014) suggest the use of the lens model to assess whether subliminal stimuli truly affects behavior. This model posits that a person does not view his environment objectively but interprets it by utilizing available cues such as product price, product design, and display to make his judgment on this observation (Figure 3). An unconscious influence can exert its influence on a person's decision process on five points (labeled A-E) (Newell and Shanks, 2014). A situation where a mother intends to buy the best product (the judgment) for her family by evaluating product quality (the criterion), using the product feature (cues) in decision-making is used as an example to demonstrate these subliminal influences. Point A is when the decision does not consciously perceive the criterion in the environment. Here, the mother is unaware of the product quality (criteria). Point B is when the subject is unaware of the association between consciously perceived cues and the criterion. The mother sees well-known brand (cue), but is unaware of the association between a well-known brand and product quality (criteria). Point C is the unawareness of using a cue in decision-making. The mother is unaware using the brand name (cue) while making a decision. Point D denotes a lack of awareness of the integration of the cue information into his decision. The mother unconsciously weighs its importance of being a well-known brand (cue) and integrates this assessment in her decision. Finally, Point E refers to a lack of awareness in making a judgment. The mother makes a purchase decision (judgment) without being aware that her decision is influenced by the information of brand name (cue).

Newell and Shanks (2014) employ this framework and other criteria in reviewing existing literature on unconscious influences. They conclude that majority of studies employ weak methods to assure the existence of unawareness. The replicability of findings is limited since authors are more likely to submit new findings because replicated studies in validating previous results are harder to be accepted for publication (Renkewitz et al., 2011). Thus, the evidences to assess the existence of unconscious stimuli and validate its impact on decision-making process and relevant behaviors are still insufficient. They conclude that the findings on unconscious thought in decision-making are based on unreliable research methods and so the results must be critically interpreted.

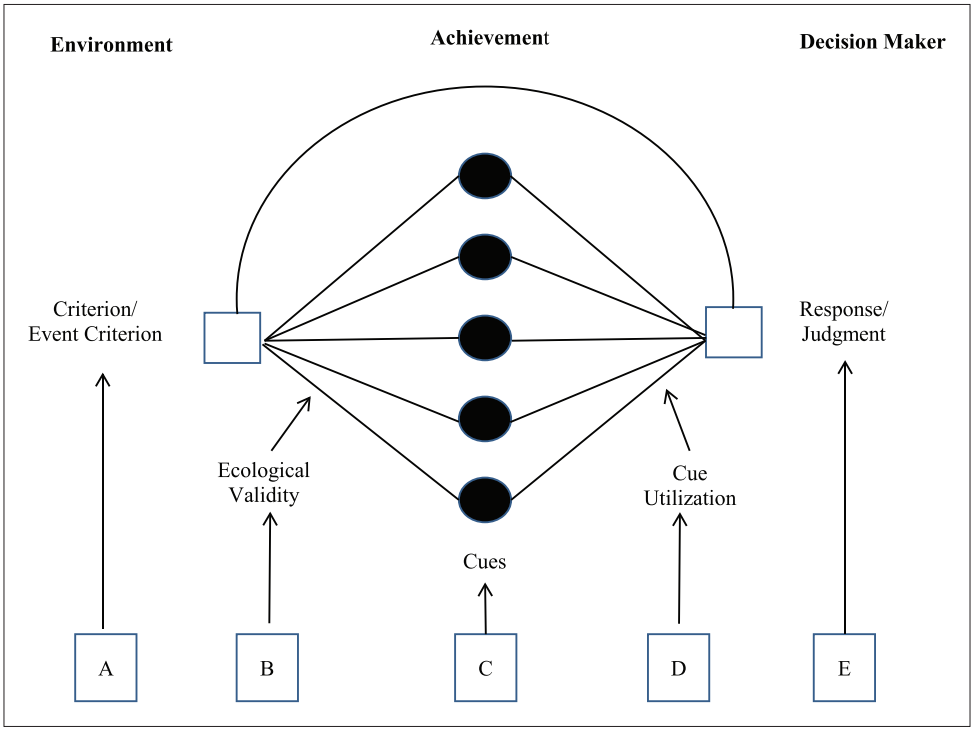
5.2. Interpretation

The mind operates three systems: The conscious mind, the subconscious mind, and the unconscious mind (Choi, 2005). As previously stated, the conscious mind operates within one's awareness in the present moment; while the unconscious mind activates outside one's awareness. The subconscious mind or the preconscious mind is defined as the stage of mind between the conscious mind and unconscious mind. Compared to the conscious mind, subconscious mind is harder to access because memories are kept in a deeper state. When the conscious mind overloads from absorbing too much information, some information is deposited in the subconscious mind for later use. However, such information is not well-organized, and hence cognitive processing is required before the information can be used by the conscious mind. This existence of subconscious mind causes some doubt to the conclusion on the influence of unconscious thought. An alternative explanation may be that conscious awareness develops gradually from the subconscious to the conscious level (Miller and Schwarz, 2014). The early brain activity might reflect sub-levels of awareness and so may not suggest that decisions are made unconsciously.

6. CONCLUSION AND IMPLICATIONS

The above review does not support or disconfirm subliminal messages in influencing the cognitive process of the unconscious mind. This research area is bursting with contradictory results and new findings leading to rapid progress of our knowledge. At this point, there is no strong evidence to confirm or disconfirm the influence of unconscious stimuli on decision-making process since new hypotheses have been proposed and tested. In the case of Vicary's claim, academic researchers do not find an impact of priming on Coca Cola and popcorn sales (Cooper and Cooper, 2002; Dijksterhuis et al., 2006). Verwijmeren et al. (2011) offer a new insight on this failure to replicate the influence of subliminal messages with regard to food consumption. They state that subliminally priming of a well-known habitual brand, as in the case of Coca Cola, will not influence consumer's brand choice. Participants will select this brand with or without being persuaded.

Figure 3: The lens model



Source: Newell and Shanks (2014)

However, if two brands are preferred and consumed equally, participants will choose one, which is subliminally primed. Thus, since the current knowledge of the influence of subliminal cues on decision-making is still in flux, marketers should employ the wait-and-see action before embarking on subliminal communication as part of their strategy.

The role of academicians is crucial for the progress of knowledge in neuromarketing and its adoption in marketing practices. They can act as a facilitator between neuroscience findings and marketing managers. Currently, articles on this subject are difficult to be understood for a typical marketing manager. Presenting unbiased findings with simple writing and tracking the progress should benefit the practitioner. Additionally, they can employ the methodology used in the unconscious study to conduct research on consumer behavior, including consumer's preferences, motivations and expectations, predicting behavior and measuring success and failure of advertisement (Bercea, 2009). Unconscious thought can be researched parallel to that of conscious thought to better our understanding of the conscious mind and how it interacts with the unconscious process (Baumeister et al., 2017). However, research methodology in which neuroscience has been employed in experimentation must be observed and followed in order to avoid pitfalls in conducting an invalid study, as this review has highlighted.

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