

On the benefits of thinking unconsciously: Unconscious thought can increase post-choice satisfaction [☆]

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Abstract

This work compares conscious thought and unconscious thought in relation to quality of choice. Earlier work [Dijksterhuis, A. (2004). Think different: The merits of unconscious thought in preference development and decision making. *Journal of Personality and Social Psychology*, 87, 586–598] has shown that people make better choices after engaging in unconscious thought (i.e., unconscious activity during a period of distraction) rather than in conscious thought. However, the evidence was obtained for choices between hypothetical alternatives with quality of choice operationalized normatively. As quality of decision is essentially subjective, in the current experiment participants chose between real objects with quality operationalized as post-choice satisfaction. In a paradigm based on work by Wilson and colleagues [Wilson, T. D., Lisle, D., Schooler, J. W., Hodges, S. D., Klaaren, K. J., & LaFleur, S. J. (1993). Introspecting about reasons can reduce post-choice satisfaction. *Personality and Social Psychology Bulletin*, 19, 331–339], participants were briefly presented with five art posters, and chose one either (a) immediately, (b) after thorough conscious thinking about each poster, or (c) after a period of distraction. Participants took their favorite poster home and were phoned 3–5 weeks later. As hypothesized, unconscious thinkers were more satisfied with their choice than participants in the other two conditions.
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Imagine being at an art auction in Paris. There is a Monet on sale for a mere 100 million Euros and a Van Gogh for a steep 125 million. Unfortunately, you've been a college professor rather than a Fortune 500 CEO all your life, so your meager savings (about 150 million) only allow you to purchase one. And let us assume it is a difficult decision because you like both Monet and Van Gogh. What to do? How to make this choice?

Psychologists and lay people alike have long maintained that thorough conscious deliberation leads to the best decisions. When you face an important choice, think about it carefully. In the case of the choice between Monet and van Gogh, scrutinize both paintings, think thoroughly about what you like and what you don't like, and about why you

like or dislike certain aspects. You may even use a balance sheet and engage in assigning the paintings pluses and minuses for different attributes. Such a strategy, we tend to think, leads to a decision we will be most happy with.

The past fifteen years have witnessed a shift in our thinking. Various researchers have shown that it is not always beneficial to think consciously about decisions (Claxton, 1997; Dijksterhuis, 2004; Dijksterhuis, Smith, van Baaren, & Wigboldus, 2005; Levine, Halberstadt, & Goldstone, 1996; Pelham & Neter, 1995; Schooler, Ohlsson, & Brooks, 1993; Simonson & Nowlis, 2000; Wilson & Schooler, 1991; Wilson et al., 1993). Conscious thought has shortcomings that can prevent sound decision making. First of all, conscious thought can lead to suboptimal weighting of the importance of aspects of different choice alternatives. In addition, because consciousness has low capacity, conscious thought often leads people to take into account only a limited subset of information at the expense of other information that

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should be taken into account when making a decision (Dijksterhuis, 2004; Wilson & Schooler, 1991).

Should this lead us to abandon conscious thought and to start making decisions without any thought at all? Is it a good idea to just ask the people at the auction to wrap the van Gogh after having merely glanced at both paintings? The answer is no. In addition to conscious thought, there is a second mode of thought, that we (Dijksterhuis, 2004; Dijksterhuis & Nordgren, *in press*) called unconscious thought. Unconscious thought refers to unconscious processes dealing with a problem while consciousness is directed elsewhere. It is thought without conscious attention and related to the notion of incubation in creativity research, and the idea to investigate unconscious thought was indeed partly based on research on creativity and related domains. Bowers, Regehr, Balthazard, and Parker (1990) have shown that when people solve a puzzle, the unconscious makes progress at finding a solution without any conscious awareness of this progress. Yaniv and Meyer (1987) found that when people are consciously trying to retrieve a word they feel they know (the “tip-of-the-tongue” phenomenon), the unconscious activation of the word increases long before any conscious awareness. In these studies, we may say that people engaged in unconscious thought.

Betsch, Plessner, Schwieren, and Gütig (2001) demonstrated that unconscious thought can even deal with relatively complex judgments. In their experiments, the unconscious was shown to be able to integrate large amounts of information without conscious guidance. Their participants were presented with ads at a computer screen while simultaneously numerical increases and decreases of five hypothetical shares were shown. Participants were requested to focus on the ads (they knew they had to answer questions about the ads later on), but afterwards they had developed a “gut feeling” towards the shares. They somehow knew what the good and bad shares were, without being able to verbalize why. These results are intriguing. In the absence of conscious attention, people somehow figured out what the best share was.

Recently, Dijksterhuis (2004) tested the hypothesis that unconscious thought can lead to superior decisions relative to conscious thought. In various experiments, participants made decisions under three different experimental conditions. After participants had read information about a decision problem (i.e., information about three different apartments), they either had to decide immediately, after a few minutes of conscious thought about the choice alternatives, or after a few minutes of distraction. Unconscious thinkers (i.e., distracted people) made superior decisions relative to participants in the other two conditions. It was also shown that the superior decisions made by unconscious thinkers was caused by a productive thought process, rather than by mere distraction. For instance, it was demonstrated that unconscious thought renders information to become better organized in memory (as assessed by clustering scores). Moreover, recent evidence (Dijksterhuis &

de Vries, 2005) shows that such unconscious thought is goal directed. In their experiment, participants first read information pertaining to a decision problem. Subsequently, all participants were distracted, but some were told that they would later have to choose between the various decision alternatives, whereas others were told they could forget the information and that they would not be asked any questions about it. As it turned out, the former group showed superior memory for the information, and indeed showed better organization of information in memory. The latter group did not demonstrate any meaningful memory organization. In sum, only participants who knew they had to choose between the apartments sometime later engaged in unconscious thought.

These and other (e.g., Dijksterhuis & Meurs, *in press*) findings have led to the development of the Unconscious Thought Theory (UTT; Dijksterhuis & Nordgren, *in press*). This theory describes various characteristics of both conscious and unconscious thought on the basis of which specific hypotheses can be derived that are applicable to decision making, attitude formation, impression formation, and creativity. For example, whereas unconscious thought works “bottom-up” and can integrate large amounts of information, conscious thought is very limited in its capacity and works “top-down.” One of the central principles of the model is the observation that consciousness has limited capacity. This limited capacity of consciousness had led to the hypothesis that conscious thought often leads to relatively poor decisions. Indeed, the experiments by Dijksterhuis (2004) earlier discussed confirmed this hypothesis.

Although more research is needed to understand exactly how unconscious thought renders superior decisions, some can be specified. First, the unconscious has very high capacity, leading unconscious thought to take into account all information rather than just a subset. Second, unconscious thought works “bottom-up” and weights the relative importance of different attributes of objects in a relatively objective and “natural” way. During unconscious thought, different attributes are weighted and evaluated and then integrated into an overall “evaluative summary judgment” of all relevant information. Conversely, conscious thought often disturbs this natural weighting process (see also Wilson et al., 1993) and can therefore lead to inferior decisions.

However, it is warranted to further investigate this hypothesis as the experiments by Dijksterhuis (2004) have two important limitations. In the experiments participants were presented with hypothetical alternatives (e.g., apartments), whereas quality of decision was operationalized normatively. One of the alternatives was made more desirable than others by giving it more positive than negative aspects. However, quality of decision is essentially subjective, and the findings by Dijksterhuis (2004) beg for a replication with a subjective operationalization of quality of choice. Hence, the goal of the current experiment is to investigate whether the beneficial effects of unconscious thought generalize across more realistic choices, whereby quality of decision is operationalized as post-choice satisfaction.

In testing our hypothesis, we will use a paradigm developed by Wilson et al. (1993) who investigated the effects of conscious thought on post-choice satisfaction. In their experiment, participants chose between art posters under two different conditions. Some participants were asked to analyze their thoughts by listing their reasons for liking or disliking each poster. Control participants, on the other hand, were not given the opportunity to consciously think before they chose. All participants were given their favorite art poster to take home and were phoned a few weeks later. Participants who consciously analyzed their choices were less satisfied with their posters than control participants.

Whereas Wilson et al. (1993) tested and confirmed the hypothesis that conscious thought would lead to poor decisions compared to no conscious thought, we test the hypothesis that unconscious thought leads to superior decisions. Testing this hypothesis entails the use of a condition in which participants have no time to think at all, and a condition in which participants are temporarily distracted to engage in unconscious thought. As we include a conscious thought condition as in the study by Wilson et al. (1993), in the current experiment we run three conditions (as in Dijksterhuis, 2004). Our baseline condition is an immediate decision condition, in addition we include a conscious thought condition and an unconscious thought condition. Our hypothesis entails that unconscious thinkers make better decisions (show more post-choice satisfaction) than participants in the other two conditions.

Method

Participants and design

One-hundred-and-thirteen undergraduate students (87 women and 26 men) of the University of Amsterdam were randomly assigned to one of three conditions: an immediate decision condition; a conscious thought condition; and an unconscious thought condition. They either received course credits or 7 Euros.

Materials and procedure

Participants were seated in individual cubicles in front of a computer. The computer program provided the instructions. The experiment was introduced as being on “Visual preferences and the evaluation of art.” After administering a few standard demographic questions, participants were asked to look at five different digital images of art posters. Three out of the five posters were abstract art posters, whereas the two others depicted photographs (of a flower and of a flock of birds). The images were presented randomly and each image appeared on the computer screen for 15 s. After presentation of the photographs, the computer assigned participants to one of three conditions.

In the *Immediate decision* condition, all five posters appeared on the screen simultaneously and participants

were requested to indicate which one they liked most. In the *Conscious thought* condition, each poster appeared on the screen individually for 90 s. Participants were asked to look at each poster again carefully, and to list reasons for why they liked or disliked each poster and to carefully analyze their preferences. Participants were given pen and paper to list their thoughts. After participants analyzed their evaluation of the various posters, all posters appeared on the screen simultaneously and participants were asked to indicate which one they liked most. In the *Unconscious thought* condition, participants were told that they would engage in another task for a while, after which they would be asked which poster they liked best. These participants solved anagrams for 450 s (i.e., the same time the conscious thinkers analyzed), after which all posters appeared on the screen simultaneously again and participants were asked to indicate which one they liked most.

After participants had indicated their preference, they were asked for their attitude towards each poster. We asked for liking ratings and used scales with only the poles labeled (“not at all” and “very much”). Between the poles a line was drawn and participants could indicate their attitude by clicking somewhere on this line. In reality, we used a 50-points scale (from –25 to 25). Subsequently, they were asked how knowledgeable they were about art, again on a 50-points scale. Finally, participants were asked to give their phone numbers in case “something goes wrong with data storage.” Participants were then requested to return to the experimenter who awaited them with a surprise: the participants could take their favorite poster home. Subsequently, participants were (partly) debriefed, thanked, and dismissed.

Three to five weeks later participants were phoned with the question whether they could remember participating in the experiment where they had received a poster. The experimenter continued by asking participants how satisfied they were with the poster they chose (on a 10-point scale from 1 to 10). Second, the experimenter asked how much regret they experienced after their choice (again, on a 10 point scale from 1 to 10), and finally, the experimenter asked them how many Euros they would be willing to sell their poster for. Participants were then thanked and, for those who wanted, fully debriefed.

Results

Of the 113 participants, 24 could not be reached over the phone, leaving 89 participants available for the analyses. It was first established that there were no significant differences of choice of posters between conditions.

Main dependent variables

Satisfaction

The satisfaction scores were subjected to an analysis of covariance with Condition and as a factor and Knowledge

Table 1
Satisfaction, amount of money asked for selling the poster (in Euros), and strength of preference for all conditions (standard deviations between parentheses)

Condition	Immediate	Conscious	Unconscious
Satisfaction	6.68 (1.28)	6.68 (.88)	7.30 (.88)
Money	6.39 (5.94)	5.03 (5.20)	9.56 (8.68)
Strength of preference	17.8 (6.0)	20.7 (6.4)	15.8 (6.0)

of art as a covariate¹. The effect of Condition was significant, $F(2, 85) = 3.71, p < .03, \eta^2 = .08$. As can be seen in Table 1, unconscious thinkers were more satisfied with their choice than conscious thinkers, $F(1, 58) = 8.96, p < .005, \eta^2 = .13$, and than immediate decision makers, $F(1, 52) = 4.14, p < .05, \eta^2 = .07$. These latter two conditions did not differ.

Regret

The same analysis of covariance yielded no effects on regret (all F 's < 1.1). Participants indicated experiencing hardly any regret (all cell means below 2).

Money

The data on the amount of money participants were prepared to sell their poster for were also subjected to the same analysis of covariance. The effect of Condition was significant, $F(2, 85) = 3.24, p < .05, \eta^2 = .07$. As can be seen in Table 1, participants in the unconscious thought condition wanted more money for their poster than participants in the conscious thought condition, $F(1, 58) = 6.65, p < .02, \eta^2 = .12$, and than participants in the immediate decision condition, although this effect failed to reach significance, $F(1, 52) = 2.28, p < .14, \eta^2 = .04$. These latter two conditions did not differ.

Attitudes

After having chosen a poster in the laboratory session, participants also indicated their attitudes towards each of the individual posters. With these data we may obtain a better understanding of the nature of the decision process in the various experimental conditions. It is possible that conscious reasoning disturbs the decision process because it leads people have less strong preferences. However, it is also possible that conscious thinkers did have strong preferences, but that their preferences were suboptimal. Wilson, Schooler, and colleagues (Wilson et al., 1993; Wilson & Schooler, 1991) have argued in favor of the second possibility. Conscious thinkers do have strong preferences, in the sense that one attitude object is clearly evaluated more

positively than others. However, these strong preferences are sometimes simply wrong, because people use the wrong "weighting schemes." They attach too much or too little weight to various aspects of the stimuli they have to choose from (see also Dijksterhuis, 2004; Schooler et al., 1993). Our data may confirm the ideas of Wilson and colleagues.

Strength of preference

The sum of the attitudes towards the four posters not chosen were subtracted from the attitude towards the chosen poster. The resulting difference scores represent how strong participants' preferences are. The scores were subjected to an analysis of covariance with Condition as a factor and Knowledge of art as a covariate. The effect of Condition was significant, $F(2, 85) = 6.58, p < .002, \eta^2 = .13$, and supported the theorizing by Wilson and colleagues. As can be seen in Table 1, conscious thinkers had stronger, rather than weaker preferences than unconscious thinkers, $F(1, 58) = 11.55, p < .001, \eta^2 = .17$. The strength of preference among the immediate decision makers fell in between the two other conditions and only differed significantly from the unconscious thought condition, $F(1, 52) = 5.63, p < .03, \eta^2 = .10$.

Correlations between main DV's and attitudes towards chosen poster

Given that conscious thinkers have strong preferences but report less satisfaction (at least compared to unconscious thinkers), may we draw the conclusion that their preferences are wrong? To shed light on this is we correlated the attitudes towards the chosen poster with the main DV's. Specifically, the attitude scores were, for each condition separately, correlated with satisfaction, regret, and amount of money participants were willing to sell their poster for. These correlations did not differ significantly between conditions, but a trend became apparent. Whereas none of the correlations for the conscious thinkers reached significance, two out of the three were significant (and in the predicted direction) in the other two conditions. For immediate decision makers, attitudes towards the chosen poster predicted satisfaction ($r = .61, p < .001$) and "money" ($r = .48, p < .01$). For unconscious thinkers, attitudes towards the chosen poster predicted satisfaction ($r = .40, p < .05$) and regret ($r = -.46, p < .03$). In sum, attitudes were predictive of post-choice satisfaction for immediate decision makers and for unconscious thinkers, whereas such evidence was not obtained from conscious thinkers. Again however, the correlations did not differ between conditions and should not be overinterpreted.

General discussion

People who were given the opportunity to think about choices unconsciously made superior decisions relative to those who thought consciously or who did not think at all.

¹ The choice to include knowledge of art as a covariate was based on the Wilson et al. (1993) experiment in which the same was done. The covariate did not regress significantly on any of the main dependent variables or the attitudes towards the chosen poster (all p 's $> .05$) although the F values were often greater than 1. However, knowledge of art did have a significant effect on preferences ($p < .01$). As one may expect, more knowledge of art led to stronger preferences. In Table 1, we list unadjusted means.

The experiment extends earlier work by Dijksterhuis (2004; see also Dijksterhuis and Nordgren, in press) in two important ways: first, quality of decision was operationalized subjectively rather than normatively, and second, participants chose something real. Having people choose among hypothetical objects is one thing, but having people choose among actual objects and then having their post-choice satisfaction affected by how they arrived at their choices in the first place is more intriguing. The current findings make our earlier conclusion that unconscious thought can lead to superior decisions much more ecologically valid and practically relevant.

Our additional data on strength preferences and the relation between the attitude towards the chosen poster and later satisfaction shed light on why conscious thinkers sometimes make poor decisions. It is not the case that conscious thought leads to an absence of a strong preference. Instead, conscious thought led to relatively strong preferences that later turned out to be suboptimal. Wilson et al. (1993) have made the same argument when they refuted the possibility that conscious thinkers were less confident in their preferences. Conscious thought disturbs the decision process by letting people put too much or too little weight on various attributes (see also Dijksterhuis & Nordgren, in press; Wilson & Schooler, 1991) but it does not to an absence of a preference.

The conclusion is that, within the confines of the current paradigm, unconscious thinkers did well. Imagine yourself at the auction in Paris again. The best strategy may be following: first, take a good look at both the Monet and the Van Gogh. Then leave the auction and distract yourself for a while (which is easy to do in Paris), and only then decide.

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