

Research Report

Conscious and Unconscious Decision-Making in Younger and Older Adults

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The Unconscious Thought Theory (Dijksterhuis, 2004; Dijksterhuis & Nordgren, 2006; Dijksterhuis & Aarts, 2010) supposes two modes of thought in decision making: unconscious and conscious. Conscious thinking requires attention whereas unconscious thinking does not. The findings of Dijksterhuis (e.g. 2004) suggest that in simple decision tasks it is a good strategy to think about all the pros and cons to find the optimal decision. But if the decision task is more complex, careful deliberation and consideration is not the strategy of choice, best decisions are made without deliberative thoughts. Thinking about complex decisions extends the free capacity we have and therefore we are unable to take all possible outcomes into account to find the best choice. In contrast, because unconscious thinking has quasi no capacity limits, good decisions resulting from unconscious can be found even in rather complex situations (e. g. Dijksterhuis, 2004; Dijksterhuis & Nordgren, 2006). At least for younger people the results of Dijksterhuis (e.g. 2004) support these assumptions. But what about older people whose decision-making abilities commonly are seen as impaired (e.g. Mather, 2006; Peters & De Bruin, in press)? Due to their decline of processing resources and working memory capacity it could be expected that older people show impaired performance in decision tasks that require deliberative thinking. Performance on unconscious decision task should be unaffected. This conclusion was tested by replicating the original Dijksterhuis (2004) experiment but with younger and older participants. In this experiment participants had to evaluate some more or less attractive apartments and find the most attractive one. In the simple task only few features had to take simultaneously into account to find the best alternative whereas in the complex task the apartments differed with respect to much more features. After providing with the relevant information participants had to decide immediately, after a period of careful deliberation or after finishing a distracting task and

without considerations. Our hypothesis was that elderly should not show impaired performance in the condition without deliberation (unconscious) whereas age differences should be obviously in the other (conscious) conditions.

Method

One hundred and fifty persons participated in the experiment (75 women and 75 men), aged between 18 and 88 ($M = 49.12$, $SD = 19.86$). Participants were instructed to find an apartment for an imaginary prospective buyer. The criteria of an apartment she or he was looking for was written down. Participants should imagine they were an estate agent helping the buyer to find a perfect apartment taking into account the relevant aspects, which were all of equal importance. In the simple condition each apartment description consisted of four attributes (total quantity of 16 pieces of information), in the complex one there were twelve aspects (total quantity of 48 pieces of information), all of different desirability. Participants in the immediate condition read the apartments' information and evaluated each of the four apartments without thinking about them consciously. In the conscious condition participants had the opportunity to think about all aspects after a period of deliberating (one minute in the simple decision task and two minutes in the complex one). In the unconscious condition participants were distracted with an anagram task for two minutes before evaluating the apartments. In each case the four apartments were judged on a Likert scale from 1 (very bad) to 10 (very good). Participants were randomly assigned to one of the resulting six conditions: the immediate condition, the conscious thought condition and the unconscious thought condition, each of them combined with the simple or difficult decision task.

Results

A new variable (*attractiveness difference*) was built by subtracting the evaluations toward the worst apartment from the best one, indicating how well the differentiation between the attractive and the unattractive apartment could be done by the participants. Younger and older participants were separated by a median split. The median was at 47 years. The *attractiveness difference* was submitted to a 3 (*way of thinking*: immediate, conscious, unconscious) \times 2 (*task complexity*: easy, complex) \times 2 (*age*: younger, older participants) mixed analysis of variance. First, there is a main effect of *task complexity*, $F(1, 138) = 6.62, p < .05, \eta^2 = .05$, indicating that in simple task it was easier to find the best apartment. Second, there is highly significant effect of *way of thinking*, $F(2, 138) = 12.15, p < .001, \eta^2 = .15$, indicating a general predominance of unconscious decisions. Furthermore, the interaction between *task complexity* and *way of thinking* is also significant, $F(2, 138) = 6.01, p < .01, \eta^2 = .08$. As can be seen in *Figure 1*, in the easy condition the best choice is followed conscious thinking whereas in the complex task unconscious thinking results in better choices. More important, participants age did not have any significant influence (all F 's $< 1.09, n.s.$).

Discussion

The goal of the present study was to examine age differences in easy and complex decision tasks, especially regarding the costs or benefits from conscious or unconscious thinking as proposed by the *Unconscious Thought Theory* (e. g. Dijksterhuis & Nordgren, 2006). At first sight the results seems to be clear cut and fully replicating the findings of Dijksterhuis (2004) in showing that conscious thought processes lead to better results when simple decision problems have to be solved whereas in complex situations unconscious thoughts are superior. We hypothesized that older people because of their cognitive deficits



Figure 1: Participants choice depending on task complexity and way of thinking

unconscious decisions should not be impaired by the age of participants. In fact, age made no differences at all. In that way our findings support the assumption that unconscious has no capacity limits as proposed by Unconscious Thought Theory and imply that older adults are not generally bad decision makers (see also Peters & De Bruin, in press). With respect to the conscious condition where capacity depending deliberative processes are predominant the missing age effects seems to be surprising. But perhaps they give us a hint for an alternative interpretation of the presented results. Maybe our participants did not engage in deliberative thinking at all but did their choices in every condition according their intuition or gut feeling (e.g. Gigerenzer, 2008). The fact that better results were obtained in the unconscious condition could be explained by simple forgetting irrelevant but decision disturbing information. For now this remains a speculative but intriguing question.

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