Why we choose, how we choose, what we choose: the influence of decision initiation motives on decision making
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CHAPTER FOUR

The Price of a Piece of Cheese: Value from Fit between Epistemic Needs and a Learning versus Outcome Focus
People make decisions to attain outcomes: We want to have an interesting and well paying job, an affordable but spacious house, and a loving and suitable spouse. None of these can be had without deciding which job to apply for, which house to put an offer in for and which person to start dating. Indeed, many decades of research have shown that attaining positive outcomes and avoiding negative outcomes are important driving factors of behaviour. However, anticipated outcomes are not the only driver of decision making. Sometimes people engage in decision making to learn from the decision making process. Several theories, including the Theory of Lay Epistemics (Kruglanski, 1989) and Social Comparison Theory (Festinger, 1954), share the assumption that humans are fundamentally motivated to understand their world, and that they may invest considerable effort to achieve such understanding (see also Piaget, 1952). Engaging in decision making confronts decision makers with alternatives, characteristics of alternatives, and information about the decisional domain and therefore offers an opportunity to learn about the topic that is decided upon. Thus, individuals may be motivated to engage in decision making focused on attaining decisional outcomes, but also with a focus on learning from the process\(^1\).

The current research investigates the consequences of decision making with an outcome versus a learning focus. We hypothesize that the effects of focus may interact with people’s epistemic needs; specifically, with their preference for developing a thorough, rich, and accurate understanding of the world, including the decision problem at hand (De Dreu et al., 2008; Kruglanski, 1989). The extent to which an individual has epistemic needs depends on several factors, some being situation-based (e.g., domain-specific expertise, accountability), others being contingent upon chronic individual differences (e.g., need for assessment, need for cognition). Also, epistemic needs have been shown to be related to decision making behaviour. For example, people high in need for cognition are more likely to rely on their preferences rather than following heuristics (Drolet et al., 2008) and are more likely to use a vigilant decision making strategy (Bouckenooghe et al., 2007) as compared to those low in need for cognition. Further, situational factors that increase epistemic needs, such as critical group norms and accountability, have been found to stimulate decision quality during group decision making (Postmes,
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Spears, & Cihangir, 2001; Scholten, Van Knippenberg, Nijstad, & De Dreu, 2007).

Although epistemic needs have been linked to decision making processes and outcomes, little is known about how they relate to the subjective value that the decision maker attaches to the chosen option. Since it is subjective rather than objective value that influences factors like satisfaction, commitment, quality of implementation, and future choice (e.g., Curhan et al., 2009; Locke & Sadler, 2007; Oliver et al., 1994), it is important to uncover how epistemic needs influence subjective valuation of decision outcomes. Achieving this was the main objective of the current research.

We invoke regulatory fit theory (Higgins, 2000) to develop the idea that a decision focus on learning rather than outcomes better fits people with higher epistemic needs who are orientated towards gaining knowledge. Furthermore, we develop and test the idea that this fit is capable of predicting the subjective value decision makers attach to their chosen option. This hypothesis was tested in three studies. In the following sections we will first elaborate on what epistemic needs entail, followed by an introduction to regulatory fit theory and a discussion of how this theory can help predict subjective value in relation to epistemic needs.

**Epistemic Needs**

People differ in their regulatory orientations. These orientations are based on their concerns and interests, and they are influenced by a person’s needs, moods, social roles, and so on (Avnet & Higgins, 2006; Higgins, 2000). With regard to needs, people’s orientations can be influenced by physiological needs (e.g., a person who is hungry will have an increased preference for goals that involve attaining food), but they are also directed by psychological needs. Some examples are the need to attain positive outcomes (Expectancy Theory, Vroom, 1964), the need for achievement, affiliation, and power (Acquired Needs Theory, McClelland, 1975; McClelland & Burnham, 1976), and the need to meet personal standards (Self-Discrepancy Theory, Higgins, 1987). More recently, work has uncovered that our regulatory orientations are also directed by epistemic needs; i.e., the need to achieve a thorough, rich, and accurate understanding of the world (De Dreu et al., 2008; Kruglanski, 1989). Epistemic needs originate from individuals’ perception that their current knowledge or
information is insufficient concerning the task or decision at hand (Chaiken et al., 1989; De Dreu et al., 2008; Kruglanski, 1990). Epistemic needs are influenced by temporary, situational factors like expertise, time pressure, environmental noise, fatigue, and accountability or by more chronic individual differences including the need for assessment, need for cognition, and need for closure (Cacioppo & Petty, 1982; De Dreu & Carnevale, 2003; Higgins, Kruglanski, & Pierro, 2003; Kruglanski & Webster, 1996; Webster & Kruglanski, 1994).

When epistemic needs are high rather than low, people prefer to process relevant information systematically until confidence is gained (or regained) and epistemic needs are satisfied. Indeed, epistemic needs have been shown to decrease selective use of information (Stuhlmacher & Champagne, 2000), to discourage stereotyping and the use of heuristics (Fiske & Neuberg, 1990), to reduce the tendency to reject divergent opinions (Kruglanski & Webster, 1991), to enhance memory for unexpected information (Kang et al., 2009), to lead to better negotiation outcomes from using fuller information (De Dreu, Beersma, Stroebe, & Euwema, 2006), to increase information sharing and decision making quality in groups (Postmes et al., 2001; Scholten et al., 2007), and to lead to longer and more elaborate decision making strategies (e.g., Bouckenooghe et al., 2007; Cacioppo, Petty, Feinstein, & Jarvis, 1996; Drolet et al., 2008; Roets & Hiel, 2008).

Although epistemic needs have been shown to lead to increased and less biased information processing, hardly any research has been done regarding the influence on subjective valuation of the task outcome. The little research that has been done has shown that more elaborated and less biased processing does not necessarily lead to a higher subjective valuation of decisional outcomes. This resembles findings that more elaborated processing does not always result in higher objective outcome quality (Dijksterhuis, 2004; Gigerenzer et al., 2001; 2009). With regard to subjective valuation epistemic needs may lead to increased decisional uncertainty and (anticipated) regret regarding the chosen option (Lin & Wu, 2006; Pierro et al., 2008; Zeelenberg & Pieters, 2007; also see Camacho et al., 2003; Kruglanski et al., 2000). Thus, it is possible that individuals with higher epistemic needs will value their outcome less than individuals with lower epistemic needs (cf. Iyengar, Wells, & Schwartz, 2006), which would be undesirable because higher valuation tends to increase
satisfaction, commitment, quality of implementation, and future choice (e.g., Curhan et al., 2009; Locke & Sadler, 2007; Oliver et al., 1994). In the next section we introduce regulatory fit theory, which allows predictions about when higher epistemic needs will yield high (vs. low) subjective valuation.

Value from Fit

According to regulatory fit theory (Higgins, 2000), people can derive value from the fit they experience between their regulatory orientation and the manner in which they actually pursue a goal. A better fit leads to a more engaging process and causes a ‘this feels right’ experience. In the case of decision making, this feeling in turn makes the subjective value of the chosen option more extreme, with liked options becoming more positive and disliked options becoming more negative (e.g., Avnet & Higgins, 2003; 2006; Camacho et al., 2003; Higgins, 2000; 2002; 2006; Higgins et al., 2008; Higgins, Idson, et al., 2003). For example, we know that people in a sad mood prefer deliberate thinking, whereas those in a happy mood prefer intuitive reasoning (Bolte, Goschke, & Kuhl, 2003; Schwarz & Clore, 2007). De Vries et al. (2008) asked participants in a sad (happy) mood to make decisions after deliberate (intuitive) reasoning. They found greater satisfaction and subjective value when the thinking strategy was a fit rather than a non-fit with the mood state (i.e., sad/deliberate and happy/intuitive > sad/intuitive and happy/deliberate).

Similarly, people who are promotion-oriented prefer an eager over a vigilant decision strategy, whereas prevention-oriented people prefer the reverse. Higgins, Idson, et al. (2003) found that when promotion-oriented people were asked to make a choice between a coffee mug and a pen using an eager strategy (i.e., by asking themselves what they would gain by choosing one option over the other), they valued their chosen option more than when they used a vigilant strategy (i.e., by asking themselves what they would lose by not choosing one option over the other). In contrast, prevention-oriented people valued their chosen option more when used a vigilant rather than an eager strategy. Based on regulatory fit theory, then, individuals with higher versus lower epistemic needs can be expected to value a chosen option more when they use a better-fitting strategy to pursue their decision making goal.

As mentioned earlier, during decision making people can focus on reaching a particular outcome or on learning something from the decision-making process.
process. When individuals adopt an outcome focus, they are concerned with attaining the best outcome (e.g., Effort-Accuracy models, Bettman et al., 1990; Payne et al., 1993). When individuals adopt a learning focus, however, they focus more on the value of the decision process itself (e.g., Avnet & Higgins, 2003; Higgins et al., 2008; Tetlock, 1991; Thibaut & Walker, 1975; Tversky & Shafir, 1992). In this case individuals view the decision process as an opportunity to learn about the decision’s options, personal preferences, and, more generally, the topic of the decision domain. Recall that epistemic needs are about the desire to achieve a rich and well-developed understanding of the world, including the task at hand. As such, we expect that an emphasis on learning better fits higher epistemic needs and, accordingly, higher epistemic needs will lead to a greater increase in valuation of the chosen option than lower epistemic needs when the focus is on learning rather than outcome.

Study Overview

We designed three studies to test our hypothesis. In each study, we used a different proxy to epistemic needs. In Study 4.1 we measured domain-specific expertise to assess epistemic needs. Since epistemic needs result from perceived insufficiency of current knowledge or information, they will generally be higher amongst people who have less knowledge about the decision task (i.e., people with less expertise). We therefore expected that people with less expertise would experience a better fit than people with more expertise when a learning rather than an outcome focus was induced, and we expected this fit to influence subjective value as predicted—a greater increase in valuation of the chosen option for lower expertise than for higher expertise people in case of a learning rather than an outcome focus.

In Study 4.2 we measured need for assessment (Kruglanski, et al., 2000). People with a high need for assessment are concerned with critically evaluating their situation and options to assess relative quality. They will ask themselves what their options are exactly, whether any options are missing, and what the best option would be based on knowledge about past, current, and future preferences. Importantly, they greatly value making decisions in the right way, and not necessarily attaining the best outcome. In order to reach these decisional goals, they want to have full information about the decisional task, thus resulting in high epistemic needs (Higgins, Kruglanski, et al., 2003;
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Kruglanski et al., 2000). We thus expected people with higher assessment concerns to experience a better fit than people with lower assessment concerns when a learning rather than an outcome focus was induced, and we expected this to influence subjective value accordingly.

Finally, in Study 4.3 we measured need for cognition, defined as the need for effortful, elaborative cognitive activity (Cacioppo & Petty, 1982; Cacioppo, Petty, & Kao, 1984; Petty & Cacioppo, 1986). Need for cognition is positively associated with amount of information acquisition and use, and with intrinsic enjoyment in cognitive activities (Cacioppo et al., 1996, for an overview) and a higher need for cognition corresponds with higher epistemic needs (e.g., De Dreu et al., 2008). We therefore expected that people with a higher need for cognition would experience a better fit in the learning condition than people with a lower need for cognition, resulting in a greater increase in valuation when a learning rather than an outcome focus was induced.

In all three studies we manipulated whether people focused on learning or on the outcome during the decision task, which consisted of selecting a piece of cheese to one’s liking. Subjective value was measured by liking of the chosen option (Study 4.1 and Study 4.2), and monetary value given to the chosen option, both measured hypothetically (Study 4.1 and Study 4.3), and with actual monetary consequences (Study 4.2 and Study 4.3).

Study 4.1

Study 4.1 used domain specific expertise as a measure of epistemic needs, with less expertise corresponding to higher epistemic needs. We expected that people with less expertise would experience a better fit in the learning condition. As a consequence of fit, value of the chosen option should show a greater increase for lower-expertise participants than for higher-expertise participants when a learning rather than outcome focus is induced.

In addition to manipulating focus, we also manipulated the size of the option-set. We expected effects to be more extreme in a larger than in a smaller option-set, because the larger set-size would give people more opportunity to satisfy their epistemic needs in case of a learning focus, creating an even better fit.
**CHAPTER 4**

**Method**

**Participants and Design**

One hundred participants (46 women, 54 men; age \( M = 21.90, SD = 4.13 \)), all students at Columbia University, were randomly assigned to a 2 (set-size: 10 vs. 40) by 2 (focus: learning vs. outcome) between-participants design. We measured expertise to serve as an additional predictor variable. Participants received money (US$12) for their participation. The main dependent variable in this study was subjective valuation of the chosen option.

**Materials**

**Expertise.** Expertise was measured by asking participants to rate 18 types of cheeses on how much they liked the cheese (1 = strongly dislike, 9 = strongly like). The cheeses varied in specificity (e.g., from most general to most specific: “To what extent do you like or dislike cheese?”; “To what extent do you like or dislike cheeses that have a mild taste?”; To what extent do you like or dislike blue cheeses?”; “To what extent do you like or dislike Port Salut?”). For each question, participants had the possibility to answer “I do not know this type of cheese well enough to say.” The expertise score was composed by deducting the number of times participants had ticked the box for “I do not know this type of cheese well enough” from 18 (i.e., a higher score thus meant greater expertise).

**Decision task.** Participants were asked to choose a cheese to their liking from a cheese menu presented on the computer. They could look at descriptions of the cheeses by clicking on them, showing one description at a time. Descriptions entailed some information about flavour (e.g., strong or mild), texture (e.g., soft or crumbly), some background information (e.g., country of origin), and a photo of the cheese. Participants could look at each description as often as they wanted and there was no time limit. They finished the task by indicating which cheese they wanted.

**Set-size.** The cheese menu existed of either 10 (small option set) or 40 (large option set) cheeses. A pre-test ensured that the two cheese menus were the same in experienced variety in cheese.

**Focus.** Focus was manipulated by either telling participants that the cheese menu they were about to receive would enable them to learn something about different cheeses (learning focus) or telling them that the
cheese menu they were about to receive would enable them to find a cheese they would really like (outcome focus). In the learning focus condition participants read the following: The reason why we would like to give you these 10 options is because this will enable you to learn a lot about different cheeses. Obviously, it is important that you have knowledge about what options are actually out there when deciding about something. Being able to gain knowledge about what cheeses there are is therefore a great benefit of choosing from these 10 different cheeses. In the outcome focus condition they read: The reason why we would like to give you these 10 options is because this will enable you to find a cheese you will really like. Obviously, it is important that you can select an option you really want when deciding about something. Being able to select a cheese you will really like is therefore a great benefit of choosing from these 10 different cheeses.

Value. Subjective value of the chosen option was measured in two ways. First, we measured the extent to which participants liked or disliked their chosen option with the question “To what extent do you like or dislike the option you have chosen?” (1 = strongly dislike, 9 = strongly like). Secondly, we measured monetary value by giving participants a choice titrator. We asked them to indicate whether or not they would accept the offer if we offered them the option to buy a US$12 piece of the cheese they had chosen with a certain discount, starting with “Please indicate (by circling your answer) whether or not you would accept the offer if you get an offer of paying $0.50 for a $12.00 piece of the cheese you selected?” and finishing with “Please indicate (by circling your answer) whether or not you would accept the offer if you get an offer of paying $12.00 for a $12.00 piece of the cheese you selected?”, raising the price by $0.50 per question.

Procedure

Participants first filled out the expertise measure. After a few filler tasks they continued with the cheese selection task. They were told they would receive a cheese menu consisting of 10 (vs. 40) cheeses from which they had to pick a cheese to their liking. Next, we manipulated focus by telling them the menu would enable them to either learn something about cheeses or find a cheese they would really like. At this point they received the cheese menu with
10 or 40 cheeses. Finally, after selecting a cheese to their liking they filled out the value measures. No tasting of the cheese was involved.

Results

Initial Analyses

The average number of cheese types known well enough to rate on liking was 11.57 (SD = 2.80), with a minimum of five and a maximum of all 18 being rated. A correlation analysis on the resulting expertise score and general liking of cheese was non-significant (N = 98, r = .08, ns.). Correlation analyses on the dependent variables showed that monetary value was significantly related to liking of the chosen option (r = .40, p < .005). Since initial regression analyses on our dependent variables revealed that set-size had neither a main effect nor any interaction effects on our value measures, we collapsed our design over this variable. Regression analyses reported below were thus performed over the collapsed data-set.

Value

Liking. A regression analysis showed that the dummy variable of focus (outcome = 0; learning = 1), the standardized expertise score, and their interaction significantly predicted liking of the chosen option, F(3, 96) = 7.82, p < .001, R² = .20. There was a main effect of focus, with a learning focus leading to more liking of the chosen option than an outcome focus, t(98) = 2.25, p < .05, β = .21. There was also a main effect of expertise, with people with less expertise liking their chosen option less than people with more expertise, t(98) = 4.20, p < .001, β = .54. However, as expected, this effect was qualified by an interaction, t(98) = -2.35, p < .05, β = -.30. Simple slope analysis showed that the positive relation between expertise and liking was only present in case of an outcome focus, t(98) = 4.20, p < .001, β = .54. In case of a learning focus, there was no relation between expertise and liking, t(98) = .87, ns. (see Figure 5a).
Monetary value. A second regression analysis showed that the dummy variable of focus (outcome = 0; learning = 1), the standardized expertise score, and their interaction also significantly predicted monetary value (in dollars), $F(3, 94) = 5.57, p < .005, R^2 = .15$. There was again a main effect of focus, with a learning focus leading to higher valuation of the chosen option ($M = 6.88, SD = 3.24$) than an outcome focus ($M = 5.35, SD = 3.35$), $t(96) = 2.42, p < .05, \beta = .23$. There was also a main effect of expertise, with more expertise leading to higher valuation of the chosen option, $t(96) = 3.26, p < .005, \beta = .44$. However, this effect was again qualified by an interaction between focus and expertise, $t(96) = -2.71, p < .01, \beta = -.37$. Since this effect was in line with predictions we conducted simple slopes analyses. These showed that people with more expertise valued the cheese more than people with less expertise in case of an outcome focus, $t(96) = 3.26, p < .005, \beta = .44$, but this effect was not present in case of a learning focus, $t(96) = -.57, ns.$ (see Figure 5b).
Discussion

Results support our hypothesis that higher epistemic needs better fit with a learning focus than lower epistemic needs and that this fit leads to an increase in subjective value of the chosen option. More specific, in the case of an outcome focus, people with lower levels of expertise (i.e., higher epistemic needs) valued their option less than people with higher levels of expertise. In the case of a learning focus, however, this difference was eliminated, and people with lower levels of expertise valued their option just as much as people with higher levels of expertise. In sum, the higher were the epistemic needs, the greater the increase in subjective value in the case of a learning focus rather than an outcome focus. This increase in value brought experienced value for low-expertise participants to the level of high-expertise participants, who presumably were more convinced about their choice regardless of decision focus. Set-size did not influence the effects. This could be explained by the fact that the ‘small’ set-size already gave people enough opportunity to satisfy their epistemic needs.
Study 4.2

Study 4.2 differed from Study 4.1 in several ways. In Study 4.2 we measured monetary valuation of the chosen option in a real situation in which people could actually buy a piece of cheese rather than the hypothetical situation used in Study 4.1. We dropped the large set-size condition, since the smaller set-size proved to be sufficiently large to satisfy epistemic needs in Study 4.1. Also, instead of measuring expertise we used a new proxy to epistemic needs, namely the need for assessment.

We had two aims for Study 4.2. First, we wanted to replicate our results of Study 4.1 with a value measure that had actual monetary consequences. Even though we did measure monetary value in Study 4.1, this measure was hypothetical, meaning participants knew they would not actually have to pay the amount they indicated. In Study 4.2 we therefore set out to measure monetary value with actual monetary consequences for the participants. Second, we wanted to test our hypothesis concerning the fit between epistemic needs and a learning focus with a different proxy to epistemic needs, namely ‘need for assessment’. Since people high in need for assessment are more epistemically driven than people low in need for assessment we expected that people with a higher need for assessment would experience a better fit with a learning focus than people with a lower need for assessment, whereas no differences in fit were expected in case of an outcome focus. We therefore expected that valuation of the chosen option would increase more for people with a higher need for assessment than for people with a lower need for assessment when a learning focus rather than an outcome focus was induced.

Method

Participants and Design

Fifty participants (27 women, 23 men; age $\text{M} = 22.86$, $\text{SD} = 6.52$), all students at Columbia University, were randomly assigned to two conditions (focus: learning vs. outcome) in a between-participants design. Need for assessment was measured as the second predictor variable. Participants received money (US$12) for their participation. The main dependent variable in this study was again subjective valuation of the chosen option.
**Materials**

**Assessment.** We administered the assessment part of the Regulatory Mode scale (Kruglanski et al., 2000), which consists of 12 items (e.g., “I like evaluating other people’s plans”, “I spend a great deal of time taking inventory of my positive and negative characteristics”, 1 = strongly disagree, 7 = strongly agree, $\alpha = .82$).

**Procedure, focus manipulation, and decision task.** The procedure and focus manipulation (learning vs. outcome) were the same as in Study 4.1. The decision task featured the menu with 10 cheeses, from which participants were asked to pick a cheese to their liking. After manipulating focus by telling them the menu would enable them to either learn something about cheeses or find a cheese they would really like, they selected a cheese to their liking and filled out the value measures.

**Value.** Similar to Study 4.1, value was measured in two ways: by expressed liking and by the monetary amount participants were willing to pay for their chosen option. Liking was measured with the same question as before (“To what extent do you like or dislike the option you have chosen?”, 1 = strongly dislike, 9 = strongly like). However, instead of measuring monetary value hypothetically by means of a choice titrator, we measured actual value by telling participants we had an offer waiting for them at the end of the experimental session. This offer entailed letting them buy a US$5 piece of the cheese they had chosen for a cheaper price. Participants were asked to indicate the maximum price they were willing to pay for a $5 piece of the cheese and were told their offer would be compared to our offer at the end of the session. If their price was higher than our discount offer, they would have to pay our offer-price in return for a piece of cheese. If their price was lower than our offer, they would lose the chance at receiving a piece of cheese for our discount price. The outcome of their offer compared to ours was indeed given at the end of the session, and its consequences were executed.

**Results**

**Initial Analyses**

One participant was removed due to lack of serious participation. The average need for assessment score was 4.84 ($SD = 1.11$). Correlation analyses
on the dependent variables showed that liking of the chosen option was significantly related to monetary value ($r = .41, p < .005$).

Value

_Liking_. A regression analysis showed that the dummy variable of focus (outcome = 0; learning = 1), the standardized assessment score, and their interaction significantly predicted the extent to which people liked or disliked their chosen option, $F(3, 45) = 4.99, p < .01$, $R^2 = .25$. There was a main effect of assessment $t(47) = -2.38, p < .05$, $\beta = -.46$, with higher assessors liking their chosen option less than lower assessors. This is consistent with previous findings that high assessors are more critical than low assessors (see Higgins, Kruglanski, et al., 2003; Kruglanski et al., 2000). We also found the expected interaction effect between assessment and focus, $t(47) = 3.67, p < .005$, $\beta = .70$. Although higher assessors liked their chosen option less than lower assessors in case of an outcome focus, $t(47) = -2.38, p < .05$, $\beta = -.46$, they liked their chosen option better than lower assessors in case of a learning focus, $t(47) = 2.82, p < .01$, $\beta = .52$ (see Figure 6a). There were no other effects.

_Figure 6a_. The influence of need for assessment and a learning versus outcome focus on liking of the chosen option (Study 4.2).
**Monetary value.** A regression analysis showed that the dummy variable of focus (outcome = 0; learning = 1), the standardized assessment score, and their interaction also significantly predicted monetary value (in dollars), $F(3, 45) = 2.84$, $R^2 = .16$, $p < .05$. As predicted, there was again an interaction effect between focus and assessment, $t(47) = 2.78$, $p < .01$, $\beta = .56$. Lower assessors were willing to pay more for their cheese than higher assessors in case of an outcome focus, $t(47) = -2.56$, $p < .05$, $\beta = -.50$, whereas there was no influence of assessment in case of a learning focus, $t(47) = -1.39$, $ns$ (see Figure 6b). There were no other effects.

![Figure 6b](image.png)

*Figure 6b.* The influence of need for assessment and a learning versus outcome focus on monetary valuation of the chosen option (Study 4.2).

**Discussion**

These results again support our hypothesis that people with higher epistemic needs experience a better fit with a learning focus than people with lower epistemic needs, and this fit leads to an increased subjective valuation of the chosen option: In the case of an outcome focus, people with a higher need for assessment (i.e., higher epistemic needs) valued their option less than people with a lower need for assessment (i.e., weaker epistemic needs), but they valued their option more (in liking) or just as much (in monetary value)
when they had a learning focus. In sum, the higher the epistemic needs were, the greater the increase in subjective value when there was a learning rather than an outcome focus. This increase in value from fit in the learning condition compensated for the overall negative effect of high assessment needs on value; i.e., the general tendency for higher assessors to be evaluatively critical, as clearly revealed in the outcome focus condition. We will return to the broader issue of the apparent negative relation between epistemic needs and value when the focus is on outcomes in the general discussion.

Study 4.3

The design of Study 4.3 differed from Studies 4.1 and 4.2 in a few critical respects. First, we dropped the liking measure of value and measured value with the two monetary value measures instead. Second, we again changed our individual differences measure. This time we used need for cognition, which has been found to be positively associated with many aspects of information processing (Cacioppo et al., 1996, for an overview). Since a higher need for cognition equals higher epistemic needs, we expected a higher need for cognition to better fit a learning focus than a lower need for cognition. We therefore expected higher need for cognition to result in a greater increase in value of the chosen option than lower need for cognition when a learning rather than outcome focus was induced. Finally, our first two studies did not have a manipulation check for the focus manipulation. We therefore added two measures, namely the extent to which people reported having focused on learning during the task and the extent to which people reported actually having learnt something during the task.

Method

Participants and Design

Fifty-two participants (40 women, 12 men; age $M = 21.04$, $SD = 4.51$), all students at the University of Amsterdam, were randomly assigned to two conditions (focus: learning vs. outcome) of a between-participants design. We measured need for cognition to serve as an additional predictor variable. Participants received money (7 Euros, approximately US$10) for their
participation. The main dependent variable measured was again subjective valuation of the chosen option.

Materials

Need for cognition. We administered the shortened Need for Cognition scale (Cacioppo, Petty, & Kao, 1984) which consists of 18 items (e.g., “I find satisfaction in deliberating hard and for long hours”, “I only think as hard as I have to” (reversed), 1 = strongly disagree, 7 = strongly agree, $\alpha = .88$).

Procedure, focus manipulation, and decision task. The procedure was the same as in the first two studies, and so was the manipulation of focus (learning vs. outcome). The decision task again featured the cheese menu with 10 cheeses, from which participants were asked to pick a cheese to their liking. After manipulating focus by telling them the menu would enable them to either learn something about cheeses or find a cheese they would really like, they selected a cheese to their liking and filled out the value measures. Next, they filled out the focus manipulation checks. Finally, we finished the session by giving participants the outcome of their offer, resulting in either the purchase of a piece of cheese or no purchase.

Manipulation checks. To check whether our manipulation of focus did what we wanted it to do we measured the extent to which participants reported having focused on learning during the decision task (1 = not at all, 9 = very much). In addition we asked participants to what extent they thought they had indeed learnt something during the decision task (1 = not at all, 9 = very much).

Value. Monetary value was measured in two ways. First, we used the hypothetical monetary value measure from Study 4.1, in which participants had to indicate whether or not they would accept an offer of buying a piece of their chosen cheese against a certain discount price. Second, we used the offer measure from Study 4.2, in which participants had to make us an offer by telling us the maximum price they were willing to pay for a piece of their chosen cheese. This resulted in either a discount purchase (in case their offer was the same or higher than the one we had set) or no purchase (in case their offer was lower than the one we had set).
Results

Initial Analyses

One participant was removed due to misunderstanding the instructions of the cheese task. The average need for cognition score was 4.47 ($SD = .81$). Correlation analyses on the dependent variables showed that the two monetary value measures were significantly related ($r = .39$, $p < .005$).

Manipulation Checks

Learning focus. A regression analysis showed that the dummy variable of focus (outcome = 0; learning = 1), the standardized need for cognition score, and their interaction significantly predicted the extent to which participants focused on learning, $F(3, 47) = 4.03$, $p < .05$, $R^2 = .21$. As expected there was a main effect of focus, $t(49) = 2.58$, $p < .05$, $\beta = .34$. In line with our predictions, people in the learning focus condition reported having focused more on learning ($M = 5.24$, $SD = 1.83$) than people in the outcome focus condition ($M = 3.81$, $SD = 1.92$). There was also a trend of an interaction effect between focus and need for cognition, $t(49) = 1.68$, $p = .10$, $\beta = .34$. A post-hoc analysis showed that in the learning condition people with a higher need for cognition were more focused on learning than people with a lower need for cognition, $t(49) = 2.01$, $p = .05$, $\beta = .35$, whereas no influence of need for cognition was found in the outcome condition, $t(49) = -.51$, $ns$.

Experienced learning. A second regression with the dummy variable of focus (outcome = 0; learning = 1), the standardized need for cognition score, and their interaction significantly predicted experienced learning during the decision task, $F(3, 47) = 4.32$, $p < .01$, $R^2 = .22$. Again as expected, there was a main effect of focus $t(49) = 2.46$, $p < .05$, $\beta = .32$, with people in the learning focus condition reporting having learnt more ($M = 5.52$, $SD = 1.53$) than people in the outcome focused condition ($M = 4.19$, $SD = 1.92$). There were no other effects.

Value

Hypothetical value. A regression analysis showed that the dummy variable of focus (outcome = 0; learning = 1), the standardized need for cognition score, and their interaction came close to significantly predicting monetary value (in euros) when measured hypothetically, $F(3, 47) = 2.35$, $p$
= .08, $R^2 = .13$. As expected there was an interaction effect between focus and need for cognition, $t(49) = 2.13, p < .05, \beta = .46$. People with a higher need for cognition were willing to pay more for their chosen option in case of a learning focus, $t(49) = 2.45, p < .05, \beta = .44$, but not in case of an outcome focus, $t(49) = -.73, ns$ (see Figure 7a). There were no other effects.

![Figure 7a](image.png)

**Figure 7a.** The influence of need for cognition and a learning versus outcome focus on hypothetical monetary valuation of the chosen option (Study 4.3).

**Actual offer.** A second regression analysis showed that the dummy variable of focus (outcome = 0; learning = 1), the standardized need for cognition score, and their interaction significantly predicted monetary value (in euros) when measured with an actual offer, $F(3, 47) = 3.99, R^2 = .20, p < .05$. There was a marginal interaction effect between focus and need for cognition, $t(49) = 1.77, p = .08, \beta = .30$. Since this effect was predicted we performed simple slopes analyses. These showed that people with a higher need for cognition were again willing to pay more for their cheese than people with a lower need for cognition in case of a learning focus, $t(49) = 3.26, p < .005, \beta = .56$, but not in case of an outcome focus, $t(49) = .43, ns$ (see Figure 7b). There were no other effects.
Figure 7b. The influence of need for cognition and a learning versus outcome focus on actual monetary valuation of the chosen option (Study 4.3).

**Discussion**

These results again support our hypothesis that people with higher epistemic needs better fit a learning focus than people with lower epistemic needs and that this fit leads to an increase in subjective valuation of the chosen option. When there was a learning focus, people with a higher need for cognition (i.e., higher epistemic needs) valued their option more than people with a lower need for cognition (i.e., lower epistemic needs). In case of an outcome focus this difference was not there, and people with a higher need for cognition valued their option just as much as people with a lower need for cognition. In sum, the higher the epistemic needs, the greater the increase in subjective value when there was a learning focus rather than an outcome focus.

**Conclusions and General Discussion**

People with higher epistemic needs have a stronger preference for gaining a full and accurate understanding of their environment and the tasks they are performing compared to people with lower epistemic needs. Past research has shown that epistemic needs generally are related to enhanced
information processing, less biased decision making on an individual level, and higher quality decision making in groups, but it remained unclear how it is related to subjective valuation of the decision outcome. In decision making, people can focus on attaining a particular outcome. However, the decision process also offers people the chance to learn about their options, their preferences, and the topic they are deciding on. Such learning is likely to be a better fit for people with higher rather than lower epistemic needs. Furthermore, this fit can increase valuation of the chosen option. Across three studies we found that, as predicted, a learning focus was a better fit for people with higher rather than lower epistemic needs, and this better fit led to a greater increase in valuation of the chosen option when compared to valuation when the focus was on outcomes.

In the remainder of this discussion section we elaborate upon these findings, address weaknesses and limitations, and provide an outline of what we see as the most critical next research questions to be addressed.

Summary of Results and Theoretical Implications

Across all three studies we found that higher epistemic needs led to a greater increase in valuation of the chosen option than lower epistemic needs when a learning rather than an outcome focus was induced, both when measured by liking of the chosen option (Study 4.1-4.2), and when measured by monetary valuation of the option (Study 4.1-4.3). The findings together support the conclusion that higher epistemic needs better fit a focus on learning than lower epistemic needs.

When we compare Studies 4.1 and 4.2 to Study 4.3 there is a difference in the effects on value. In the first two studies, the fit between epistemic needs and a learning focus diminished the negative effect of epistemic needs on value. In Study 4.3 there were no negative effects in the case of an outcome focus, and this resulted in higher epistemic needs leading to higher value for a learning focus. One possible explanation is that in Study 4.3 epistemic needs were measured with a different measure than in Studies 4.1 and 4.2. Previous research has shown that epistemic needs can lead to (anticipated) regret and uncertainty about whether or not the right choice was made (e.g., Lin & Wu, 2006; Pierro et al., 2008). Since subjective value judgments are highly dependent on relative attractiveness, uncertainty about
whether or not the chosen option is actually better than the other options is likely to lower the subjective value of the chosen outcome. This can explain the negative effects of epistemic needs on value found in Studies 4.1 and 4.2 because low expertise (Study 4.1) and higher assessment (Study 4.2) are both likely to be associated with uncertainty about making the right choice. Research on need for cognition, on the other hand, has shown that, rather than having a general negative impact on decisional certainty, need for cognition only has a negative impact in situations in which epistemic needs could not be satisfied. Since participants in the present studies were given enough information and time to satisfy epistemic needs, a negative effect of need for cognition on valuation was not observed.

**Study Limitations and Avenues for Future Research**

One important limitation of the current research is that we have no direct evidence pertaining to which psychological state mediates the fit effect on value. Specifically, our expectations were based on the regulatory fit literature which suggests that strength of engagement is the underlying process, but engagement was not measured in the current studies. It is thus important to obtain direct evidence in future research. For example, if value differences are the result of engagement, then valuation of unattractive options should be lower (i.e., more negative) under fit than under non-fit conditions. Alternatively, past research has shown that fit effects can be undone by telling people that their engagement in the task could have made them “feel right” about what they were doing, and then asking them to report to what extent the process “felt right” before letting them value the chosen option (Higgins, 2006, for an overview).

Also, valuation of the chosen option was based on written information (i.e., cheese attributes) and visual information (i.e., picture), rather than actually tasting the cheeses. This closely resembles many real-life settings since tasting or, more generally, using a product before the purchase is often not possible. Still, customers usually have the option to ask for a refund if the product is not satisfactory. In addition, the question arises whether they will buy the product again. Therefore, future research should test the possible limits of the fit effect. For example, this research could test whether the fit between epistemic needs
and a learning focus can also influence appraisal of a product that is actually used, and, if so, how long this effect persists.

Finally, inducing a learning focus proved helpful in reducing the negative effects of epistemic needs on value in Studies 1 and 2, where epistemic needs was likely to be associated with uncertainty about having made the right choice. However, it might not always be possible to use this method, as when the decision maker already has full knowledge regarding the options and decisional topic. Since the negative influence of epistemic needs on value is likely the result of uncertainty about making the right decision and regret experienced as a consequence of this, solutions aimed at reducing uncertainty and regret could be sought for these circumstances instead. Research has already uncovered several ways of reducing (anticipated) regret, like transferring responsibility, increasing justifiability, ensuring reversibility, and avoiding feedback about foregone options (Zeelenberg & Pieters, 2007, for an overview), as well as by strengthening locomotion concerns rather than assessment concerns (Pierro et al., 2008). Future research could explore the appropriateness of these different techniques for preventing the negative effects of high epistemic needs on value.

**Practical Implications**

We argued that when making decisions, people can focus on the outcome of a decision but they can also focus on learning something from the decision process, and that people with higher epistemic needs experience a better fit with a learning focus than people with lower epistemic needs. We focused on the effect of this fit on valuation of the chosen option, and the main implication of the studies reported in this paper is that a learning focus has increasing benefits in case of higher epistemic needs. This has some practical implications in situations in which people are likely to have these high epistemic needs. For example, the increased value due to fit can serve marketing purposes. More specific, for product types about which a substantial number of individuals feel they currently lack knowledge to make a good decision (e.g., special cheeses, extensive wine collections, but also “new” green products like energy saving cars or waterless washing machines), consumer valuation of these products could be improved by putting a greater focus on the ability to learn something about the new product category. This
applies as well to ‘politicians’ as a product for voters as electoral consumers. In addition, value from fit could serve as a decision aid for complex decisions. Since many important life decisions are also decisions people have relatively little experience with and thus little knowledge about, such as buying a house or making career decisions, trying to help people decide on these issues by instructing them how to reach the best outcome might not be the best strategy, since this induces a strong outcome focus. Instead, one could point out the possibilities of learning from and gaining experience in the decisional domain.

In conclusion, the subjective value of a chosen option is not purely the result of a deliberate and effortful decision strategy, but also of the fit between a person’s regulatory orientation and the way the decision process is executed. In general, this article supports the idea that there is not a single way of making a decision, and that different people benefit from different decision foci at different times. People are usually unaware of the decision focus that best fits them. Finding out which focus fits what orientation allows us to aid the decision maker in establishing a fit, and therefore deserves more attention.
Notes

1 This resembles the distinction made in the achievement goal literature (e.g., Elliot, 1997; Elliot & Church, 1997; Elliot & Harackiewicz, 1996), where people can have performance goals (reaching a better or avoiding a worse outcome than others; cf. outcome focus) or mastery goals (increasing one’s personal skills; cf. learning focus).