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

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CHAPTER TWO

Approach versus Avoidance: The Influence of Decision Initiation Motives on Effort and Information Processing during the Subsequent Decision Process

Much of our direction in life is determined by the decisions we make. Buying stocks instead of opening a savings account, getting health insurance or not, deciding to get married instead of living apart together, continuing to rent an apartment instead of buying it, applying for a new job, hiring a promising but rather junior job candidate, ending merger negotiations prematurely: these are but a few examples of the pivotal choices we make in the course of our lives. Their consequences being both immense and easy to imagine, many decades of research have provided a solid understanding of the psychological mechanisms that lead towards or away from optimal decision processes, and outcomes that live up to some normative standard.

Yet, even though the outcomes of decisions play an important role in motivating our decision behavior (e.g., outcome importance, Creyer et al., 1990; Payne et al., 1996), this motive does not stand alone. For example, people are still motivated to decide for themselves when letting someone else decide for them will result in exactly the same decision outcome, or perhaps an even better one (e.g., Beattie et al., 1994), a phenomenon that cannot be explained by an outcome motive. Since people can thus be motivated to initiate the process of deciding (i.e., to start making a decision) because of different types of motives, the question arises what these motivational types entail, and whether or not they affect decision making in the same way.

Exceedingly few studies have looked at what different types of motives lead to initiation of the process of deciding (e.g., Beattie et al., 1994; Crowe & Higgins, 1997; McNeill, Nijstad, Handgraaf, & De Dreu, 2007) and even fewer studies have investigated how these different types of initiation motives relate to the subsequent decision process and outcome (e.g., Crowe & Higgins, 1997; DeCaro & Johnson, 2007; also see Higgins, 2002). The current research was designed to fill this void. We propose that initiation motives can generally be categorized as approach motives (e.g., attaining a positive outcome, pride, pleasure, getting money for making a decision) or avoidance motives (e.g., avoiding a negative outcome, shame, displeasure, getting a fine for not making a decision). We develop and test the idea that initiation due to approach motives will lead to more effort exertion during the subsequent decision process than initiation due to avoidance motives. We furthermore propose and test that initiation due to approach motives leads to

a broader information processing style than initiation due to avoidance motives. These hypotheses were tested in three studies.

Effort in Decision Making

In principle, decision making is a costly activity: it requires effort and time to identify options, search for information, compare options, make trade-offs, deliberate, and choose (e.g., Bettman, Johnson, & Payne, 1990). Yet decision theory has uncovered that individuals may expend more or less effort in processing all the relevant (and irrelevant) information. Dual Process Models, such as the Heuristic-Systematic Model (Chaiken, 1987), the Elaboration Likelihood Model (Petty & Cacioppo, 1986), and the more general System I and System II distinction (Evans, 2003; 2008) distinguish between effortless, shallow, and automatic information processing on the one hand, and more effortful, systematic and deliberate information processing on the other. Similarly, others distinguish between intuitive/heuristic based and rational/computational modes of decision making, with the rational/computational mode again requiring more cognitive resources and effort (e.g., Gigerenzer & Brighton, 2009; Gigerenzer & Selten, 2001; Tversky & Kahneman, 1974).

The distinction between these information processing modes is important because they have been linked to decision performance. For quite some time, decision theory proceeded on the basis of the assumption that effortful, systematic information processing and search facilitates high-quality decision making and results in better outcomes than more effortless, heuristic processing. However, this basic idea has recently been challenged (Dijksterhuis, 2004; Gigerenzer & Brighton, 2009; Gigerenzer & Selten, 2001), and has become the target of debate and renewed interest (e.g., Weber & Johnson, 2009). Accordingly, it is unclear whether, when, and why effortful processing and search produces better decisions than effortless “unconscious” processing and search. Yet it is clear that information processing tendencies do matter and that we need to know what triggers more effortful processing, and why.

The Effort—Accuracy Trade-off

In decision theory and research, effort has largely been studied in

relation to the need for accuracy. Resonating with the core notion developed in the above mentioned Dual Process Models, the idea is that some decision strategies are more effortful than others and therefore are more costly, but that more effortful strategies are more likely to result in accurate decisions (e.g., Payne, Bettman, & Johnson, 1993). Consistent with this reasoning, decision makers use more effortful strategies when decision accuracy is more important (Creyer et al., 1990; Payne et al., 1996; Tyzska, 1998). For example, when accuracy rather than speed is rewarded or emphasized, decision makers process information more extensively and less selectively—they more systematically evaluate alternatives, and use a more structured approach when comparing alternatives (Payne et al., 1996). Similarly, when the possibility of regret following decision making is more salient, people exert more effort during decision making (Reb, 2008). However, when speed is important due to opportunity costs or time pressure, people engage in less effortful, less intensive, and more selective information processing (De Dreu, 2003; Kruglanski & Freund, 1983; Payne et al., 1988; 1996).

To date the effort—accuracy trade-off has been conceptualized as a function of the decision consequences, including regret aversion, and as a function of the specific contextual features of the decision process itself, such as time pressure. However, most decisions people make are preceded by some (more or less conscious) deliberation as to whether or not to engage in decision making. Because decision making itself is costly – it requires effort and time to identify options, search for information, compare options, and so on – and may cause (anticipatory) regret or other negative emotions over potential losses or non-gains, individuals will be selective in which decisions they initiate and which they avoid (Anderson, 2003; Luce, 1998; Tykocinski, Pittman, & Tuttle, 1995). To our knowledge, prior research has neglected the examination of effort as a function of the different types of motives that led to initiation of the process of deciding in the first place.

Initiating to Approach Gains or to Avoid Losses

Whereas people sometimes choose to avoid decision making, and thus to avoid (anticipatory) responsibility, blame, and regret (Beattie et al., 1994), they often do engage in decision making. At a most general level, initiation of the process of deciding may be driven by two types of motives.

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The first is a desire to obtain positive outcomes (i.e., a gain relative to the status quo). Examples would be to start examining new job possibilities to improve one's career prospects or to start looking for bigger apartments to increase living comfort. The second is initiation because failing to do so will result in negative outcomes (i.e., a loss relative to the status quo; e.g., Janis & Mann, 1977). For example, one may start thinking about whether or not to sell one's stock portfolio out of fear that stock value drops in the nearby future (e.g., Simonson, 1992). Put differently, we propose that some initiation motives are approach motives (attaining pleasure or gains) while others are avoidance motives (avoiding displeasure or losses).

The distinction between approach and avoidance motivation is based on the pleasure-pain principle, which states that people are directed in their behavior by two general types of motives, namely the motive to attain pleasure (cf., positives) and the motive to avoid pain (cf., negatives) (Elliot, 2008). If a motive is positive or desirable in nature, it is said to be an approach motive, an example being attaining a reward. If a motive is negative or undesirable in nature, it is said to be an avoidance motive, an example being the threat of receiving a fine (Lewin, 1935; also see Elliot, 1999, 2008; Elliot & Covington, 2001; Elliot & Thrash, 2002). Approach motives lead people to move towards the motivating factor, whereas avoidance motives lead people to move away from the motivating factor (Lewin, 1935, also see Elliot, 2008).

Whether the decision maker initiates the process of deciding due to approach or avoidance motives may influence his or her effort exertion during the subsequent decision process. The idea here is that different initiation motives induce different mindsets that, in turn, influence the decision process that follows. A mindset can be defined as a cognitive focus influencing both the way we perceive our surroundings and the way in which we respond to them (Rhinesmith, 1993). Even after an original motive is no longer present, the concomitant mindset can remain active and is capable of influencing our motivation, cognition, and behavioural tendencies (e.g., Bianco, Higgins, & Klem, 2003; Hirt, Melton, McDonald, & Harackiewicz, 1996). For example, work has shown that having promotion motives that are focused on gains and opportunities (vs. prevention motives that are focused on losses and threats) in one context induces a mindset that carries over to, and influences behavioral tendencies in subsequent tasks, even when they are unrelated (Crowe &

Higgins, 1997; Higgins, 1997). Accordingly, we suspect that having approach motives for initiation of the process of deciding activates an approach mindset, whereas having avoidance motives can be expected to activate an avoidance mindset. These mindsets can be expected to stay active after initiation, thus influencing cognitive and behavioral processes during the decision process that follows.

We expect that the different mindsets that are activated by initiation motives lead to differences in effort exertion during the decision process. As mentioned earlier, in the case of approach motives people are motivated to approach positives whereas in the case of avoidance motives people are motivated to avoid negatives. Approach motives will therefore create a mindset in which people assume the environment to be relatively safe, pleasant, and void of threat compared to the mindset created by avoidance motives. Accordingly, approach motivated individuals may experience fewer restrictions to open-mindedly explore the environment and to expend more effort in doing so.

Indeed, research on achievement motivation has shown that approach type achievement motivation (i.e., mastery, in which one's goal is to perform better than one has in the past; and performance approach, in which one's goal is to perform better than others) is positively related to both perceived ability to exert effort (e.g., I am able to pay attention in class) and actual effort exertion in a variety of domains, whereas avoidance type achievement motivation (i.e., performance avoidance, in which one's goal is to avoid performing worse than others) is not (Agbuga & Xiang, 2008; Chouinard, Karsenti, & Roy, 2007; Elliot, McGregor, & Gable, 1999; Fenollar, Román, & Cuestas, 2007; Lopez, 1999; Phan, 2008, 2009). Likewise, Capa, Audiffren, and Ragot (2008) found that approach motivated participants, compared to avoidance motivated participants, reported exerting more effort on a memory search task. They also had a stronger decrease of mid-frequency band of heart rate variability (a measure that has been linked to mental effort exertion in the past, Miyake, 2001; Mulder, Van Roon, Veldman, Elgersma, & Mulder, 1995; Ryu and Myung, 2005) than avoidance motivated participants, especially during difficult tasks.

In addition, there is evidence that approach and avoidance mindsets associate with differences in information processing tendencies. For one, there

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is growing evidence that individuals with an approach mindset are more explorative and cognitively flexible than those with an avoidance mindset (Friedman & Forster, 2000, 2001, 2002, 2005; also see Baas, De Dreu, & Nijstad, 2008; Leikas, Lindeman, Roininen, & Lahteenmaki, 2007). Also, Derryberry and Tucker (1994) argued that when an avoidance mindset is activated, for example because of imminent threat or anticipated losses, conceptual scope narrows and information processing becomes exceedingly narrow-focused. Likewise, there is evidence that power holders, with their concomitant approach motivation, adopt a broader focused processing style than those without power and concomitant avoidance motivation (Keltner, Gruenfeld, & Anderson, 2003; Smith & Trope, 2006). In sum, it appears that approach motives with their concurrent approach mindset lead to both more effort exertion and a broader, more explorative information processing style than avoidance motives.

The Present Studies

Our review highlights four core issues that have been largely ignored in decision making theory and research. First, people may be motivated to initiate the process of deciding by different types of motives, and, second, these motives essentially can be characterized as approach motives and avoidance motives. Third, approach motives activate an approach mindset which associates with more effort exertion than avoidance motives. Fourth, and finally, the more effortful decision process due to approach motives is exemplified by a broader, more explorative information processing style. Testing and further developing these notions about the effects of different initiation motives on the subsequent decision process was the main goal of the current research.

Study 2.1

In the first study we inquired participants about their expected effort during decision tasks they initiated because of approach motives, avoidance motives, or a combination of these two. As such, Study 2.1 provides a first answer to the question whether approach motives increase effort in decision making and whether avoidance motives decrease effort (Hypothesis 1), which

should result in the following effect on effort: Approach > approach and avoidance > avoidance.

Method

Participants and Design

Seventy-eight students at the University of Amsterdam (46 women, 32 men; age $M = 21.37$, $SD = 3.00$), were randomly assigned to a 3 (initiation motive: approach vs. avoidance vs. both) within-participants design. Order of the conditions was counterbalanced. Participants either received course credit or money (7 Euro; approximately US\$9) for their participation. The main dependent variable in this study was expected effort exerted during the decision process.

Materials

Initiation motive. Participants received three different scenarios that all started with the following: “*Imagine you will be working on a task that involves making a decision. You were also offered to do an alternative task*”. The scenarios continued with one of three different motives (approach vs. avoidance vs. both) that supposedly had made participants initiate the decision task.

The approach scenario read the following: *Imagine you will be working on a task that involves making a decision. You were also offered to do an alternative task. You have chosen to do the decisional task because you will receive a reward for doing so.*

The avoidance scenario read: *Imagine you will be working on a task that involves making a decision. You were also offered to do an alternative task. You have chosen to do the decisional task because you would have received a fine for carrying out the alternative task.*

Finally, the scenario containing both motives read: *Imagine you will be working on a task that involves making a decision. You were also offered to do an alternative task. You have chosen to do the decisional task because you will receive a reward for doing so, and you would have received a fine for carrying out the alternative task.* No further information about the decision task was given.

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Effort. Effort was measured by three items (“How much information do you plan to gather before making a decision” 1 = none at all, 7 = very much, “How carefully do you expect to compare the options?” 1 = not at all, 7 = very much, “How much will you try to make an optimal decision?” 1 = not at all, 7 = very, $\alpha = .84$).

Procedure

After having signed an informed consent, participants were placed in separate cubicles. Participants first completed some demographic questions, and then received a short introduction to the experimental task. They were told that they would be answering a series of questions several times according to different scenarios. These scenarios all involved working on a decision task. The scenarios differed in what had motivated participants to start working on this decision task. Participants were told to actively imagine being in the situation as described by the scenarios while answering these questions.

Results and Discussion

Because initial analyses revealed no order effects (all $F < 2.06$; $p > .05$) this variable is dropped from further analyses and discussion. In order to test our hypothesis regarding effort exertion we conducted a 3 (initiation motive: approach vs. avoidance vs. both) within-participants ANOVA on effort. Results showed that the type of initiation motive (approach vs. avoidance vs. both) influenced effort, $F(2, 76) = 23.17$, $p < .001$, $\eta^2 = .38$. We used contrast analysis to test for the expected differences among conditions. As can be seen in Figure 1, initiation due to an approach motive led to more expected effort ($M = 5.26$, $SD = .79$) than initiation due to an approach plus an avoidance motive ($M = 4.99$, $SD = .98$), $F(1, 77) = 8.06$, $p < .01$, $\eta^2 = .10$, which in turn led to more expected effort than initiation due to only an avoidance motive ($M = 4.48$, $SD = 1.17$), $F(1, 77) = 20.23$, $p < .001$, $\eta^2 = .21$.

These results provide some preliminary support for the hypothesis that approach motives for initiating the process of deciding positively influence effort exertion during the subsequent decision process, and avoidance motives negatively influence effort exertion. This last result is potentially noteworthy, because it suggests that approach and avoidance motives may not contribute to effort in the same way (i.e., adding an approach motive does not have the

same effect on effort as adding an avoidance motive). In fact, our results suggest that avoidance motives reduce effort to about the same degree as to which approach motives increase effort. In addition, these results suggest that these initiation motives cancel each other out, rather than that one motive overrules the other. However, since these results derived from a hypothetical choice situation, we wanted to replicate the pattern of results in an actual decision making situation. This was our goal for Study 2.2.

Study 2.2

In Study 2.2 we measured the extent of cognitive effort during an actual decision as a result of initiating the process of deciding due to an approach motive or an avoidance motive. We also included a control condition in which no initiation motive was present. We had three aims for Study 2.2. First, we wanted to replicate our findings of Study 2.1 in an experimental setting in which people actually had to make a decision. We expected initiation due to an approach motive to lead to more effort than initiation due to an avoidance motive. Results of Study 2.1 indicated that a mixture of approach and avoidance motives led to intermediate levels of effort. This suggests that avoidance motives reduce effort while approach motives increase effort, and that these motives cancel each other out. By comparing approach vs. avoidance motives to a control condition in which neither type of motive is induced, we are able to provide a more definite conclusion. As in Study 2.1, manipulations of approach and avoidance were based on attaining a reward versus avoiding a penalty by initiating the decision task, and rewards and penalties were explicitly made independent of effort spent during the decision process. Based on Hypothesis 1 we expected that the amount of effort would be highest in the approach condition, intermediate in the control condition, and lowest in the avoidance condition.

Second, our goal with Study 2.2 was to further explore the nature of effort exertion during decision making. As mentioned before, the process of deciding can be more or less effortful, but decision processes also differ in processing style. This can show itself in what Payne and colleagues (1993, 1996) call alternative-based versus attribute-based information processing. In case of attribute-based processing decision makers compare the relative value of

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various alternatives simultaneously, which matches a broader information processing style. They do this by switching between different alternatives on the same attribute – e.g., how do different cell phones differ in price, how do they compare in terms of functionality, et cetera. Under alternative-based information processing, in contrast, decision makers focus on determining the value of one particular alternative at the time, which better matches a narrow processing style, and do so by switching between attributes within that alternative – e.g., what is the price of this particular cell phone, what gadgets does it have, et cetera. Due to a broader information processing style participants in the approach condition can be expected to simultaneously compare various alternatives on the different attributes available, and therefore use the extra effort to increase attribute-based information processing rather than alternative-based processing (Hypothesis 2).

Third, and finally, we wanted to test the plausibility of several alternative explanations for our results, namely reactance and affect. Even though participants in both the first and the current study were objectively free to choose whether or not to work on the decision task, our manipulations of approach and avoidance motives could have resulted in people in the avoidance condition feeling more coerced to work on the decision task than people in the approach condition. Coercion, in turn, has been shown to lead to reactance which can result in a decrease in motivation, thereby decreasing effort (Brehm, 1966; Brehm & Brehm, 1981; Wild, Cunningham, & Ryan, 2006). An experimental setup allowed us to test the validity of this explanation by measuring participants' experienced coercion in initiating the decision task. In addition, it allowed us to examine the role of affect. Attaining something positive by initiating a task can be expected to lead to a more positive or less negative affective state than avoiding something negative by initiating a task (Davidson, 1995; 1998; Davidson & Sutton, 1995; Gray, 1994; Lang, Bradley, & Cuthbert, 1990; Meloy, Russo, & Miller, 2006). Affect, in turn, has been linked to both differences in effort exertion and information processing style (e.g., Ashby, Isen, & Turken, 1999; Baas et al., 2008; Isen, 1999; 2001; Meloy et al., 2006; Schwarz & Clore, 2007). If the approach manipulation leads to different affective states than the avoidance manipulation, this could thus serve to explain found differences in effort exertion and in information processing resulting from our manipulation of the initiation motive.

Method

Ninety-nine participants (69 women, 30 men; age $M = 21.81$, $SD = 5.08$), all students at the University of Amsterdam, were randomly assigned to a 3 conditions (initiation motive: approach vs. avoidance vs. control) between-participants design. Participants either received course credit or money (7 Euro; approximately US\$9) for their participation. The main dependent variable measured in this study was effort exertion during the decision process.

Materials

Coercion and affect. In order to test the validity of reactance as an alternative explanation for effects of different initiation motives on effort we measured the extent to which participants experienced coercion in initiating the decision task ("To what extent did you feel forced to/did you feel it was necessary to do the decision task?" 1 = not at all, 7 = very, $\alpha = .55$). In order to test the validity of affect as an alternative explanation we measured both positive and negative affect with three items each (positive affect: "To what extent did you feel happy/satisfied/at ease during the task?" 1 = not at all, 7 = very, $\alpha = .84$; negative affect: "To what extent did you feel on edge/agitated/down during the task?" 1 = not at all, 7 = very, $\alpha = .77$)

Initiation motive. Participants heard they would take part in a lottery at the end of the session for which they received five lottery tickets simply by taking part in the experimental session. They were told that the lottery was computerized, and that their chance of winning did not depend on the number of lottery tickets of other participants. The computer would pull a random number, and if this number matched one of the participants' lottery tickets they would win a prize. Next, participants were given a choice between performing two tasks. The only difference between the tasks was their name, with one being called a decision task and the other a judgment task. In the approach condition participants could gain five extra lottery tickets by choosing to work on the decision task. In the avoidance condition they could lose five lottery tickets by choosing to work on the judgment task. In the control condition no lottery tickets could be gained or lost by choosing either task. All lottery tickets were handed out after participants indicated their task choice, but before they actually initiated the decision task. No tickets could be gained or lost by doing

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a good or poor job on the task, and the chance of winning per lottery ticket was never indicated.

Decision task. The decision task was computerized and featured an information board consisting of a matrix with attributes as rows and alternatives as columns. The board displayed information about five different mugs. For each product item information was available on five different attributes: colour, pattern of print, shape of body, shape of handle, and size. Each attribute for each product was available in an information box that was covered to make the information invisible. Participants were told they could open the information boxes by clicking on them in order to see the information and could only look at one information box at the time. They were asked to select a mug to their liking and were not given any time limits.

Effort. Effort was measured with the same three-item questionnaire as in Study 2.1 ($\alpha = .60$).

Information processing. In order to measure the extent to which participants had a broad versus narrow information processing style we registered the *number of attribute based switches* by counting the number of times participants consecutively looked at the same attribute for different options, the *number of alternative based switches* by counting the number of times participants consecutively looked at different attributes within the same alternative, and the *number of other types of switches* by counting the number of switches between information boxes not fitting into the two previous types. These three types of switches add up to the total number of switches made to form the total number of information boxes opened minus 1 (see e.g., Reb, 2008 for similar measures).

Procedure

After a short introduction, participants were told about the lottery they would take part in. They received five tickets. Next, they had to choose between working on a decision task or a judgment task. They were told that both tasks involved an information board with information appearing whenever an information box was clicked on. They received no further information concerning the tasks. At this point the type of initiation motive was manipulated by informing participants about the changes in number of lottery tickets they would receive (see above). After indicating which task they wanted

to work on, all participants received their total number of lottery tickets. Next, participants initiated the decision task (including those who chose the alternative task). After finishing the task by indicating the mug of their choice, participants answered the questions regarding coercion and affect, followed by a debriefing. The lottery was played so that all participants had an equal chance (1 in 20) of winning a 10 Euro gift certificate.

Results and Discussion

Treatment of the Data

Of the participants assigned to the approach or avoidance conditions, 11 participants chose to work on the alternative task instead of the decision task. A log linear analysis was performed using type of initiation motive (approach vs. avoidance) as a factor and choice of working on the decision task versus the alternative task as dependent variable. This analysis showed no difference in percentage of people choosing to work on the judgment task depending on whether the motive for initiating the decision task was of the approach (18%) or avoidance (15%) kind, $\chi^2(1, N = 66) = .11, ns$. The 11 participants choosing to perform the judgment task were dropped from further analyses.

Of the 33 participants assigned to the control condition, 16 chose to work on the task labelled as 'decision task' and 17 chose to work on the task labelled as 'judgment task'. This pattern is not significantly different from one that would be expected if participants' task choice was random (i.e., a .5 chance of choosing either task), $t(32) = .17, ns$. Since all participants in the control condition performed the same mug-selection task, and the labelling of the task as decision versus judgment task did not influence our dependent measures (all F 's < .94), we collapsed participants in the control condition across task choice, and used all in subsequent analyses.

Coercion and Affect

We performed three one way ANOVA's with type of initiation motive (approach vs. avoidance vs. control) as between-subjects factor and experienced coercion, positive affect, and negative affect as the dependent variables. The analysis on coercion showed an influence of the type of initiation motive (approach vs. avoidance vs. control), $F(2, 83) = 4.71, p < .05, \eta^2 = .10$.

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Contrast analysis showed that both people who had initiated the decision task due to approach motives and those who had initiated it due to avoidance motives felt more coerced ($M = 3.63$, $SD = 1.31$ and $M = 4.00$, $SD = 1.35$ respectively) than people in the neutral condition ($M = 2.89$, $SD = 1.57$), $t(85) = 1.98$, $p = .05$, $d = .42$ (approach vs. neutral), and $t(85) = 2.98$, $p < .005$, $d = .65$ (avoidance vs. neutral), whereas no difference in experienced coercion was found between people in the approach versus avoidance conditions, $t(85) = -.93$, *ns*.

The analysis on positive affect showed no influence of the type of initiation motive, $F(2, 83) = .21$, *ns*, and neither did the analysis on negative affect, $F(2, 83) = .08$, *ns*. In addition to these analyses we calculated correlations between our dependent variables of effort and processing style on the one hand, and our measures of experienced coercion and affect on the other. We looked at both the overall correlations and the correlations within the three different conditions, and there were no significant relations.

Effort

A one way ANOVA with type of initiation motive (approach vs. avoidance vs. control) as between-subjects factor and experienced effort as the dependent variable showed an influence of the type of decision initiation motive (approach vs. avoidance vs. control), $F(2, 83) = 3.17$, $p < .05$, $\eta^2 = .07$. Contrast analyses revealed that participants reported more effort when the decision task was initiated because of an approach motive ($M = 5.72$, $SD = .75$) than in case of an avoidance motive ($M = 5.21$, $SD = .87$), $t(83) = 2.50$, $p < .05$. The control condition took an intermediate position ($M = 5.51$, $SD = .70$), and was neither significantly different from the approach condition, $t(83) = 1.10$, *ns*, nor from the avoidance condition, $t(83) = -1.54$, *ns* (see Table 1 for an overview of the relevant means). These results are compatible with those obtained in Study 2.1, and consistent with the idea that people who engage in decision making because of an approach motive exert more effort into the decision process than people who engage in decision making because of avoidance motives.

Information Processing

To test our hypothesis regarding differences in information processing style we analyzed the use of different types of information processing (i.e.,

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types of switches between information boxes). A 3 (type of processing: attribute based vs. alternative based vs. other) within-participants by 3 (initiation motive: approach vs. avoidance vs. control) between-participants ANOVA showed a main effect for type of processing, $F(2, 82) = 164.17, p < .001, \eta^2 = .80$. Participants used more attribute based processing ($M = 20.94, SD = 11.17$) and alternative based processing ($M = 20.22, SD = 14.54$) than other types of processing ($M = 4.66, SD = 2.58$), $F(1, 83) = 170.67, p < .001, \eta^2 = .67$, versus $F(1, 83) = 118.77, p < .001, \eta^2 = .59$ respectively. The main effect for type of initiation motive was not significant, $F(2, 83) = .02, ns$, and neither was the expected interaction effect (see Table 1 for relevant means), $F(2,83) = .52, ns$.

Table 1. Means between Conditions and Correlations between Dependent Variables in Study 2.2 ($N=86$).

	Mean (SD)			Correlations			
	Approach	Neutral	Avoidance	1	2	3	4
1. Effort	5.72 (.75)	5.51 (.70)	5.21 (.87)	-			
2. Attribute switches	20.88 (10.73)	19.42 (11.51)	23.20 (11.58)	.04	-		
3. Alternative switches	20.12 (14.52)	21.09 (12.74)	19.26 (15.77)	.30*	-.06	-	
4. Other switches	4.73 (2.85)	4.87 (2.26)	4.33 (2.75)	.21	-.18	-.07	-

Note. * $p < .05$.

In sum, even though our hypothesis regarding effort was again confirmed, our hypothesis regarding information processing style had to be rejected. A possible explanation for the lack of this finding is that our decision task was relatively simple: participants were choosing among five mugs that varied on five dimensions. Indeed the average number of information items looked at was 42, with over 80% of participants opening more than 25 information boxes (which would be the minimum if examining all information at

least once). This corresponds with the finding by Capa and colleagues (2008) that effects of types of motives on performance are especially strong in difficult rather than simple tasks. We examined this possibility in Study 2.3.

Study 2.3

The design of Study 2.3 differed from that of the previous one in only a few but otherwise critical aspects. First, we dropped the control condition and focused on the approach vs. avoidance contrast. Second, we increased the difficulty of the decision task. Instead of letting participants decide between 5 different mugs on the basis of 5 different attributes, we let them decide between 18 different mobile phones on the basis of 6 different attributes. This meant an increase from 25 relevant information boxes to 108 boxes. Third, we added a measure of effort, namely time spent on the task, and a measure of information processing style by measuring the number of alternatives that were seriously explored (cf., consideration set, see Heller, Levin, & Goransson, 2002; Rietzschel, Nijstad, & Stroebe, 2009; Yaniv & Schul, 1997). In addition to leading to increased effort exertion (Hypothesis 1), and the use of relatively more attribute-based information processing (Hypothesis 2), approach motives can also be expected to lead to a greater number of alternatives that are seriously explored due to a more explorative information processing style, whereas avoidance motives, with their more narrow information processing style, can be expected to lead to the exploration of only one or a few alternatives. We can therefore expect approach motivated individuals to seriously explore more alternatives than avoidance motivated individuals (Hypothesis 3). Last but not least, we wanted to examine the role played by intrinsic motivation. Our manipulation of the initiation motive was based on receiving an external reward versus avoiding a penalty, and these two have been shown to influence intrinsic motivation (for an overview see Deci, Koestner, & Ryan, 1999; also see Mulder, Van Dijk, De Cremer, Wilke, 2006), which in turn has been linked to effort exertion and information processing style (e.g., Amabile, 1998; Holmås, Kjerstad, Lurås, & Straume, 2010; also see Pintrich & De Groot, 1990; Waterman, 2005). For example, Amabile (1998) found that motivating personnel with monetary rewards or threats kills their intrinsic motivation and makes them less creative. On a similar note, Holmås et

al. (2010) found that the use of monetary punishments for letting patients overstay in hospitals actually lengthens the average stay rather than shortening it. The authors explained this finding with punishments reducing intrinsic pro-social motivation, resulting in less willingness to exert effort to limit patients overstaying. By adding a measure of intrinsic motivation we were able to examine the plausibility of intrinsic motivation as an additional explanation for any of the found effects.

Method

Participants and Design

Thirty-eight student at the University of Amsterdam (22 women, 16 men; age $M = 20.68$, $SD = 3.02$) were randomly assigned to a 2 conditions (initiation motive: approach vs. avoidance) between-participants design. Participants either received course credit or money (7 Euro; approximately US\$9) for their participation. The dependent variables were the same as before with the addition of time and number of alternatives seriously explored.

Procedures, Manipulations and Decision Task

The procedure was the same as in Study 2.2, and type of initiation motive (approach vs. avoidance) was manipulated as in Study 2.2. The decision task again featured an information board consisting of a matrix with attributes as rows and options as columns. This time the board displayed information about 18 different mobile phones. For each product item information was available on six different attributes: camera details, battery capacity, volume (size and weight), color availability, memory capacity, and extent of world coverage (band width). Similar to Study 2.2, each attribute for each product was available in an information box that was covered to make the information invisible. Participants could open the information boxes by clicking on them in order to see the information and could only look at one information box at the time. They were asked to choose a mobile phone to their liking and were not given any time limits. After having made a selection, participants answered the questions measuring experienced coercion, affect, and intrinsic motivation.

Dependent Variables

Our self-report measure for effort existed of two items of the previously

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used questionnaire ("To what extent did you gather information before deciding?" and "To what extent did you carefully compare the options before deciding?", 1 = not at all, 7 = very, $\alpha = .77$). One item ("To what extent did you make an optimal decision?") was dropped due to low item-total correlation ($r = .06$). Furthermore, this measure was complemented by a non-obtrusive measure of time-on-task (i.e., the total amount of time spent between opening the first information box and committing oneself to one of the options).

Information processing style was measured in two ways, one of them being our measure from the previous study (attribute-based vs. alternative-based vs. other). In addition we measured the number of alternatives that were seriously explored. Since each alternative had information about six attributes, one had to explore six different attributes in order to get full information regarding the alternative. We therefore measured the number of alternatives that were seriously explored by counting how many alternatives had each attribute examined at least once.

In a post-task questionnaire we assessed three constructs that may provide alternative explanations to the mindset reasoning adopted thus far – experienced coercion, affect, and intrinsic task motivation. First, experienced coercion was measured with the same questions as Study 2.2 ("To what extent did you feel forced to/did you feel it was necessary to do the decision task?" 1 = not at all, 7 = very, $\alpha = .44$). Second, we again measured both positive and negative affect with three items each (positive affect: "To what extent did you feel happy/satisfied/at ease during the task?" 1 = not at all, 7 = very, $\alpha = .76$; negative affect: "To what extent do you feel on edge/agitated/down?" 1 = not at all, 7 = very, $\alpha = .83$). Finally, we added a measure of intrinsic motivation consisting of three items ("To what extent did you enjoy the decision task?", "To what extent did you like the decision task?", and "To what extent would you like to do a similar task again?", 1 = not at all, 7 = very much, $\alpha = .87$).

Results and Discussion

Treatment of the Data

Three participants, all in the approach condition, chose to work on the alternative task instead of the decision task. A log linear analysis using type of initiation motive (approach vs. avoidance) as a factor and choice of working on the decision task versus the alternative task as dependent variable showed no

significant difference between conditions, $\chi^2(1, N = 38) = 2.64$, ns. These participants were dropped from further analyses.

Coercion, Affect, and Intrinsic Motivation

We performed four one-way ANOVA's using type of initiation motive (approach vs. avoidance) as a factor and experienced coercion, positive affect, negative affect, and intrinsic motivation as the dependent variables. The ANOVA on experienced coercion showed no influence of type of initiation motive (approach vs. avoidance), $F(1, 33) = .59$, ns. (approach: $M = 4.08$, $SD = 1.27$; avoidance: $M = 3.79$, $SD = .92$), and neither did the ANOVA's on positive affect, $F(1, 33) = .13$, ns. (approach: $M = 5.24$, $SD = .76$; avoidance: $M = 5.14$, $SD = .95$) and negative affect $F(1, 33) = .04$, ns. (approach: $M = 2.20$, $SD = 1.01$; avoidance: $M = 2.27$, $SD = .99$). The same applied for intrinsic motivation, for which we also found no effects whatsoever, $F(1, 33) = .34$, ns. (approach: $M = 4.37$, $SD = 1.28$; avoidance: $M = 4.61$, $SD = 1.14$). In addition we looked at correlations between experienced coercion, affect, and intrinsic motivation on the one hand and our dependent variables on the other. There were two significant correlations. One was between intrinsic motivation and time spent on the decision task, $r(35) = .35$, $p < .05$, and the other was between negative affect experienced during the task and number of alternative based switches made, $r(35) = .34$, $p < .05$. We will return to these findings in the general discussion. It thus appears that our experimental manipulation of approach versus avoidance motives did not influence experienced coercion, affect, or intrinsic motivation, and that these variables cannot readily explain effects of type of motive on effort or information processing style.

Effort

An ANOVA on reported effort showed a trend of influence of the type of initiation motive (approach vs. avoidance), $F(1, 33) = 3.44$, $p = .07$, $\eta^2 = .09$. Participants reported more effort when they had initiated the decision task due to an approach motive ($M = 5.14$, $SD = .76$) rather than an avoidance motive ($M = 4.44$, $SD = 1.39$). Similar results were obtained for time-on-task, another indicator of effort and correlated with the self-reported measure, $r(35) = .31$, $p < .05$. An ANOVA on time spent on the decision task also showed an influence

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of the type of initiation motive (approach vs. avoidance), $F(1, 33) = 6.64$, $p < .05$, $\eta^2 = .17$. Participants spent more time (in seconds) in the decision process when they had started the decision task due to an approach motive ($M = 157.74$, $SD = 84.23$) rather than an avoidance motive ($M = 99.39$, $SD = 41.41$). These results replicate the patterns observed in Study 2.1 and 2.2.

Information Processing

A 3 (type of processing: attribute based vs. alternative based vs. other) within-participants by 2 (initiation motive: approach vs. avoidance) between-participants ANOVA on the number of switches made showed a trend of a main effect for type of decision initiation motive, $F(1, 33) = 3.30$, $p = .08$, $\eta^2 = .09$. Participants made more switches (i.e., opened more information boxes) when they had initiated the task due to an approach motive ($M = 127.28$, $SD = 86.82$) than when they had initiated it due to an avoidance motive ($M = 84.41$, $SD = 45.20$). There was also a main effect for type of processing used $F(1, 33) = 57.43$, $p < .001$, $\eta^2 = .64$. Participants generally used more alternative based processing ($M = 66.31$, $SD = 40.42$) than attribute based processing ($M = 29.83$, $SD = 32.50$), $F(1, 33) = 50.10$, $p < .001$, $\eta^2 = .60$, which in turn was used more than other strategies ($M = 10.31$, $SD = 7.53$), $F(1, 33) = 17.36$, $p < .001$, $\eta^2 = .35$. Furthermore, there was a trend of an interaction effect between type of processing and type of initiation motive, $F(1, 33) = 2.39$, $p = .10$, $\eta^2 = .07$. Since this interaction was predicted we further examined it by using contrast analysis. This analysis showed that participants who had initiated the decision task due to an approach motive used more attribute based processing ($M = 79.67$, $SD = 47.12$) than people who had initiated it due to an avoidance motive ($M = 52.18$, $SD = 26.45$), $F(1, 33) = 4.46$, $p < .05$, $\eta^2 = .12$. They also used more other types of processing ($M = 13.33$, $SD = 8.88$) than people who had initiated the task due to an avoidance motive ($M = 7.11$, $SD = 3.95$), $F(1, 33) = 7.01$, $p < .05$, $\eta^2 = .18$. There was no difference in the extent of alternative based processing between the approach ($M = 34.28$, $SD = 40.55$) and avoidance ($M = 25.12$, $SD = 21.26$) conditions, $F(1, 33) = .69$, *ns*. This suggests that people who had initiated the decision task due to an approach motive were systematic in using the extra effort put into the decision, rather than simply increasing all types of processing.

We also performed an ANOVA on our second measure of information processing style, namely the number of alternatives seriously explored. This measure was very highly correlated with our first measure, $r(31) = .84, p < .001$, and also showed a trend of a main effect of the type of initiation motive (approach vs. avoidance), $F(1, 29) = 2.78, p = .11, \eta^2 = .09$. Participants examined more alternatives seriously when they had initiated the decision task due to an approach motive ($M = 4.80, SD = 5.35$) than when they had initiated the decision task due to an avoidance motive ($M = 2.44, SD = 1.82$).

All in all, using a more difficult task we replicated the basic finding that initiating the process of deciding due to approach motives leads to greater effort during the subsequent decision process than initiating the process due to avoidance motives. We furthermore obtained some evidence that the effort exerted in the case of approach motives may be associated with a broader, more explorative information processing style, as revealed by more attribute-based processing and not more alternative-based processing (Hypothesis 2), and by the serious exploration of a larger number of alternatives (Hypothesis 3).

Conclusions and General Discussion

People may have a number of motives for avoiding decisions (Anderson, 2003) and they likewise have a number of motives for initiating the process of deciding. We distinguished between approach motives and avoidance motives. Initiation motives of the approach kind drive people towards decision making in order to attain pleasurable, positive outcomes. Initiation motives of the avoidance kind, on the other hand, drive people towards decision making in order to avoid painful, negative outcomes. Across three studies we found that, as predicted, people expend more effort when they initiate the process of deciding due to approach motives rather than due to avoidance motives. Moreover, when decision tasks are relatively complex and difficult, approach motives lead to a conceptually broad and explorative information processing style. This is in accordance with previous findings showing that, compared to avoidance motives, approach motives appear to induce a mindset that is exemplified by a broad rather than narrow conceptual scope, global rather than local thinking, and explorative rather than exploitative tendencies.

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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 individuals reported greater effort (Study 2.1-2.3) and spent more time processing information (Study 2.3) when they initiated the process of deciding due to approach motives rather than due to avoidance motives. The findings together support the conclusion that approach motives promote effort more than avoidance motives.

In Study 2.1 and 2.2 we compared approach (avoidance) motives to a condition that consisted of a mixture of both avoidance and approach motives (Study 2.1), or of no approach or avoidance motives (Study 2.2). In both cases we found approach motives to promote effort and avoidance motives to reduce effort. This suggests that approach versus avoidance motives both influence amount of effort independently, rather than one serving to increase effort and the other having no relation with effort, or one overruling the other in their influence. Moreover, they influence effort in opposite directions, thereby suggesting that approach motives and their concomitant mindset induce information processing tendencies that may be qualitatively rather than quantitatively different from avoidance motives and their concomitant mindset (cf., Amodio, Master, Yee, & Taylor, 2008; Baas et al. 2008). More precisely, as uncovered in Study 2.3 in particular, approach motives lead to an approach mindset, resulting in more effort, a conceptually broad mental scope, global processing, and explorative thinking. Initiating the process of deciding due to avoidance motives, on the other hand, will lead to an avoidance mindset, resulting in less effort during decision making, a narrower conceptual scope, local processing, and more exploitative thinking.

When we compare Study 2.2 and 2.3 we noted a striking difference in effects on information processing style. Whereas in both studies initiation motives influenced effort, only in Study 2.3 did we find notable effects on information processing style also. One possible explanation is that effects on information processing come about especially when the decision task is relatively difficult and complex. Such an explanation fits findings by Capa and colleagues (2008) who found that individual differences in approach versus

avoidance motivation influenced information processing more under difficult rather than simple tasks. It also fits the conclusion that approach motives augment effort whereas avoidance motives inhibit it – and that this matters especially in more difficult tasks. Future studies could pursue this possibility by comparing the effects of approach versus avoidance motives in decision tasks that vary in the degree of complexity and difficulty.

The processing data in Study 2.3 supported the idea that approach motives lead to a broader, more explorative processing style and therefore to more attribute-based processing and a larger number of alternatives taken into serious consideration. However, avoidance motives did not lead to more alternative-based processing even though this could be predicted based on the concomitant narrow processing style. One explanation is that avoidance motivated decision makers processed less overall. Indeed, when looking at the relative amount of alternative-based processing, avoidance motivated decision makers used relatively more alternative-based switches (28%) than approach motivated decision makers (22%). However, this difference is not significant and new studies are needed to settle this issue more conclusively.

In Study 2.2 we used post-task questionnaires to measure experienced coercion and affect, and in Study 2.3 we additionally measured intrinsic motivation. No effects of initiation motives on these variables were found. Also, there was no relationship between these control variables on the one hand and reported effort exertion, attribute-based processing, and number of alternatives seriously explored on the other. We did find a significant relation between intrinsic motivation and time spent on the task in Study 2.3, an effect that is in concordance with prior research showing that increased intrinsic motivation is related to effort exertion (e.g., Pintrich & De Groot, 1990; Waterman, 2005). All in all, these results thus permit the conclusion that experienced coercion, affect, and intrinsic motivation are unlikely mediators of the effects of initiation motives on effort and information processing style. The absence of mediation by these variables further attests to the idea that initiation motives induce specific mindsets that carry-over and predict effort and processing style in the subsequent decision process.

Study Limitations and Avenues for Future Research

Our measure of effort was based on self-report, which is less than

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optimal. However, we validated this measure with the unobtrusive, on-line assessment of time-on-task, and time-on-task correlated positively with the self-report measure of effort. In addition, our findings for effort were in line with those for information processing style and this provides further confidence in the validity of our conclusions. This notwithstanding, however, future research on initiation motives could invest in other, less obtrusive, measures of effort. Possibilities include, apart from the currently used time-on-task, assessments of brain activity.

Also, we have no direct evidence pertaining to the issue whether the effects that we observed were due to cognitive mindsets, as we argued, or due to something else. Indeed, there are alternative explanations for our findings, although we believe those to be less plausible. As mentioned above we did not find any proof for mediation by experienced coercion, affect, or intrinsic motivation, making the alternative explanations provided by these constructs less likely. In addition, our manipulation of initiation motives could be seen as a manipulation of a gain versus loss frame. However, based on the principle that losses loom larger than gains (Kahneman & Tversky, 1979) we could expect differences in strength of effects with avoidance effects being stronger than approach effects, but not in a different direction. Overall, we did not find stronger effects for our avoidance manipulations than for our approach manipulations, and we did find directional effects, making this explanation seem less plausible. Still, it is important to obtain direct evidence in future research, for example by using a priming procedure to induce approach versus avoidance mindsets (cf. Gollwitzer, Heckhausen, & Steller, 1990). An alternative would be to test the activation of mindsets more directly, for example with a lexical decision task in which people have to recognize approach and avoidance related words and response latencies are measured.

Finally, it is well known that approach and avoidance motives often coincide with inducers of different regulatory foci (i.e., promotion versus prevention focus, Higgins, 1997; e.g., Crowe & Higgins, 1997; Friedman & Förster, 2001). Indeed, in addition to activating an approach mindset, getting a reward may also activate a promotion focus (e.g., directed at obtaining gains and avoiding non-gains), while avoiding a penalty may activate both an avoidance mindset and a prevention focus (e.g., directed at avoiding losses and obtaining non-losses). Since many of the studies that report a link between

approach-avoidance motivation or regulatory focus on the one hand, and effort exertion or information processing style on the other have used manipulations that show overlap in their induction as described above, the issue of which is driving the effects is one that deserves further attention. For example, studies could focus on situations in which decision makers choose to perform tasks in order to avoid non-gains rather than approach gains (when receiving a reward represents the status quo; e.g. stopping your monthly pay check). On the basis of approach avoidance theory we would expect that decision makers in these cases would have an avoidance mindset and not exert much effort, while regulatory focus theory would argue that the avoidance of non-gains is associated with a promotion focus and therefore would lead to more effort.

Practical Implications

We argued that there are many different motives for people to initiate the process of deciding, and that what motivates people to initiate it may have consequences for the subsequent process. We focused on the basic distinction between approach and avoidance motives, and the main implication of the studies reported in this paper is that the two types differently influence effort exertion and information processing style during decision making. When effortful and broadly focused decision making is of the essence, for example in situations in which there are important differences among alternatives and these differences are not readily apparent, approach motives should thus be preferred over avoidance motives. This has some practical implications in situations in which it is desirable to convince people to delve into a decision. An example would be pension plans. Many people in the United States currently do not have a good pension plan (Iyengar et al., 2004), and the US government (or companies) might want to stimulate participation in one of the many plans on offer. Trying to stimulate people by emphasizing the costs associated with *not* having a pension plan might not be the best strategy. Rather, one should emphasize the benefits that might be gained from delving into the issue.

In conclusion, differences in effort and information processing do not only come about because effortful or vigilant decision making brings benefits (e.g., in terms of a better decision), but also because initiating the process of deciding due to different motives activates different mindsets that carry the

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motives' influence into the decision process. In general, this article supports the idea that these mindsets are capable of determining what people focus on during decision making and what types of goals they set for their decision. Since these effects might largely be subconscious, they are easily overlooked. As approach and avoidance motivation is one of the (if not the) most basic motivational distinction (Elliot, 2008), the effects of approach and avoidance mindsets on decision making and other behaviours deserve more attention.

Notes

¹ Due to the low alpha of our experienced coercion measure we conducted two additional ANOVA's on the separate questions measuring coercion. Neither showed an influence of type of initiation motive (both F 's < 1.01).