

Perceived Proximity to Making a Decision

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In order to investigate what makes people feel closer to making a change decision, female undergraduates were asked to employ mental exercises on personal problems (e.g., breaking up with a boyfriend). In an exhaustive *predecisional* exercise, subjects deliberated on the expectancies and values of making a change decision. Two less exhaustive *predecisional* exercises required subjects to imagine enjoying the incentives of having made a change decision either in a realistic or fantasy-like manner. In an exhaustive *postdecisional* exercise, subjects were to develop a plan concerning how to implement the decision not yet made and were to imagine themselves executing it. Two less exhaustive *postdecisional* exercises required subjects either to imagine the execution of one single implemental action or to deliberate solely on various possible action steps. Both the exhaustive pre- and postdecisional exercises were found to be more effective in increasing subjects' perceived proximity to the act of a change decision than the respective nonexhaustive exercises. Results are interpreted in terms of a phase model of action that conceives of decisions as volitional acts that propel the individual from a deliberative to an implemental state of mind.

The questions focused on by prescriptive and descriptive models of decision making (Baron, 1988) regard how people should or do decide in choice situations in order to maximize their goals. In the present paper, a different question is addressed: What factors increase people's readiness to make a change decision? According to expectancy-value theories of motivation (see Atkinson, 1964; Feather, 1982) or utility theory (Edwards, 1961), the feasibility and desirability of the implied change should be the major determinants. However, further critical variables unrelated to the expected value or utility of making a change decision may exist.

One such variable might be the amount of effort people put into deliberating the question of making a change. Janis and Mann (1977)

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demonstrated that people feel ready to make a (change) decision when they have processed all of the available relevant information and do not expect additional information. Moreover, people's readiness to make a change decision might also be positively affected by the amount of prospective planning regarding the implementation of the change decision not yet made. In Beach & Mitchell's image theory (Beach & Mitchell, 1987; Beach, Smith, Lundell, & Mitchell, 1988) one's readiness to make a change decision is also a question of whether the individual already entertains compatible strategies and tactics of implementation. According to the image theory, the adoption of a new goal (change decision) requires that this goal be compatible not only with the decision makers' self-images (existing principles) and trajectory images (existing goals), but also with their action images (existing strategies and tactics).

In our view, one's readiness to make a change decision depends on the individual's state of mind. We maintain (Heckhausen, 1987a, b; Heckhausen & Gollwitzer, 1987) that a change decision is an intentional act that makes for a transition from one type of psychological functioning to another, each governed by unique principles. To highlight this perspective, we refer to the point of transition metaphorically as the 'Rubicon'¹. Rather than conceiving of the course of action in terms of a progression from abstract, superordinate goals to concrete, subordinate goals, as is common to vertical, hierarchical models of action (e.g. Carver & Scheier, 1981; Gallistel, 1980; Hacker, 1985), the Rubicon model segments the course of action into a number of consecutive phases.

The first phase of this horizontal, temporal model is the *predecisional* phase in which the individual faces the task of choosing the most appropriate action goals. When a firm commitment to pursue a certain goal is formed (Rubicon transition), the *postdecisional* phase is entered and the individual now needs to solve the problem of proper implementation. The postdecisional individual may not immediately initiate a course of action that is instrumental for the attainment of the chosen goal; therefore, this phase may remain preactional for quite some time.

Our experimental work has shown that the predecisional mindset does, in fact, differ from the postdecisional one in content and style of information processing, both styles being functional in terms of meeting the requirements of the phase-typical tasks encountered. In a thought sampling study (Heckhausen & Gollwitzer, 1987, Study 1), predecisional

¹ When Julius Caesar made the decision to cross the Rubicon river with his legions, located in Northern Italy, he had actually started civil war; he commented on this irrevocable fact with "alea iacta est!"

subjects reported comparatively more thoughts related to the incentive values of goal options and the expectancies of performance outcomes, whereas postdecisional subjects reported comparatively more implemental thoughts. Most prominent among the latter were implemental intents as to when and where to initiate appropriate actions and how to perform them. In a memory experiment (Gollwitzer, Heckhausen, & Steller, 1987, Study 2), predecisional subjects recalled information related to expected values better than postdecisional subjects; the reverse was found for implementation-related information. Finally, predecisional subjects processed information on the available goal options in a more impartial manner than postdecisional subjects (Beckmann & Gollwitzer, 1987). When asked to contemplate change decisions, predecisional subjects spent an equal amount of thought on both the positive and negative consequences of making a change decision (Gollwitzer & Heckhausen, 1987, Studies 2 and 3). Moreover, subjects in a predecisional state of mind were more accurate in judging action-outcome expectancies than subjects in a postdecisional state of mind (Gollwitzer & Kinney, 1989).

In the present experiment we tried to explore various ways of helping people make change decisions. Subjects had to indicate unresolved personal problems (e.g., problems at home), in which they did not know yet whether to commit themselves to making a change (e.g., moving from home). In order to increase subjects' readiness to make a change decision, we had our subjects perform mental exercises corresponding to the Rubicon model of action phases.

We expected that subjects who are asked to solve predecisional tasks should experience a deliberative state of mind. This state of mind should be more pronounced when more of the predecisional tasks are solved, indicating to subjects that the predecisional phase is completed and that they can now move on to the postdecisional phase of implementation. It follows that subjects who are made to solve all possible predecisional tasks should experience a full-blown deliberative state of mind and thus feel closer to making a change decision than subjects who only solved a partial set of these tasks.

The Rubicon model suggests an additional possibility with respect to helping people approach a change decision. If predecisional people are mentally placed into the next, i.e., postdecisional phase, it should also make them feel that the predecisional phase is already completed. To test this hypothesis, we had some subjects perform an exhaustive postdecisional mental exercise and solve all of the various tasks characteristic of that phase, and other subjects perform nonexhaustive exercises, solving only a partial set of postdecisional tasks.

Yet, even if changes in subjects' readiness to make a change decision should occur as predicted, these effects might actually be mediated by changes in subjects' likelihood estimates and value judgments. Maddux, Norton, and Stoltenberg (1986) showed that increases in outcome expectancy and outcome value both contribute to making decisions. Therefore, we measured the potential mediators of *outcome expectancy* and *outcome value* before and after subjects performed their mental exercises. Changes in outcome expectancy and outcome value represent potential alternative explanations for the postulated effect on increased readiness to make a change decision. To the extent that these variables mediate the expected effects, they weaken or invalidate our hypothesis that exhaustive mentation on pre- or postdecisional concerns directly induce progression toward a change decision.

Another potential mediator is implemental intents as to when or where to initiate appropriate action and how to perform it in the face of anticipated difficulties. The formation of such implemental intents might well facilitate the act of decision. Accordingly, we measured this potential mediating variable before and after subjects performed their exercises. The exhaustive postdecisional exercise was expected to stimulate the forming of implemental intents most successfully.

Finally, we also wanted to know whether the expected effects of exhaustive exercises would hold true for all types of personal problems, regardless of whether the perceived instrumentality of one's actions for achieving the desired goal was low or high. To check on this potential moderator variable, we had subjects indicate two different personal problems, one implying an easy-to-implement change decision, the other a difficult-to-implement change decision.

We tried to measure the effects of the mental exercises in a way that most sensibly captured 'moving toward making a change decision.' Simply counting the number of actual change decisions in each exercise condition was too crude a measure, in light of pilot findings suggesting that immediate change decisions cannot be expected to result from the mental exercises. Accordingly, we asked subjects to rate their perceived proximity to making a change decision. This was done prior to engaging in the mental exercises, immediately after performing the exercise, and three weeks later, thus allowing for a change measure of perceived proximity. We did not make explicit predictions as to immediate and delayed effects. However, exhaustive mental exercises were expected to produce lasting positive effects.

Method

Subjects and Procedure

The 154 participants (female students at the University of Munich) were told that researchers at the Institute were developing a procedure that allows people to see more clearly where they stand with respect to whether they should pursue a certain goal. The present study would focus solely on decisional problems pending a change decision ('Should I do X or not?'). Accordingly, subjects were asked to indicate two unresolved personal problems of the type 'Should I do X?' and then to apply to these problems a mental exercise designed by the researchers.

Subjects received a stack of numbered envelopes that contained different questionnaires and instructions. For *Envelope 1*, subjects were required to indicate two personal problems of the type 'Should I do X or not?'. These problems should be of current concern, and subjects should have not yet reached a change decision. Whereas the first problem should be such that - once a change decision was made - its implementation was rather simple (subscribing to a newspaper was given as an example), making a decision with respect to the second problem should confront the subject with difficult implemental issues (starting one's M.A. thesis was given as an example).

In *Envelope 2* subjects found *baseline* questionnaires designed to measure *how close they felt to making change decisions*. The following three questions had to be answered for each of the problems indicated: (1) "How determined do you feel at the moment?" (2) "How much resolution will it still take for you to arrive at a change decision?" and (3) "On the line below, please indicate the point which best represents your distance from the act of a change decision." For this purpose, a horizontal line of 13 cm was provided: The starting point was labeled 'far from having made a change decision', the 10 cm mark 'act of change decision', and the end point 'past having made a change decision'. Moreover, subjects were requested to answer questions tapping *outcome expectancy* and *outcome value* associated with making the change decision: (4) "How certain are you that you will reach what you intend to reach after having made a change decision?" (5) "How important is it to you to reach what you intend to reach after having made a change decision?" A final question probed for *implemental intents*: (6) "Do you feel that you have committed yourself to a certain implemental course of action?"

Envelope 3 contained two exercise booklets. One of these booklets had already been completed by a presumed former subject who faced the decisional problem of going on a vacation. This exercise booklet served as a model for the subjects' practice exercise concerning the following fictitious problem: 'Should I pursue advanced educational

training abroad?' An unmarked booklet was provided for this practice exercise. For each of the seven conditions this set of exercise booklets (the model booklet and the booklet for the practice exercise) differed in their format, as did the instructions on how to work with them.

There were three *predecisional* and three *postdecisional exercises* (one exhaustive and two nonexhaustive in each), and a control group. The three *predecisional exercises* were:

(1) *Deliberation on expected values* (DEV). This exhaustive exercise required subjects to deliberate positive or negative consequences of making the decision to study abroad. First, subjects thought of the immediate and the delayed positive and negative consequences of studying abroad and estimated the likelihood that these would actually occur. Second, subjects listed potential hindrances to studying abroad and estimated the probability that the desired action outcome could still be obtained. Third, subjects considered positive and negative (immediate as well as long-term) consequences of failing to make the decision to study abroad and estimated the probability of their occurrence. Finally, the four most important positive or negative (immediate or long-term) consequences of making the decision (or failing to make the decision) were selected from the consequences listed.

(2) *Imagination of realistic incentives* (IRINC). In the first nonexhaustive exercise, subjects were asked to anticipate a positive experience that might occur once the decision to study abroad had been implemented, and to compose a story describing this experience in detail with themselves as the main actor. Subjects were told that no activities required to implement the decision to study abroad should appear as part of the story. Finally, subjects had to vividly imagine themselves experiencing the events described.

(3) *Imagination of fantasized incentives* (IFINC). The second nonexhaustive exercise was patterned after the 'imagination of realistic incentives' exercise. The only difference was that subjects were encouraged to give free rein to their fantasy. They were instructed to fantasize about a positive experience that could occur after the decision to go abroad had been implemented and to enjoy this image to the fullest. Subjects were told to disregard any reality constraints, such as personal limitations or external pressure.

The three *postdecisional exercises* were performed as follows:

(4) *Imagination of implementation* (IIMP). In the exhaustive exercise, subjects listed a number of different activities that could serve the purpose of implementing the decision to study abroad and then decided on a certain course of action by writing a detailed story in the first person. Finally, subjects imagined themselves executing this course of

action to further their commitment to the implemental route chosen.

(5) *Imagination of the 'point of no return' (IPNR)*. In the first nonexhaustive exercise subjects described only *one* critical implemental action. Executing this action meant that the decision to study abroad could no longer be reversed (e.g., the boarding of an airplane). The rest of the exercise required subjects to imagine themselves executing this critical action.

(6) *Deliberation on implementation (DIMP)*. In the second nonexhaustive exercise, subjects filled out a detailed questionnaire on how to implement the decision to study abroad. First, they listed up to eight activities that would serve to implement the decision; then they ranked the instrumentality of these activities, i.e., which activity needed to be completed before others could be undertaken, and also estimated the urgency of each of the activities. Second, subjects had to indicate how much time and money would be needed to complete each activity successfully, and the degree to which everyday life would be disrupted by these activities. Third, subjects indicated potential difficulties and obstacles for each activity.

The *control group* was run as follows:

(7) *Computing arithmetic problems (C)*. Control subjects were told that people are at times unable to see clearly whether they should act on a certain issue, particularly if they become too involved in the problem at hand. Accordingly, a mental exercise that takes subjects' minds off the decisional problem at hand might prove beneficial to the process of making decisions. Therefore, instead of contemplating the question of whether to study abroad, subjects were instructed to concentrate on computing arithmetic problems.

In *Envelope 4* subjects found the same exercise booklets used in working on the 'studying abroad' problem (*Envelope 3*). This time, however, subjects were told to apply the mental exercise they had practiced on their own problems, that is, on the two personal problems requested in *Envelope 1*. Subjects were reminded to proceed exactly as they had learned in the 'studying abroad' problem.

Envelope 5 contained questionnaires (one for each personal problem) designed to measure whether subjects' perceived distance from the act of a change decision had changed as an immediate result of the mental exercise performed. In addition, changes in outcome value and outcome expectancy, as well as incidences of implemental intents, were obtained.

Three weeks later, we mailed *Envelope 6* to their homes. This envelope contained the baseline questionnaires (the outcome expectancy, outcome value, and implemental intent items were deleted), so that we

could measure the delayed effects on subjects' perceived proximity to the act of decision. Eighty-eight percent of the subjects (i.e., 136 participants) actually returned their completed questionnaires within a week.

Results

Perceived Proximity to Change Decision

Our suspicion was confirmed that crossing the Rubicon as an immediate consequence of the mental exercises is rather rare. On Item 3 (Envelope 5) where subjects had been asked to check on a horizontal line how far they felt from the 'act of a change decision,' only one percent of the subjects checked for the easy-to-implement change decision that the act of decision had been passed, and only four percent did so for the difficult-to-implement problem. Although many subjects had crossed the Rubicon three weeks later (Envelope 6; 70 percent for the easy problem and 52 percent for the difficult problem), we decided to analyze subjects' readiness to make a change decision in terms of perceived proximity to the point of decision instead of the actual making of the decision. Accordingly, we computed proximity indices (z-transformation) that combined the first three items of Envelopes 2, 5, and 6, respectively. The higher the scores on these indices, the closer subjects felt to the act of a change decision. These indices showed high internal consistency for the baseline assessment, the immediate assessment made after subjects had completed the mental exercise, and the delayed assessment made three weeks later (Cronbach's α for each $> .81$).

We then computed change scores from the baseline, one score for the immediate assessment and a second score for the delayed assessment. These measures allowed assessment of whether subjects' readiness to make a change decision increased or decreased as an immediate consequence of the mental exercise employed, and whether these immediate changes were followed - in the three weeks after the experiment had been conducted - by approaching the Rubicon or stepping back from it.

Three-factorial analysis of variance. A 7 (mental exercise group: DEV, IRINC, IFINC, IIMP, IPNR, DIMP, C) x 2 (type of personal problem: easy- vs. difficult-to-implement decision) x 2 (time of assessment: immediate vs. delayed) ANOVA was conducted. Results are depicted in Figure 1. We found a main effect for 'mental exercise group,' $F(6,129)=2.3$, $p < .05$, qualified by a 'mental exercise group' x 'time of assessment' interaction, $F(6,129)=2.6$, $p < .05$. Both 'time of assessment' ($F < 1.0$) and 'type of personal problem' ($F < 1.0$) showed no main effects. The latter factor displayed no interaction effects.

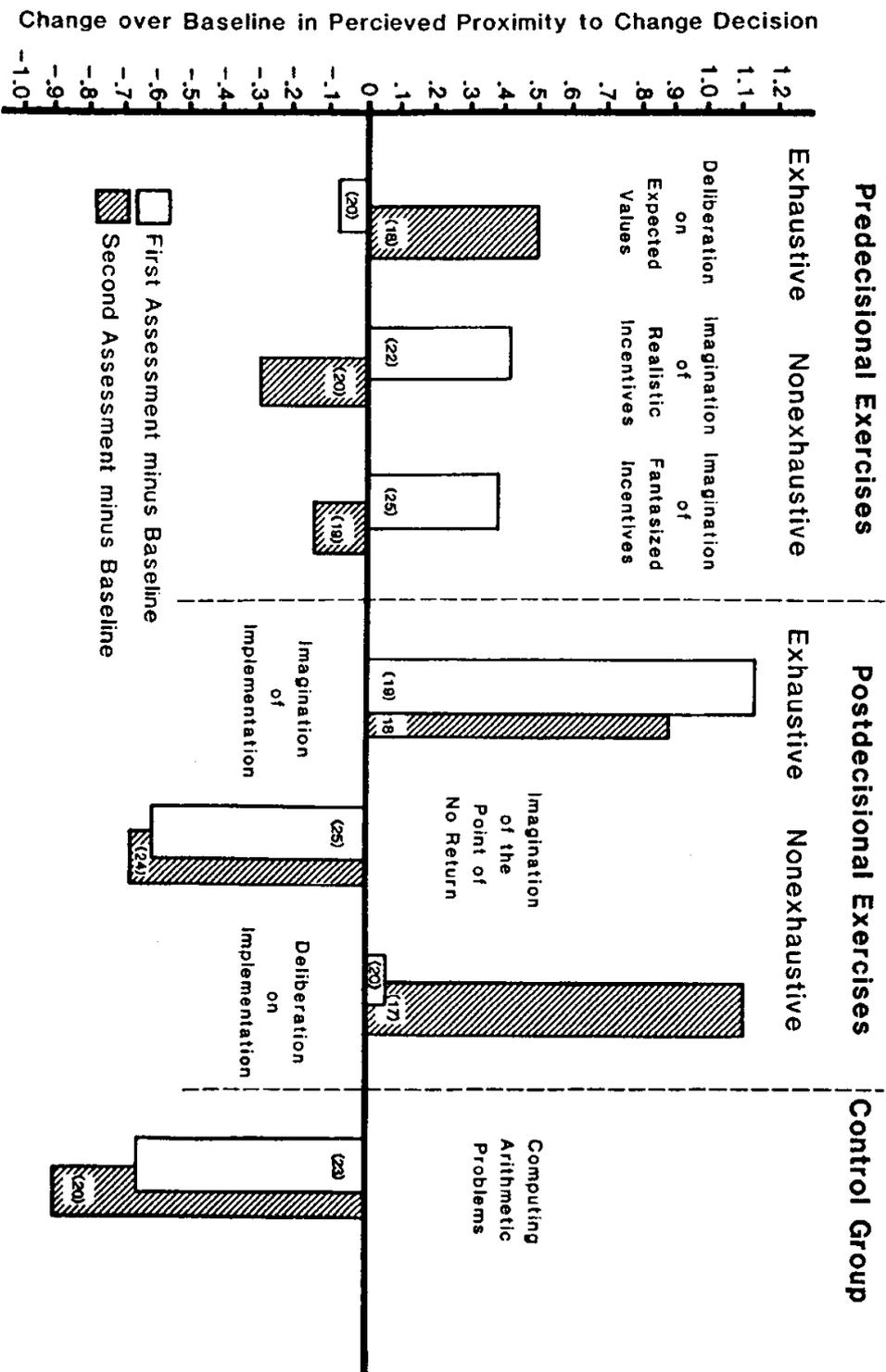


Figure 1. First and second assessments of perceived proximity to the act of decision (change decision) for each of the seven mental exercise groups.

We continued our analysis by computing the single main effect of 'mental exercise groups' collapsed over type of problem. The overall $F(6,147)=2.1$ for immediate assessment, and the overall $F(6,129)=2.4$ for delayed assessment were significant at the .05 level. Follow-up contrasts revealed that for the *immediate assessment*, only the 'imagination of implementation' group ($M=1.13$) felt closer to arriving at a change decision than the control group ($M=-.65$), $t(147)=2.8$, $p<.01$. The difference between the control group and the 'imagination of realistic incentives' group ($M=.42$), as well as the 'imagination of fantasized incentives' group ($M=.38$), fell short of significance, both t 's(147)= 1.8 , p 's $<.08$. Contrasting the other experimental groups with the control group revealed nonsignificant differences, all p 's $>.25$.

Comparisons of the *delayed assessment* for the experimental groups with the control group showed that the 'imagination of implementation' group ($M=.88$), $t(129)=2.6$, $p<.05$, the 'deliberation of expected values' group ($M=.50$), $t(129)=2.0$, $p<.05$, and the 'deliberation of implementation' group ($M=1.06$), $t(129)=2.8$, $p<.01$, all differed significantly from the control group ($M=-.90$). The other three experimental groups showed nonsignificant differences, p 's $>.25$.

Four-factorial analysis of variance. We also conducted a 2 (type of mental exercise: pre- vs. postdecisional) x 2 (exhaustion: exhaustive vs. nonexhaustive exercise) x 2 (time of assessment) x 2 (type of personal problem) ANOVA. Results revealed a 'type of mental exercise' x 'exhaustion' x 'time of assessment' interaction effect, $F(1,112)=9.1$, $p<.01$. No other main effects or interaction effects were significant. Exploring this interaction effect by conducting separate 2 (exhaustion) x 2 (time of assessment) ANOVAs for pre- and postdecisional exercises, respectively, showed different results for each type of mental exercise. For the predecisional exercises no significant main effect for 'exhaustion' was found, $F<1.0$. However, a significant interaction with 'time of measurement' was observed, $F(1,55)=7.7$, $p<.01$, indicating that the nonexhaustive exercises showed stronger immediate than delayed effects, whereas the reverse was true for the exhaustive exercise. For the postdecisional exercises, the exhaustive exercise was found to be more effective than the nonexhaustive exercises, $F(1,57)=3.6$, $p<.06$. This effect of exhaustion did not interact with 'time of assessment', $F(1,57)=2.0$, $p>.15$.

Potential Mediators

For all of the mental exercises that produced immediate effects (IIMP, IRINC, IFINC) and delayed effects (DIMP, DEV, IIMP), we wanted to know whether mediation through outcome expectancies, out-

come value, or implemental intents had occurred. To this end, we conducted path analyses following a procedure outlined by Kerlinger and Pedhazur (1973, pp. 317-331) that decomposed the observed effects into *direct* effects of the mental exercises and *indirect* effects as mediated either by changes in outcome expectancy, outcome value, or implemental intent. With respect to the immediate effects of the 'imagination of implementation', the 'imagination of realistic incentives', and the 'imagination of fantasized incentives' exercise, the *indirect* effects of outcome expectancy and outcome value turned out to be negligible. This was not true for the potential mediator of implemental intents (this variable had been measured by asking subjects whether they felt committed to a specific route of executing the change decision not yet made). Very strong indirect effects were observed for the 'imagination of implementation' exercise; the indirect effects of the 'imagination of realistic incentives' and 'imagination of fantasized incentives' exercises were considerably smaller.

Scrutinizing the delayed effects of the 'imagination of implementation' the 'deliberation of implementation', and the 'deliberation of expected value' exercise, we observed the following: The potential mediators of outcome value and outcome expectancy consistently produced negligible indirect effects. Again, this was not true for implemental intents. We observed strong indirect effects for the 'imagination of implementation' and the 'deliberation of implementation' groups; the indirect effect of implemental intents was close to zero, however, when the 'deliberation of expected value' group was considered.

Discussion

We conceived of making a change decision as the transition from a state of mind oriented toward weighing expectancies and incentives to a qualitatively different state of mind oriented toward implementing the chosen goal. This Rubicon model of action phases guided us in constructing a number of different pre- and postdecisional mental exercises. We examined whether people entertaining some unresolved personal problems move towards making a change decision after performing these exercises.

Dwelling on Predecisional Issues

Compared to the control group, only the exhaustive predecisional exercise (*deliberation of expected values*) group showed significantly greater proximity to the act of change decision three weeks after the exercise had been performed. This effect was obtained regardless of

whether easy- or difficult-to-implement problems were considered. We can therefore conclude that the perceived instrumentality of one's actions for achieving the desired goal did not moderate the effect of the exhaustive motivational exercise.

Path analyses revealed that the effect was also not mediated by an increase in outcome expectancy, outcome value, or implemental intents. These findings are consistent with our hypothesis that having experienced a full-blown predecisional state of mind allows individuals to move toward making a change decision.

Immediately after subjects had performed the 'deliberation of expected values' exercise, perceived proximity to the act of change decision was not strongly affected. At this point in time, subjects were probably still in a predecisional state of mind, contemplating both the positive *and* negative consequences of making a change decision. Thus, they were hesitant to commit themselves to making a change and a significant increase in perceived proximity to the change decision could only be observed after a three-week delay.

As expected, the two nonexhaustive predecisional exercises (*imagination of incentives*) did not result in substantial, stable progress toward a change decision. This was true regardless of whether the positive consequences imagined were of a realistic or unrealistic nature. Apparently, when people contemplate change decisions, only a complete, impartial deliberation of both positive and negative consequences of making such a decision produce a full-blown predecisional state of mind. Imagining only positive incentives failed to lure subjects into making a change decision, even when those incentives were fantasized to be highly positive. For both imagination of incentives groups we observed an immediate, albeit nonsignificant, increase in perceived proximity. One might be tempted to attribute these immediate effects to heightened availability of the positive consequences imagined (Tversky & Kahneman, 1973, 1974). However, our mediation analyses revealed that outcome expectancy as well as outcome value were not positively affected by the imagination exercises and thus do not qualify as potential mediators.

Most interestingly, the results of our mediation analyses point to the implemental intent variable as a potential contributor to the immediate effects observed. Apparently, vividly imagining certain positive consequences triggers the formation of an intent concerning how to create these consequences, or at least creates the feeling that one has committed oneself to a certain behavioral route to create them. However, this sense of having committed oneself does not seem to be very pronoun-

ced; otherwise, the imagination of incentives exercises also would have produced lasting effects.

Dwelling on Postdecisional Issues

We expected the exhaustive postdecisional exercise (*imagination of implementation*) to induce a greater readiness to make a change decision. This hypothesis was clearly corroborated. Compared to the control group, subjects reported a greater proximity to the act of change decision, not only immediately after performing the imagination exercise but also three weeks later. Path analyses revealed that this effect was not mediated by changes in outcome value or outcome expectancy; rather, mediation through forming implemental intents had occurred. In addition, the effects held for both types of personal problems, indicating again that implemental difficulty (i.e., perceived instrumentality of one's actions for achieving the desired goal) did not moderate the effects of the exhaustive exercise.

It is important to note that the nonexhaustive postdecisional exercise of *imagining the point of no return* did not move subjects closer to the act of decision, although the action imagined was highly indicative of having made up one's mind. As our mediation analyses suggest, this exercise did not lead subjects to form implemental intents and thus failed to move them closer to the change decision.

The effect of imagining behavioral scenarios on one's willingness to execute the imagined target behavior has been analyzed before by Anderson (1983; Anderson & Godfrey, 1987). When subjects had to imagine scenarios with themselves as the main character successfully completing the target behavior (e.g., donating blood), an increase in willingness to execute the target behavior was observed. As in our study, these effects of imagining behavioral scenarios were *not* mediated by changes in outcome value (measured in terms of positivity of consequences), and they were found to be stable over time.

Anderson conceives of an intention as a self-expectancy concerning the implied target behavior, and therefore refers to Tversky and Kahneman's (1973, 1974) availability hypothesis to explain his findings. The role of availability remains unclear in our study. It seems possible, however, that parts of the effects observed in Anderson's studies were mediated by changes in outcome expectancy and/or by forming implemental intents. We would suggest that imagining an implemental route leads to forming implemental intents. In addition, this effect may be assumed to be stronger the greater the ease of the respective imagination (cf. Anderson & Godfrey, 1987).

The second nonexhaustive postdecisional exercise (*deliberation of implementation*) group confirmed our expectation only with regard to the first, but not the second assessment. Since subjects were asked to think about implemental issues without subsequently forming implemental intents, we did not expect this exercise to increase perceived proximity to the act of decision. This was in fact the case for the immediate assessment; however, after three weeks a significant increase was observed.

Our mediation analyses suggest that much of the delayed effect was due to having committed oneself to a certain way of executing the change decision in question (i.e., to having formed implemental intents). Apparently, the exercise we designed did not succeed in making our subjects solely deliberate on implemental steps; that is, subjects did not refrain from committing themselves to some of these steps, thus turning this nonexhaustive postdecisional exercise into an exhaustive one. Assuming that people were still in a deliberative state of mind right after the exercise, the implemental intents formed (as a consequence of the mental exercise) did not immediately acquire much of a binding quality. After three weeks, however, this state had vanished, and the implemental intents formed could finally unfold their properties with respect to making people move closer to a change decision. Moreover, it seems possible that subjects formed additional implemental intents during this time period. Since they had already been concerned with implemental issues during the exercise, albeit in a deliberative manner, they might have proceeded to the 'next' step of committing themselves to one or the other implemental course of action.

Goal Intentions versus Implemental Intentions

The Rubicon model of action phases conceives of a change decision in terms of forming a *goal intention*, that is, the individual forms the resolution to pursue the desired goal (e.g., to move from home). Committing oneself to when, where, and how to enact the chosen goal, however, is referred to as forming *implemental intents* (Heckhausen, 1987b; Lewin, 1926/1951). It is assumed that the question of whether a goal intention will be formed is not solely a function of the expected utility of a goal. Even when expected utility is comparatively high, individuals are not expected to feel automatically committed to the respective goal. As Michotte and Prüm (1910) pointed out long ago, a decision implies a consenting act of will with the preferred choice option.

This view clearly departs from traditional motivation theory (Atkinson, 1964) and decision theory (Edwards, 1961), for these theories equate high expected value or utility with a commitment to the respec-

tive action goal. Our Rubicon model also departs from those theories of intention that conceive of an intention as an attitude (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) or a self-expectation (Anderson, 1983) toward behavior, since these notions also do not incorporate the concept of committing oneself. The same holds true for the so-called control theories (e.g., Miller, Galanter, & Pribram, 1960), which define intentions as activated action plans.

In the present study, we stimulated the formation of goal intentions (change decisions) by placing subjects into a full-blown predecisional or postdecisional state of mind. We tried to achieve this by having subjects perform exhaustive pre- or postdecisional mental exercises. However, it is conceivable that for certain types of problems these exercises need not be completely exhaustive to elicit the observed effects. As Beach and Mitchell (1978) pointed out in their contingency model for the selection of decision strategies, how thoroughly a decision is contemplated depends on the type of problem, the surrounding environment, and the personal characteristics of the decision-maker. Such variables have been explored successfully in numerous experimental studies - concerning, e.g., complexity of decision (Lanzetta & Driscoll, 1968), importance (Irwin & Smith, 1957), accountability and reversibility (McAllister, Mitchell, & Beach, 1979), deadlines and analytic aptitude (Christensen-Szalanski, 1980), mood (Isen & Means, 1983), or superordinate commitments (Toda, 1976). We believe that all of these variables may raise or lower people's standards with respect to the question of whether predecisional deliberation is exhaustive or not.

Returning to the postdecisional state of mind, it is conceivable that postdecisional mentation that does not imply the formation of implemental intents might sometimes suffice for creating this state of mind. For many goals, the route of implementation is either self-evident or has become overlearned and automated. Accordingly, no implemental intents concerning a particular course of goal implementation need to be formed (Heckhausen, 1987a; Toda, 1976). The individual simply calls upon the respective course of behavior when the appropriate time and opportunity is encountered. To place individuals into a postdecisional state of mind with respect to such goals might require nothing more than having them imagine the use of appropriate opportunities; in other words, one only needs to remind them of the implemental intents formed long ago.

Conclusion

Our findings suggest that people may move closer to making a change decision with respect to unresolved personal problems by engaging in certain kinds of mentations. They may either try to achieve a full-blown predecisional state of mind by engaging in exhaustive predecisional mentation, that is, weighing the desirability and feasibility of the goal under consideration, or they may start to plan the implementation of the change decision not yet made, thus creating a postdecisional state of mind. Particularly effective is the formation of implemental intents, that is, committing oneself to when, where, and how to enact the desired goal.

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