

Arousal and Post Decision Processes: Effects of Experimentally Manipulated Arousal on
Differentiation and Consolidation Processes.

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Abstract

This study investigates experimentally manipulated arousal influence on post decision consolidation processes within the theoretical framework of the differentiation and consolidation theory of human decision making (Svensson, 1992). Fifty-six university students participated in the experiment. Instructional manipulation of participants' level of arousal was used. A multi-attribute decision task concerning a choice between two apartments was used. One week later the participants had to recall the task. Heart rates were measured using a heart rate meter, and current mood assessed using a questionnaire (Lewinsohn & Mano, 1993). Results of the arousal manipulation were not found, nor any consolidation effect (F-test, $\alpha=.05$). No importance reversals of alternative attributes occurred. Interaction effects between commitment, activation level, level of arousal, conflict and ability to recall variables were not found (Tukey's HSD, $\alpha=.05$). The conclusion was that predictions failed due to too weak a manipulation of arousal. Implications for future research were discussed.

Keywords: Differentiation and Consolidation Theory, Arousal, Mood, Heart Rate, Decision Making

Arousal and Post Decision Processes: Effects of Experimentally Manipulated Arousal on
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This study investigates the effects of arousal on decision making processes. Decision making is an activity people engage in on an everyday basis. Decisions differ in their impact on the decision maker's life, and the stakes involved. How we reach our decisions and how we view them in hindsight are issues that concern researchers within decision making theory, a field of cognitive and social psychology.

Decision making theory

Early, primarily structural decision making theories, focused primarily on the results of the decisions. Major theories among these are expected utility theory (EU), subjective expected utility theory (SEU), and multi attribute utility theory (MAUT) (cf., Baron, 1994). EU is a normative theory in so much as it provides researchers with means to evaluate decisions made under ideal circumstances. According to EU, the decision maker carefully weights the utility of the outcome of each alternative against the probability that the outcome will occur when choosing the alternative. SEU is similar to EU except that the decision maker weights the utility of the outcome against the subjective probability of the outcome when comparing alternatives. In MAUT, the utility of an alternative is calculated by breaking each consequence of the alternative into attributes. The utility of each attribute of each option is measured and added across the attributes (Baron, 1994).

Subsequent process related decision making research focus on decision making over time and the underlying processes. Lewin (Lewin, 1951; as cited in Festinger, 1964), studied both pre- and post decisional processes and found differences between them. According to him, the decision maker investigates and compares the different alternatives in an objective manner prior to the decision. After the decision is made, the decision maker shows tendencies to stick to the values and opinions about the alternatives held in the moment the decision was made, even in the light of contradictory information (Lewin, 1951; as cited in Festinger, 1964).

Conflict and dissonance

In cognitive dissonance theory (Festinger, 1964), the differences between pre and post processes in decision making are considered and incorporated. In making a decision, Festinger claims, the decision maker collects equal amounts of information and compares their good, as well as their bad aspects. The attributes are compared according to a preference list and the alternatives are systematically re-evaluated in order to find a difference between the attractiveness of the best alternative and the others large enough to choose it.

According to Festinger, a conflict in the pre decision phase is followed by dissonance in the post decision phase. A conflict occurs when the attractiveness of the choice-alternatives at hand are so close that no choice is obvious. Having to choose either of the alternatives, then causes the decision maker to feel a frustration, as a sign of a conflict. Festinger also found that participants considered their decision to a higher extent when the difference between the alternatives' attractiveness was close, and when the decision makers were committed to the issue of the decision. Immediately after the decision is made the decision maker starts question the choice, looking for facts that speak against the chosen alternative. If the decision maker under this phase finds inconsistencies between the choice and personal values, dissonance occurs. The greater the conflict before the decision is made, the greater the dissonance afterwards (Festinger, 1964). As this dissonance is perceived as threatening to the decision maker, a dissonance reduction process starts. This consists of a selective continued consideration of the alternatives' attributes, e.g. by looking for facts related to the decision that supports the chosen alternative. The dissonance reduction continues until the decision maker feels content in standing by the decision (Festinger, 1964).

These pre and post decision processes mentioned by Festinger (Festinger, 1964) are also brought up in Conflict, Choice and Commitment theory (Janis & Mann, 1977). In their conflict model of decision making they regard the decision maker as unwilling to act. The decision maker acts only when challenged by some warning that the present situation is threatened, and then starts to consider the choice-alternatives. Janis and Mann describe the decision making process by means of a flow chart. The decision making process consists of antecedent conditions, mediating processes and the consequences of the decision. In the model the present decision

situation is preceded by a number of antecedent conditions, that gives information to direct the decision maker in the choice of future course of action (i.e. to make a choice between alternatives). After the decision is made Janis and Mann predicts post decision processes. The decision maker often strengthen, “bolster”, the decision after it is made. Bolstering increases with the degree of conflict in the decision. The decision maker often alters the subjective appraisal of the alternatives in favour of the chosen one. In doing this, the decision maker often follow one out of a set of bolstering strategies. Janis and Mann discusses six such strategies. The decision maker can, for instance, choose to exaggerate positive consequences or downgrade negative consequences of the decision. The decision maker may also deny threatening emotions (e.g. to see the chosen course of action as a challenge), exaggerate the remoteness of the action commitment, minimising social surveillance or the decision maker may minimise the feeling of personal responsibility. The choice of strategy depends on personal factors, but also on the situation as well as the kind of decision in question.

The differentiation and consolidation theory (diff. con. theory)

The diff. con. theory (Svensson, 1992; Svensson, 1995) takes the suggestions made by Festinger (Festinger, 1964) as well as Janis and Mann (Janis & Mann, 1977) into further consideration. According to the diff. con. theory, the decision maker, when put in front of a number of alternative courses of action, starts to scrutinise the alternatives in order to distinguish them from each other, this is called the differentiation process. The differentiation process works gradually, and the aim here is to get one of the alternatives, not only the best but so much better that the choice will stand solid in the future. The chosen alternative have to be superior even in the occurrence of new information that might decrease the difference in attractiveness, obtained in the differentiation process, between the chosen and the competing alternatives. Such new information can be either external (e.g., poor outcome) or internal (e.g., change in own values) and constitutes a threat to the superiority of the chosen alternative (Svensson & Benthorn, 1992). The corresponding post decision process in support of the chosen alternative is called consolidation.

Differentiation

When confronted with a decision problem, the decision maker starts identifying the alternatives and goals by means of available information. In order to minimise the strain on the decision maker, perceptual or cognitive markers, presumably, shows where to start the analysis. Such a marker might, for instance, tell the decision maker to start by looking at the price of an alternative.

Three different types of differentiation processes are identified: holistic, process related and structural. Svensson (1992) connects these types of differentiation to four levels of decision making based on the representation of attractiveness needed at each level. People tend to use holistic differentiation in quick decisions at level one and two. Decisions belonging to level one are the simplest. These are made automatically and the alternatives do not need any direct representation of attractiveness as the decisions are made on a basis of similarity with preceding decisions. Instead the decision maker uses other cognitive processes (for instance matching). Decisions at this level may once have belonged to higher levels but through application and experience they have been reduced and are now made automatically. Such a decision can, for instance, be to always buy a certain brand of breakfast cereal without considering other alternatives. A reference decision alternative is often chosen through a quick, level one decision to be used as an anchor, a point of reference to which other alternatives are compared during the subsequent differentiation. Decisions made at level two refers to the alternatives attractiveness of one or more attributes. The decisions are made according to some stereotypic rule of thumb, for instance “big is beautiful”. Another way to make a decision at this level is to consider the attractiveness in a holistic perspective in the sense that the decision is made, based on emotions or intuition. Such decisions can, for instance be to help out in a situation according to the notion that “helping is good”. The decision maker can also appraise the alternatives’ attractiveness in a holistic way, e.g. on emotional or intuitive basis. It is often enough with this kind of differentiation in order to make a decision but the holistic differentiation may also be a part of a more complex differentiation process (Svensson, 1992; Svensson, 1996).

The process of differentiation may follow one or more decision rule(s). These rules guides the decision maker in his reasoning to obtain the best choice. The decision rules, however, do not

suggest a good differentiation level, the difference in attractiveness to aim for. The choice of rules depends on both personal and situational factors (Svensson, 1992). Such kind of decision rules, are the conjunctive and the compensatory rules (Svensson, 1996). When applying conjunctive decision rules to a decision, criterion values for each attribute are set up. Each alternative is then measured against these criterion values attributewise, and are rejected if they fall below the criterion. This proceeds, if possible, until one alternative stands as a sole winner. Compensatory rules, on the other hand, assume that the alternatives have attractiveness values that are comparable across different attributes. Compensatory rules may then prescribe the decision maker to look for the attribute with the greatest difference in attractiveness and then choose the alternative which is more attractive on this attribute or the decision maker could choose the alternative with the largest number of favourable attributes.

In the process oriented differentiation, the alternatives are distinguished through decision rule differentiation or criterion differentiation. In decision rule differentiation it is common to start the differentiating process using rules like the conjunctive rule to eliminate some of the possible initial alternatives. In the next phase of the decision process, rules using trade-offs between choice-attributes (e.g. compensatory rules) are applied. In criterion differentiation criterion values on different attributes are set up by the decision maker according to subjective values. The different kinds of decision rules used in the process related differentiation all need these criteria. Alternatives that does not meet this criterion can be sorted out. If there are too many alternatives remaining either criterion or rules can be changed (Svensson, 1996).

The main focus of the diff. con. theory has been on the structural differentiation process and on decisions belonging to level three . Decisions at level three are not made automatically. The alternative's attractiveness are considered and assessed during differentiation since the choice here often involves a conflict. According to diff. con. theory a conflict occurs when the chosen alternative is inferior to competing alternatives regarding the value of an important attribute. The decision maker sometimes changes their appraisal of the decision, following a number of decision rules, in order to strengthen their decision (Svensson, 1995). This restructuring may involve attractiveness, importance of alternatives' attributes and facts as well as the decision problem. A choice at this level might, for instance, be a choice between two cars. To decide on a

car, attributes (aspects of the cars) are compared according to the decision makers' subjective estimate of their importance (e.g. colour, security and price) before the decision is made.

Restructuring with respect to attractiveness often takes the form of upgrading the chosen alternative's attractiveness and / or downgrade the rejected alternatives' attractiveness.

Restructuring with respect to attribute importance consists of a change in rank order between the attributes constituting the alternatives. Factual restructuring occurs, for instance, when forced to reject a preferred car and buy a cheaper, less preferred car. Factual restructuring can then have the effect of making the buyer remember the price of the more expensive car as even higher than it really was. Restructuring of decision problems consists for instance of looking for new kinds of solutions to the problem. When the alternatives are unknown, in full or to some extent, the decision maker have to find out the alternatives. For instance, finding out the best way to invest a sum of money may involve searching for and appraise different means and opportunities to place the money, perhaps new to the decision maker. Such a decision belongs to level four. The situations leading towards the decisions of level four are often novel to the decision maker and because of this the decisions may involve aspects of problem solving (Svensson, 1992).

Consolidation

In having to choose one alternative over the others, includes a threat in the sense that it involves loosing the good aspects of the rejected alternatives as well as the fact that the decision maker gets stuck with negative aspects of the chosen alternative. A way to reduce this threat is, as the diff. con. theory predicts, to continue the process of differentiation after the decision is made. This post decision differentiation process is called the consolidation process. The same processes as in the differentiation are used and the restructuring now occur in order to strengthen the decision. The level of restructuring depends on the size of the difference between the chosen alternative and the rejected. If the difference between the alternatives with respect to the most important attribute already is well established (so that the choice is undoubted), the need to consolidate is lower and this allow for attention to the other attributes of the alternative (the second, the third and so on...). Consolidation continues as long as the decision maker feels doubts regarding the choice.

Svensson and Benthorn performed studies of importance and facts restructuring on mainly fictions decision making tasks without real outcome (Svensson & Benthorn, 1992). They focused on the post decision processes that occur in order to consolidate a previously made choice. In one study (Svensson & Benthorn, 1992) no consolidation effect was observed five minutes after the decision was made, but after a week had passed, consolidation did occur regarding attractiveness favouring the chosen alternative, in terms of upgrading the aspect values from the first occasion to the second. This effect concerned only the two most attractive attributes. This effect was the opposite, regarding the two least important attributes where the difference had decreased.

Svensson and Malmsten (1995) investigated the effects of differentiation and consolidation processes regarding decisions with real life alternatives and real outcomes (Svensson & Malmsten, 1995). The participants had to choose between either of two lotteries. The choice involved a conflict in terms of attractiveness between the choice-alternatives and probability of the desired outcome as the lottery with the finest price had the smallest probability of winning and vice versa. According to Svensson and Malmsten, this conflict would increase the level of consolidation. Results showed that the participants who received a positive outcome from their choice, consolidated to such a degree that attributes that were reported to decrease the chosen alternative's attractiveness prior to the decision, afterwards were reported to be in favour of the chosen alternative. The participants whose choice gave a desired outcome appreciated their chances to this outcome as being higher after the decision than they did prior to the decision. Participants that did not get the desired outcome showed opposite, however not as strong, results.

In another study, Svensson and Malmsten found a consolidation effect after only ten to fifteen minutes after the decision was made, as opposed to the study by Svensson and Benthorn (1992). The cause of this difference was assumed to be found in the fact that the later study occurred under real life conditions as this increases the commitment of the decision makers (Svensson & Malmsten, 1995).

Mood and decision making

In current research within the diff. con. theory framework there have been a growing interest of the effects of process moderating factors in the decision making processes. This include

stress, time pressure, task involvement, mood and other factors that might affect the decision maker (Svensson, 1995). The focus of this study concerns the influence of aspects of mood on post decision processes.

Mood and emotion

Mood is related to emotions and affect (Fiske & Taylor, 1991). When a person experience something, this might cause an affect. Affect stands for a variety of preferences, evaluations, moods and emotions. Preferences include mild subjective reactions that are essentially either pleasant or unpleasant. This have been studied within social psychology, mainly regarding personal evaluations (i.e. simple positive and negative reactions to others). Mood may be distinguished from other affects in the fact that mood has a less specific target. Being in a good mood does not necessarily have to have a specific reason. Moods affect a wide range of social cognitions and behaviours. Like affect, moods are primarily considered as simply positive or negative (Fiske & Taylor, 1991).

The concept of emotion refers to a complex variety of affects, beyond merely good and bad feelings, e.g. including anger, exuberance and joy. Emotions can cause intense feelings that may involve physical manifestations, including increasing respiration and heart rate level (Fiske & Taylor, 1991).

Emotions and mood have also been distinguished in terms of external versus internal concerns, object versus objectless focus and present versus future orientation (Fiske & Taylor, 1991).

Mood affects the whole human being. It affects muscle tension, neurological activity as well as the cardio-vascular system (Izard, 1977). There also exists a body of evidence on the fact that our mood influence cognitions in the matter of self appraisal as well as on our perception. A persons mood in a specific situation influence the way the person perceives the situation. For instance, a person in a positive mood is more likely to perceive the world through “rose coloured glasses”. Similarly may a negative mood “pitch the world black” (Izard, 1977).

Several studies have showed that a high commitment and an interest in a choice situation, makes the person willing to put in much cognitive effort into the decision and consider facts

related to the situation (Festinger, 1964; Izard, 1977; Janis & Mann, 1977). Results have also shown that subjects become more willing to make sacrifices in terms of their own comfort. The subjects who were given a good result on a dummy test showed a greater willingness to put effort into charity work than did subjects who were given a poor result (Weyant, 1978). Schachter and Singer means that mood is a result of physiological arousal, cognitive evaluation and an appraisal of the situation causing the arousal (Schachter & Singer, 1962). Depending on the evaluation of the situation where the arousal occurred, the person may experience different kinds of mood.

Arousal

Researchers agree upon the notion of a correspondence between psychological and physiological arousal (Atkinson et al., 1993). Atkinson et al claims further that changes in psychological arousal are closely related to and followed by changes in physiological arousal. Arousal resulting from activation of the sympathetic division of the autonomic nervous system as it prepares the body for emergency action can be observed through, e.g. measurements of blood pressure and heart rate (Atkinson et al., 1993).

Schedlowski and Tewes (1992) have studied the relationship between self reports of experienced arousal and actual arousal among novel and expert parachute jumpers, during jumps. Results showed that the novel jumpers assessed their arousal during the jump as being higher than the expert jumpers did. Heart and respiration rates showed similar levels of arousal between the two groups.

Bagozzi (1995) have conducted studies in attitude theory and found that an increase of positive associations and cognitions concerning actions as well as a decrease in negative associations and cognitions follow an increase in arousal. This can be related to studies by Elliot and Devine (1994), who found that arousal manipulation facilitates task performance on easy tasks, but decrease task performance on hard tasks.

Results from studies on learning and arousal have shown a correspondence between a state of high commitment and interest with a high level of physiological arousal (D. Berlyne, 1960 as cited in Izard, 1977; D. E. Berlyne, 1967; as cited in Izard, 1977).

Results from other studies have shown on an opposite U-shaped relationship between

arousal and information processing capacity. Up to a certain point, an increase in arousal results in an increase in commitment and interest. Beyond this point, however, the arousal results in tunnel vision, concentration difficulties or hypervigilance (e.g. Easterbrook, 1959; Janis and Mann, 1977; Lewinsohn and Mano, 1993; Stone and Kadous, 1994).

Mood, arousal and decision making

Research have been conducted on the influence of mood on cognitions in general. Some research have focused on the effect of mood in decision making. In studies of the effect of mood on decision making processes, Lewinsohn and Mano refers to a multi dimensional mood state model (Lewinsohn & Mano, 1993; Mano, 1994) (see Figure 1), This model is a development of Russel's multi dimensional mood model (Russel, 1978). In Mano's model mood is described on two main dimensions, hedonic tone (pleasure-displeasure) and arousal (arousal-quietness). Besides these main dimensions the model includes locus of causation, control as well as the depth of experience they are assumed to explain only a minor part of the variance. In the model, Mano includes eight discrete mood states (Mano, 1994).

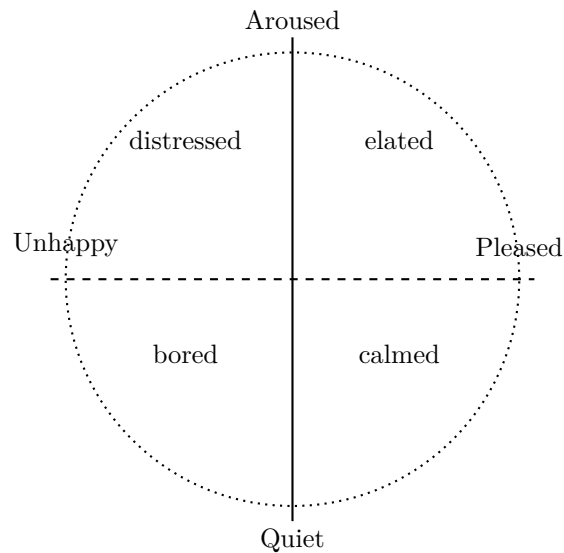


Figure 1. The Affect Circumplex (Lewinsohn & Mano, 1993).

In studying emotions, researchers distinguish experience of emotion over time from current emotion (Fiske & Taylor, 1991). For instance, Watson and Tellegen (Watson and A., 1985, as

cited in Fiske and Taylor, 1991) describes' the structure of affect by a two dimensional model, similar to Manos' Affect Circumplex model (Mano, 1994).

In a study, conducted by Lewinsohn and Mano (1993), subjects were asked to give self reports concerning their naturally occurring emotional state followed by a multi-attribute decision making task. This study showed that subjects in a pleasant mood put more cognitive effort into their decision than did subjects in more aroused mood. Subjects in an aroused mood spent less time elaborating the alternatives of the decision making task. They also considered fewer attributes and made less comparisons between the alternatives.

Psychologists have addressed the problems in inducing specific discrete mood states (Izard, 1977; Polivy, 1981). Trying to induce one specific mood often result in multiple dimensional states (Polivy, 1981).

Studies have been performed on the influence of arousal on post decision processes. Benson III (1993) have conducted such studies on post decision processes and framing when the decision is made under a time constraint. He does, however, not distinguish arousal, induced by a time constraint from general arousal (Benson III, 1993; Svensson, 1996). Svensson and Edland (1987) assumes, however, that arousal induced by a time constraint and general arousal may both result in a reduction in information processing capacity and will therefore affect decision making processes equally.

Salo (1996) has brought decision and mood theory together in a study concerning the influence of manipulated negative and positive mood on post decision processes. In order to induce different moods, subjects were asked to recollect a personal memory of a situation in which the specific mood had been particularly strong. After this subjects were given a decision task. One week later the subjects had to recall the attractiveness of the attributes of the alternatives of the decision making task. Consolidation in terms of restructuring of attractiveness differences between the chosen and the non-chosen alternative did not occur in any condition. There were, however, within subject changes in post decision attribute attractiveness restructuring of the most important attributes, following positive and negative mood. Subjects in both conditions tended to upgrade both alternatives, although this effect was stronger in the group of subjects in positive mood than in the group of subjects in negative mood.

Salo also found that subjects changed their rank order of attribute importance from the first occasion to the second one more frequently in negative than in positive mood which was assumed to be an indication of insufficient differentiation of the alternatives. Salo (1996) suggests that future research should focus on how the arousal component of mood may contribute to possible effects on differentiation and consolidation processes.

Research questions

According to diff. con. the differentiation in the pre decision processes are followed by consolidation in the post decision phase (Svensson, 1995). Arousal affects cognition differently in different situations (Fiske & Taylor, 1991). This may lead to different degrees of differentiation which in turn may be followed by different degrees of consolidation. Being in an aroused state when making a decision, may increase the consolidation in the post decision process, due to a decrease in information processing, depending of the level of arousal, which, in turn, may lead to a lower differentiation level. On the other hand being aroused during a decision making task may lead to a decrease in consolidation (Svensson, 1995). This is due to the fact that, up to a certain point, an increase in arousal creates an increase in the decision makers information processing capacity (Easterbrook, 1959). This may enable the decision maker to differentiate the alternatives enough to feel content regarding the choice and will therefore not need to consolidate (Svensson, 1992).

Following research questions are asked here: Does an experimentally manipulated arousal in the decision making moment affect the differentiation process in such a way that this in turn gives rise to a consolidation process that differs from one that arises from a differentiation not affected by an manipulated arousal? If so, in which directions are the consolidation process affected? Is the level of consolidation increased or decreased by the manipulation compared to the consolidation in a situation without manipulated arousal? Will reversals or restructuring of the attribute rank order of importance occur following manipulated arousal? In case of initial value conflicts between the choice alternatives, how are they solved by decision makers with different levels of arousal?

Hypothesis. Following hypothesis will be tested: Manipulated arousal will lead decision makers to decrease their cognitive effort in evaluating the alternatives of a decision making

problem in the pre decision phase to their decision. This should affect the decision makers' confidence in their choice which in turn influence the consolidation process in the post decision phase compared to participants without a manipulation of their level of arousal.

Method

Participants

Fifty-six university students (28 men, 28 women, mean age = 23.4 years) volunteered to participate in the experiment. They were all students at the Lund University, faculties of social sciences, economics and law. The distribution of participants between the two conditions, experiment and control, can be seen in Table 1.

Condition	Men	Women	Totally	Mortality
Experiment (Arousal)	13	15	28	7 (6.7%)
Control	15	13	28	7 (6.7%)

Table 1

Distribution of participants with respect to experimental condition and gender.

The participants that showed up on both occasions had a chance to win a IKEA gift voucher, worth 200 SEK. Participants were guaranteed confidentiality.

Materials

The following materials were used in the experiment: a heart rate meter, a number of forms, a mood questionnaire and a demographic report. The demographic report was a 5 pages long report concerning migration to and from the city of Lund. The heart rate meter was a Clas Ohlsson, PULSE BEEP, which use an active IR sensor to measure pulse rate in the bloodflow on the left index finger. The sound system was disconnected to avoid interference.

Forms. Six different forms were used. One form (see Appendix A) consisted of four VAS scales, (all VAS scales; visual analogue scales, used in the experiment were one hundred

millimetres) labelled with the attribute names. They were anchored from “unimportant” to “important” in the end points.

The decision task (see Appendix B) consisted of two equally attractive apartments described with respect to the four attributes named above. The attribute values of the both apartments were presented with eight VAS-scales, anchored from “good” to “bad” in their end points. Each scale was labelled with an attribute name and a mark showing the value of the attribute of the apartment.

A questionnaire (see Appendix C) contained questions about any strategies used in the decision making task and regarding commitment to as well as conflict in the decision.

Three forms were to be presented on a second occasion. The first of these (see Appendix D) resembled the decision making task, but the marks on the VAS-scales were missing (see Appendix B),

A second form (see Appendix E) resembling the importance form (Appendix A) was used to assess participant preferences with respect to the four attributes. This form also contained a VAS scale, anchored from “easy” to “hard”, used to assess participants’ difficulty to remember the apartments aspect values.

A third form (see Appendix F) was a questionnaire about participants’ experiences from the different phases of the experiment, also including two VAS scales (anchored from “calm” to “active” and from “little” to “much”, respectively) where participants were asked for a self report of “how active they were during the decision task” and the extent to which this influenced the decision task.

Mood questionnaire. A mood questionnaire (see Appendix G) was used consisting of twenty-four items. The items were grouped by the eight octants in Mano’s Affect Circumplex. Each item consisted of mood related adjective followed by a VAS-scale, anchored from “not at all” to “a lot” in the end points. The mood questionnaire is a development of Mano (Lewinsohn & Mano, 1993) to fit Swedish circumstances (language) (Salo, 1996). The following alphas (Cronbach) for covariance among the three items per octants have been obtained: arousal (0.70), elation (0.78), pleasantness (0.81), calmness (0.46), quietness (0.49), boredom (0.85), unpleasentness(0.92), distress (0.69).

Procedure

The experiment was conducted at the Department of Psychology, Lund University, Sweden. Participants were selected through a simple random sampling and distributed into two conditions (experiment and control). Each participant was asked to show up on two occasions one week apart. The procedure of the main experiment was tested in a pilot study.

First occasion. At arrival the participants were introduced by one of the experimenters to the experiment, and the heart rate meter was showed to them, in order to make the participant feel at ease. The participants were asked to fill in a mood questionnaire (see Appendix G) according to printed instructions to assess their current mood. Additional instructions to emphasise that the questionnaire concerned the current mood were given. The participants' heart rate was then measured. The participants were not allowed to see the results of the heart rate measurements until the end of the experiment. Then the demographic report was presented (see Appendix J) and instructions were given. The instructions differed between the two conditions. In the experiment condition the participants were told that they after the "study" session would be tested, with a memory achievement test, on the material by "someone belonging to the department". This constituted the arousal manipulation. The thought was that the nervousness of not being able to make a good result on the achievement test, in front of the person, yet not met, would trigger physiological as well as psychological arousal (which was supposed to be observable in the results from the mood questionnaires as well as in the heart rates). The participants in the control condition were told to read the material but also assured that no enquiry was to follow. After this, the participants were left to read the material for five minutes.

After the five minutes had expired, the participants were given the importance assessment form (see Appendix A). In the experiment condition, but not in the control condition, the second experimenter now entered (under the assumption that he was to conduct the memory achievement test on the previous study material). In the experiment condition the second experimenter administered the remainder of the experiment, as opposed to the control condition, where the following events was administered by the original experimenter and the participant's heart rate was measured again. A second mood questionnaire (see Appendix G) was administered. The decision making task followed this. The participants were to choose between

the two apartments presented on the decision task form (see Appendix B). This constituted the decision making task. The task was to be solved without any time constraints. This was followed by the post task questionnaire (see Appendix C) where the participants were asked to express any strategies used in the decision making task. The participants were also asked questions to assess their commitment to as well as any conflict in their decision. At this time, the participants in the experiment condition were told that there would not be any memory achievement test on the previous study material. A final heart rate was then measured to compare with the base line heart rate measurement.

Following this debriefing took place. The participants' feelings and experiences during and after the experiment were polled. The participants were asked to estimate relations between the three heart rates taken under the experiment before these were revealed. The participants were not told anything about the experiment that could reveal the hypothesis.

Second occasion. One week later the participants were presented with the form for assessing the participants memory of the decision making task (see Appendix D). Now the participants had to recall the values of the attributes of the two apartments in the decision task (see Appendix B) from the first occasion. The participants were to recreate the marks on the VAS scales showing the attribute values on the decision making task form (see Appendix B) according to memory. Then their preferences regarding attribute importance rank order were assessed with the form in Appendix E. The participants were to report the rank order of importance of the attributes of the apartments. This was followed by the questionnaire in Appendix F where the participants had to describe their feelings and experiences of the first occasion. The questionnaire was followed by debriefing and a brief explanation of the theory and hypotheses underlying the experiment.

Results

Results showed no effects in line with the predictions made in our hypothesis. All changes in attractiveness as well as mood were interpreted as changes in millimetres of the participants estimates on the one-hundred millimetre long VAS scales from the first to the second occasion. All data were normally distributed.

Attribute's attractiveness values from the forms in Appendix B and Appendix E was sorted from the categories "standard", "size", "rent" and "location" into categories "most attractive attribute", "2nd most attractive attribute" and so on, according to the attribute importance rank order scores obtained from the form in Appendix A. The attribute values were also sorted from categories "apartment A" and "apartment B" into categories "chosen" and "not chosen" according to the participant's choice.

Heart rates

During the first occasion, the participants had a heart rate measure taken three times. The participants in the control condition showed an initially higher heart rate than the participants in the experiment condition. The heart rate mean values in the two conditions are shown in Figure 2. The difference in heart rate decreased in the second and third measurements compared to the first measurement. The differences between the conditions were not significant.

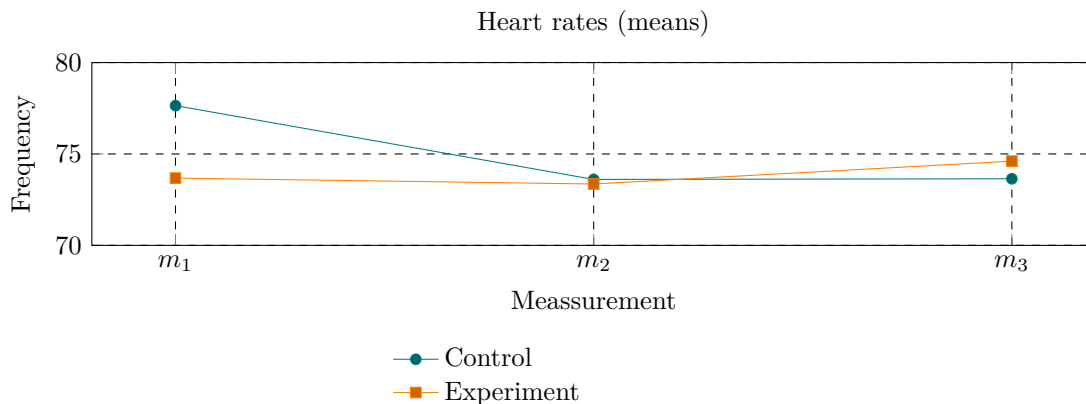


Figure 2. Heart rate means for the two groups.

Mood assessment

The twenty-four scores obtained from each mood questionnaire were sorted into groups by three according to the octant (mood state) they belonged to and a mean score was calculated for each group of scores. A difference between the two scores from each occasion and octant was calculated yielding eight "mood difference scores" to each participant. The results from this can be seen in Figure 3. No significant differences between the groups were found. The arousal score

of the control group dropped, while the experiment group does not show such a decrease. These changes corresponds to the changes in the counterpart to arousal, quietness. For the control group there are similar changes in the octants distress and elation, which both include positive arousal (see the affect circumplex, Figure 1). The experiment group, shows contradictive changes in these octants. While the changes in distress indicates an increase in arousal changes in elation implies a decrease.

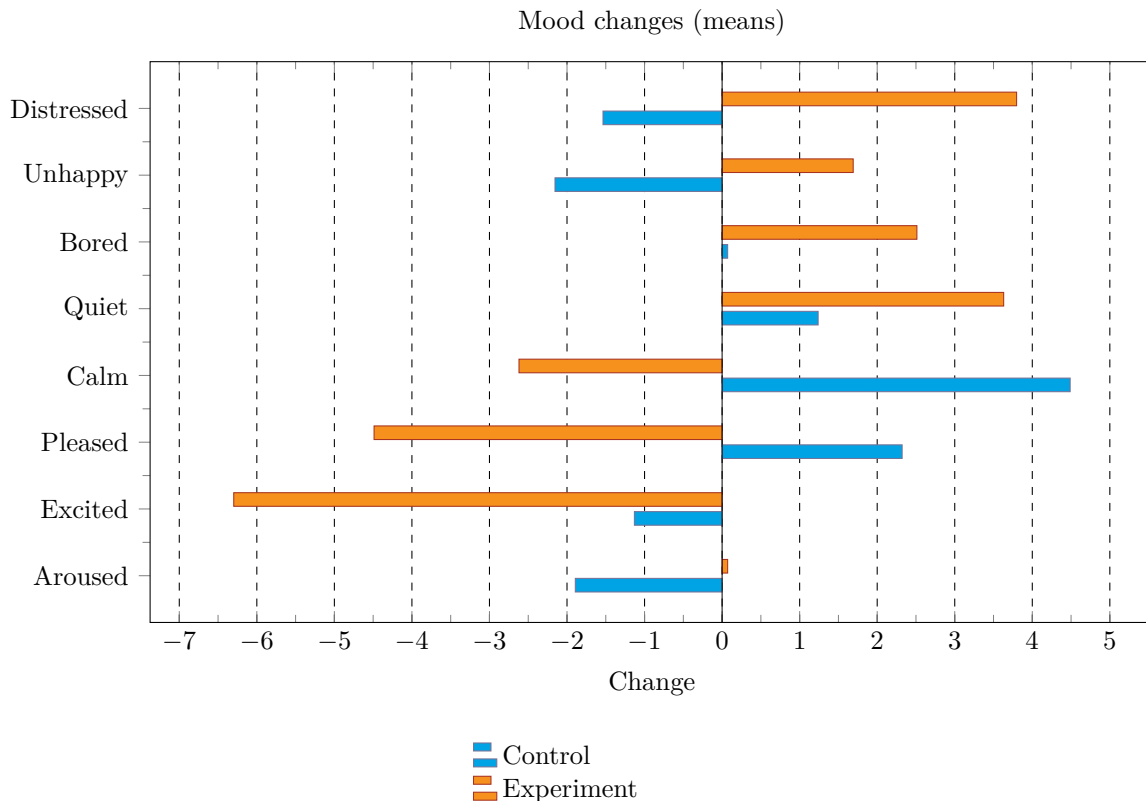


Figure 3. Mood changes. Mean score of the two conditions. *Note.* Differences are not significant (t-tests, independent groups, $\alpha = 0.05$, $df = 54$, $2 < t_{crit} < 2.021$, t-values were 0.30, -0.90, -1.11, -1.05, 0.50, 0.44, 0.88, 1.04 respectively).

Consolidation effects

The consolidation effect of each participant was obtained from the attractiveness differences between the two apartment's attribute values of the decision making task form (see Appendix B and Appendix D). The consolidation effect was calculated by subtracting the difference between

the attribute values, of the chosen and the non chosen alternative in the decision situation, from the corresponding difference in the recall situation on the second occasion. If the effect was positive, i.e. the difference had increased, on a certain attribute supporting the chosen alternative, consolidation had occurred. No significant differences between the two conditions were found . The mean values of the two conditions are shown in Figure 4. The participants in the experiment condition show a slightly higher consolidation effect than participants in the control condition on the two most important attributes. In the case of the two least important attributes, the effect is somewhat reversed and stronger in the experiment condition than in the control condition as well.

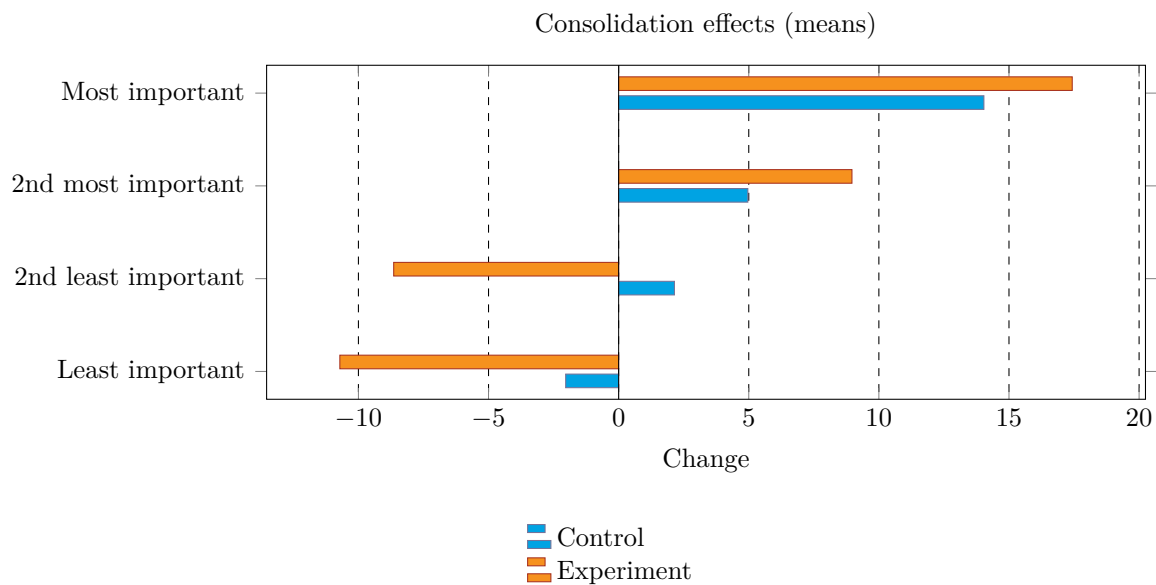


Figure 4. Consolidation effects mean values in the two conditions. *Note* Differences are not significant (t-tests, independent groups, $\alpha = 0.05$, $df = 54$, $2 < t_{crit} < 2.021$, t-values were 0.19, 0.23, -0.72, -0.61 respectively).

Interaction effects

In the absence of differences of the arousal manipulation and consolidation between the two conditions, interaction effects were investigated. No significant differences were found.

The consolidation effects of participants were investigated with respect to a “commitment score”, obtained from the questionnaire from the first occasion (see Appendix C). The participants were given 1 point each for each “yes” to the questions whether the choice of apartment was a

current issue as well as whether it was an important issue to the decision maker. This yielded a 3 grade commitment scale. The consolidation effect with respect to the commitment score as well as experimental condition are shown in Table 3. No significant differences were found.

A value conflict was defined as a choice in which one of the two most important attributes of the chosen alternative had attribute values inferior to the corresponding one of the non chosen alternative. Consolidation effect were compared with respect to this conflict score as well as the experimental condition. No significant differences were found.

An “activation” score of each participant was obtained from the “how active” and “how this influenced the decision” VAS scale questions given at the first occasion. No significant differences were found (Tukey’s, $\alpha=.05$, $df = 50$) Table 4.

The consolidation effect of participants following their ability to remember their choice on the second occasion (see Appendix E) as well as the experimental condition was compared. No significant differences were found (Tukey’s, $\alpha=.05$, $df = 52$).

Participants was given an arousal score according to their change in arousal during the experiment. This was obtained from the arousal difference as obtained from the mood questionnaire. Participants were grouped according to whether they had an increase or decrease in arousal. Differences between groups were tested (Tukey’s, $\alpha=.05$, $df = 52$) but no significant differences were found Table 5.

Restructuring of importance

The difference between the two importance values of each attribute reported on the two occasions (Appendix A, Appendix E) was measured and the difference was interpreted as an estimate of participants’ restructuring. No significant restructuring of attribute importance rank order was found (t-test, $\alpha=.05$, $df = 54$). The attribute importance rank order of participants following experimental condition are shown in Table 2.

Discussion

This study investigated the effects of experimentally manipulated arousal as a component of mood on post decision consolidation processes in a fictions decision problem without real

outcome. The results were contradictory to earlier experiments of diff. con. processes in the way that no post decision consolidation was found. There were however, no significant effects of the manipulation of arousal in the experiment condition compared to the level of arousal in the control condition. Small effects regarding commitment was found. Results from the mood questionnaire showed small effects in line with predictions.

The fact that no effect from manipulation of arousal was found may be due to the large variance in heart rates and mood selfreports. The relatively small number of participants in the study can also be questioned as sufficient. Questions can also be raised to the heart rate measuring method. The frequency of measurement may not have been high enough to catch heart rate fluctuations. Some participants may have been in a hurry to the experiment and therefore showed a different heart rate baseline than they otherwise would have had. Regarding the absence of effect of arousal on consolidation, it may be due to the weak manipulation. Arousal may also fade away quickly and therefore do not affect the consolidation process. Results showed that a differentiation in the pre decision phase had occurred for all participants on the most important attribute, this can imply that there were no need to consolidate in the post decision phase. Participants with a conflict in the decision making task concerning the attractiveness on the most important attribute tended to show small effects in the negative consolidation on the most important attribute but small effects of positive consolidation on the second most important attribute. This indicates that they remembered their most important attribute correctly on the chosen alternative as not “as good” as for the non chosen alternative and to justify their choice, the post decision consolidation process occurs on the second most important attribute in favour for the chosen alternative.

According to results of small differences regarding commitment one may question the accuracy of the questions with respect to commitment. According to type 1 and type 2 errors one can ask what another millimetre on the VAS-scales in the different questionnaires implies.

Interesting were the participants reactions towards the experiment. It seemed like if something in the experiment triggered the participants emotions in a way that made them open up about personal problems rather than continuing the experiment. This occurred frequently in both conditions. It is possible that the mood questionnaire itself induced certain kinds of mood.

In that case, one has to question the accuracy of the mood questionnaire. According to earlier studies there can be a difference between self reported subjective arousal and actual arousal (Schedlowski & Tewes, 1992). This seemed to be the fact in this study as well but no sure results can be revealed in this question because there were no reference points in the participants descriptions of their subjective experiences of their level of arousal which made calculations impossible. This was due to the fact that the first participants expressed a feeling of arousal even though no factual arousal was obtained and after realising this, the rest of the participants were, in the end of the experiment, asked to estimate the correlation between arousal levels during the three measurements. It was also interesting that the results showed small effects regarding commitment. This may indicate the importance of involvement in the decision task, especially considering that earlier diff. con. experiments without real outcome sometimes have not found consolidation in the post decisional phase (Svensson & Benthorn, 1992). One can assume that task involvement is an important factor regarding the consolidation process. This makes us suggest that following studies on experimentally manipulated arousal and post decision processes should continue to focus on realistic decision problems, with real outcomes. Another issue of interest would be to investigate the correlation between subjective self reported arousal and actual arousal in connection with post decision processes.

References

- Atkinson, R. L. et al. *Introduction to Psychology*. Orlando: Harcourt Brace College Publishers, 1993.
- Bagozzi, R. P. "The Effects of Arousal on the Organisation of Positive and Negative Affect and Cognitions: Application to Attitude Theory." University of Michigan, 1995.
- Baron, J. *Thinking and Deciding*. Cambridge: Cambridge University Press, 1994.
- Benson III, L. "Studies in Human Decision Making: On the Effects of Experimental Instructions, Framing and Time Constraints". Phd thesis. Lund: Lund University, 1993.
- Berlyne, D. E. "Arousal and reinforcement". In: *Nebraska Symposium on Motivation* 15 (1967), pp. 1–110.
- Berlyne, D.E. *Conflict, arousal, and curiosity*. New York: McGraw–Hill, 1960.
- Easterbrook, J. A. "The Effect of Emotion on Cue Utilisation and the Organisation of Behaviour". In: *Psychological Review* 66 (1959), pp. 183–201.
- Elliot, A. J. & P. G. Devine. "On the Motivational Nature of Cognitive Dissonance: Dissonance as Psychological Discomfort". In: *Journal of Personality and Social Psychology* 67 (1994), pp. 382–394.
- Festinger, L. *Conflict, Decision and Dissonance*. Stanford, CA: Stanford University Press, 1964.
- Fiske, S. T. & S. E. Taylor. *Social Cognition*. Singapore: McGraw–Hill, Inc., 1991.
- Izard, C. E. *Human Emotions*. Plenum Press, 1977.
- Janis, I. L. & L. Mann. *Decision Making*. New York: The Free Press, 1977.
- Lewin, K. *Field theory in social science; selected theoretical papers*. Ed. by D. Cartwright. New York: Harper & Row, 1951.
- Lewinsohn, S. & H. Mano. "Multi–attribute Choice and Affect: The Influence of Naturally Occurring and Manipulated Moods on Choice Processes". In: *Journal of Behavioural Decision Making* 6 (1993), pp. 33–51.
- Mano, H. "Risk–taking, Framing Effects, and Affect". In: *Organisational Behaviour and Human Decision Processes* 57 (1994), pp. 38–58.
- Polivy, J. "On the Induction of emotion in the Laboratory: Discrete Moods or Multiple Affect States?" In: *Journal of Personality and Social Psychology* 41 (1981), pp. 803–817.

- Russel, J. A. "Evidence of Convergent Validity on the Dimensions of Affect". In: *Journal of Personality and Social Psychology* 36 (1978), pp. 1152–1168.
- Salo, I. "Manipulated Positive and Negative Mood Affecting Post Decision Processes". Department of Psychology, Lund University, Sweden, 1996.
- Schachter, S. & J.-E. Singer. "Cognitive, social, and physiological determinants of emotional state". In: *Psychological Review* 69 (1962), pp. 379–99.
- Schedlowski, M. & U. Tewes. "Physiological Arousal and Perception of Bodily State During Parachute Jumping". In: *Psychopatology* 29 (1992), pp. 95–103.
- Stone, D. N. & K. Kadous. "The Joint Effects of Arousal and Task Difficulty in Multiattribute Choice". Department of Accountancy, University of Illinois, IL., 1994.
- Svensson, O. "Decision Making and the Search for Fundamental Psychological Regularities: What can be Learned from a Process Perspective?" In: *Organisational Behaviour and Human Decision Processes* (1995).
- Svensson, O. "Differentiation and Consolidation in Human Decision Making: On Pre and Post Decision Processes". Stockholm, 1996.
- Svensson, O. "Differentiation and Consolidation Theory of Human Decision Making: A Frame of Reference for the Study of Pre- and Post Decision Processes". In: *Acta Psychologica* 80 (1992), pp. 143–168.
- Svensson, O. & L. J. Benthorn. "Consolidation Processes in Decision Making: Post Decision Changes in Attractiveness of Alternatives". In: *Journal of Economic Psychology* 13 (1992), pp. 1–13.
- Svensson, O. & A. Edland. "Change of Preferences under Time Pressure: Choices and Judgements". In: *Scandinavian Journal of Psychology* 28 (1987), pp. 322–330.
- Svensson, O. & N. Malmsten. "Post-decision Consolidation over Time as a Function of Gain or Loss of an Alternative". In: *Scandinavian Journal of Psychology* 36 (1995), pp. 1–10.
- Watson, D. & Tellegen, A. "Toward a consensual structure of mood". In: *Psychological Bulletin* 98 (1985), pp. 219–235.
- Weyant, J. M. "Effects of Mood States, Costs and Benefits on Helping". In: *Journal of Personality and Social Psychology* 36 (1978), pp. 1169–1176.

Condition	n	Most important attribute		2nd most important attribute		3rd most important attribute		4th most important attribute	
		Decision	One week later	Decision	One week later	Decision	One week later	Decision	One week later
Control	28	92.14	81.89	79.57	72	60.5	52.32	34.68	35.29
		(7.94)	(13.65)	(9.79)	(13.52)	(17.66)	(16.23)	(20.67)	(20.44)
Experiment	28	89.82	81.54	77.07	67.07	55.89	54.46	34.5	35.71
		(10.19)	(16.19)	(14.21)	(17.89)	(20.33)	(19.33)	(25.21)	(22.37)

Table 2

Comparison of attribute importance between experimental condition groups on the two occasions (Means above Std. Dev.). Note. Differences are not significant (t -tests, independent groups, $\alpha = 0.05$, $df = 52$, $2 < t_{crit} < 2.021$, for all $p > 0.2$).

Condition	Commit- ment score	n	Most important attribute	im- important attribute	2nd most important attribute	3rd most im- portant at- tribute	4th most im- portant at- tribute
Control	0	2	9.33 (9.45)	-5.33 (30.99)	1 (45.51)	-12 (19.97)	
	1	21	-5.86 (47.588)	9.57 (44.05)	23.43 (35.213)	-5.713 (52.436)	
	2	4	41.25 (30.12)	0 (26.621)	-4.25 (28.20)	20.5 (41.10)	
Experiment	0	2	-56.5 (71.42)	-69 (35.36)	46.5 (72.83)	-4 (25.46)	
	1	16	3.9375 (26.30)	1.3125 (33.47)	-2.75 (17.04)	-5.25 (29.51)	
	2	10	-2.7 (48.88)	11.5 (56.22)	0.8 (54.13)	-18.5 (30.38)	

Table 3

Comparison of consolidation effect with respect to experimental condition as well as “commitment score”. (Means above std deviations). Note. Differences are not significant (Tukey’s HSD procedure, $\alpha = 0.05$, $df = 5/50$, $3.98 < Q_{crit} < 4.04$, for all $Q_{obt} < 0.203$).

Condition	Level of activation	n, subjects in group	Most important attribute	2nd most important attribute	3rd most important attribute	4th most important attribute
Control	0	12	19.08 (44.65)	6.33 (50.10)	-5.75 (35.57)	10.75 (45.73)
	1	8	6.13 (44.66)	32.13 (40.99)	4.38 (39.11)	-10.5 (34.98)
	2	5	10 (58.85)	-37 (29.37)	21 (41.93)	-12.4 (41.44)
	3	3	21.67 (43.43)	-3 (60.4)	-3.67 (44.60)	-13.33 (40.7)
Experiment	0	12	16.92 (51.66)	14.67 (43.21)	-10.92 (41.99)	-17.25 (39.43)
	1	10	20.6 (41.94)	24 (36.46)	-16.2 (39.52)	-3.4 (30.88)
	2	3	-8.33 (66.01)	-35 (19.08)	13 (51.51)	-5.33 (5.51)
	3	3	34.67 (29.87)	-20 (32.74)	4 (44.84)	-14.33 (32.32)

Table 4

Comparison of consolidation effect with respect to experimental condition as well as “activation score”. (Means above std deviations). Note. Differences are not significant (Tukey’s HSD procedure, $\alpha = 0.05$, $df = 7/48$, $4.39 < Q_{crit} < 4.46$, for all $Q_{obt} < 0.00003$).

Condition	Increase in arousal	n, subjects in group	Most important attribute	im-2nd most important attribute	3rd most important attribute	4th most important attribute
Control	no	13	13.54 (44.44)	12.77 (48.48)	-5.54 (35.50)	5.15 (45.85)
	yes	15	14.47 (46.96)	-1.8 (50.26)	8.8 (39.40)	-8.27 (36.57)
Experiment	no	12	12.25 (52.38)	12.92 (51.86)	-10.5 (48.02)	-14.5 (37.87)
	yes	16	21.31 (43.16)	6 (33.09)	-7.25 (36.38)	-7.88 (29.36)

Table 5

Comparison of consolidation effect with respect to experimental condition and increase of arousal obtained from mood form. (Means above std deviations). Note. Differences are not significant (Tukey's HSD procedure, $\alpha = 0.05$, $df = 3/52$, $3.40 < Q_{crit} < 3.41$, for all $Q_{obt} < 0.047$).

Aspekter på bostäder

Hur viktiga tycker du att de fyra egenskaperna standard, storlek, läge och hyra är om du skulle titta på en bostad? Sätt markeringar på de vågräta linjerna. Sätt olika värden på egenskaperna.

Rangordna även egenskaperna genom att markera dem med siffrorna 1,2,3 och 4 (1= viktigast - 4 = minst viktig). Sätt siffrorna i rutorna till höger.

Standard	oviktig	_____	mycket viktig	<input type="checkbox"/>
Storlek	oviktig	_____	mycket viktig	<input type="checkbox"/>
Läge	oviktig	_____	mycket viktig	<input type="checkbox"/>
Hyra	oviktig	_____	mycket viktig	<input type="checkbox"/>

Val mellan två bostäder

Nedan är två bostäder beskrivna på fyra egenskaper, standard, storlek, läge och hyra. Bostad A och B har olika "värden" på de fyra egenskaperna. Bostädernas värden på respektive egenskap är markerade med streck på de vågräta linjerna.

Din uppgift är att jämföra de olika bostäderna med varandra och därefter välja den bostad du skulle vilja flytta in i.

Ringa in det valda alternativet.

Bostad A

Standard Dålig

Storlek Dålig

Läge Dålig

Hyra Dålig

Bostad B

Bra Dålig

Bra Dålig

Bra Dålig

Bra Dålig

Bra

Bra

Bra

Bra

Appendix C

Namn: _____

Ålder: _____

Förklara hur du tänkte för att komma fram till ditt beslut.

Hur svårt var valet av bostad för dig?

lätt _____ mycket svårt

Är val av bostad en viktig fråga för dig?

Ja Nej

Är val av bostad en aktuell fråga för dig?

Ja Nej

Tack för din medverkan!

Val mellan två bostäder

För en vecka sedan valde du mellan två bostäder som var beskrivna på fyra egenskaper, standard, storlek, läge och hyra. Ringa det alternativ du valde.

Bostad A och bostad B hade olika värden på de fyra egenskaperna. Dessa var markerade med streck på de vågräta linjerna. Försök att beskriva bostäderna genom att återskapa markeringarna som du minns dem.

Bostad A

Standard Dålig _____ Bra Dålig _____

Storlek Dålig _____ Bra Dålig _____

Läge Dålig _____ Bra Dålig _____

Hyra Dålig _____ Bra Dålig _____

Bostad B

Bra _____

Bra _____

Bra _____

Bra _____

Appendix E

Namn: _____

Ålder: _____

Hur svårt var det att minnas de olika värdena?

lätt _____ mycket svårt

Hur viktiga tycker du själv att de olika egenskaperna är? Sätt markeringar på de vågräta linjerna. Sätt olika värden på egenskaperna.
Rangordna även egenskaperna genom att markera dem med siffrorna 1,2,3 och 4 (1= minst viktig - 4 = viktigast). Sätt siffrorna i rutorna till höger.

Standard	oviktig _____	mycket viktig	<input type="checkbox"/>
Storlek	oviktig _____	mycket viktig	<input type="checkbox"/>
Läge	oviktig _____	mycket viktig	<input type="checkbox"/>
Hyra	oviktig _____	mycket viktig	<input type="checkbox"/>

Appendix F

Förra gången du var här ...

- fyllde du i ett formulär för att fastställa ditt känsloläge och din puls mättes
- läste du in ett material,
- fick du fyll i ett formulär om aspekter på bostäder och värer dessa,
- din puls mättes igen och du fick fylla i ytterligare ett formulär för att fastställa ditt känsloläge,
- löste du en beslutsuppgift som presenterades av en försöksledare,
- mättes din puls igen.

Beskriv i egna ord hur du kände dig under de olika momenten.

Hur kände du dig när du fattade beslutet?

lugn _____ mycket aktiv

Hur tror du att ditt beslut kan ha påverkats av hur du kände dig?

inte alls _____ mycket

Om du tror att ditt känsloläge påverkat ditt beslut, beskriv isåfall hur.

Tack för din medverkan!

Appendix G

Försök att känna efter hur du känner dig just nu. Du skall för varje ord nedan ange graden för ditt nuvarande känslotillstånd, genom att med ett litet men tydligt streck markera på de vågräta linjerna. Tänk och känn efter noggrant för varje ord, innan du gör din markering. 41

Glad inte alls _____ mycket

Upprymd inte alls _____ mycket

Vilande inte alls _____ mycket

Rädd inte alls _____ mycket

Slö inte alls _____ mycket

Exalterad inte alls _____ mycket

Sorgsen inte alls _____ mycket

Dämpad inte alls _____ mycket

Tillfreds inte alls _____ mycket

På högvarv inte alls _____ mycket

Ängslig inte alls _____ mycket

Overksam inte alls _____ mycket

Olycklig inte alls _____ mycket

Livlig inte alls _____ mycket

Avspänd inte alls _____ mycket

Dåsig inte alls _____ mycket

Upphetsad inte alls _____ mycket

Sömnig inte alls _____ mycket

Lugn inte alls _____ mycket

Begeistrad inte alls _____ mycket

Stillsam inte alls _____ mycket

Deppig inte alls _____ mycket

Nervös inte alls _____ mycket

Nöjd inte alls _____ mycket