Does Mood Influence Judgment Accuracy?

Soussan Djamasbi*
William Remus**
Marcus O'Connor***

*Department of Management
Worcester Polytechnic Institute
Worcester, MA USA
Email: Djamasbi@hpu.edu

**College of Business
University of Hawaii
Honolulu, HI USA
Email: Remus@cba.hawaii.edu

***University of Sydney
Sydney, Australia
Email: M.Oconnor@econ.usyd.edu.au

Abstract

In this study, we investigated the influence of mood on a production scheduling managerial task by comparing the effects of positive and neutral mood on individual judgments and their accuracy. When the subjects have been exposed to the task and thus have gained experience doing the task, the subjects in a positive mood performed significantly better than the subjects in a neutral mood.

Keywords

Affect, Mood, Decision Making, Judgments, Judgmental Performance, Judgmental Accuracy, Judgmental Consistency

1. INTRODUCTION

It is often assumed that rational decisions are made in the absence of the influence of one's feeling state. Psychological investigations, however, suggests that one's feelings state can influence what comes to one's mind first or most easily (for a detailed review see Isen, 1984) and what comes to one's mind first or most easily can in turn influence one's decisions and judgments (Tversky and Kahneman, 1973). Consequently, given the inherent importance of managerial judgments in organizations, it becomes crucial to investigate the role of mood in these types of judgments. Since people are always in a "sort of mood", as Venkatesh and Speier (1999) aptly put it, and since these feeling states can influence one's thought processes, it becomes of great importance to investigate whether the quality of complex managerial judgments can be influenced by the judge's feeling state.

The investigations that examine the impact of mood on judgment and decision making can roughly be categorized into two main groups: the first group investigates the impact of feelings states on decisions that do not involve risk (Clark and Isen 1982; Isen 1984, 1993, 2000) and the second group investigates the impact of feeling states on decisions that do involve risk (Au et al., 2003; Mellers, 2000; Lowenstein, et al., 2001). The line of research that considers decisions without the involvement of risk generally concentrates on the effects of immediate feeling states only (Clark and Isen, 1982; Isen, 1984, 1993). The line of research that investigates decision making under risk, on the other hand, usually focuses on the effects of anticipated feeling states on decisions (see the literature review in Lowenstein et al., 2001). Our paper falls under the first category mentioned above. That is, in this paper we examine the impact of positive mood (an immediate feeling state) on judgments that do not involve risk. In addition, we concentrate on a specific type of managerial judgment, which by its very nature requires complex cognitive processing.

In the following sections we review the literature on judgment and mood, form some relevant hypotheses, and conduct an experiment to examine this issue directly.

2. BACKGROUND

Judgment analysis is often grounded in Social Judgment Theory (for a detailed discussion see Hammond, 1975; Cooksey, 1996; Brehmer 1988). Judgment can be defined as a cognitive process in which a person draws a conclusion (a judgment) about something that he or she cannot see (a criterion) on the basis of a set of data (cues and or feedback) that he or she can see (Hammond, 1975). In other words when making a judgment, one has to estimate the relative importance of the given set of cues as well as their functional relationship to the criterion. Consequently, one can improve his or her judgmental performance by (1) adjusting one's subjective weights of the given set of cues to match those of the task, (2) organizing the cue data in the appropriate way, and (3) applying these appropriately organized set of cues with a high degree of consistency (Hammond, 1975; Cooksey, 1996 p. 211). Clearly, the harder to predict a criterion, the more difficult it is to make an accurate judgment (Hammond, 1975; Cooksey, 1996 p. 209).

The quantitative articulation of the above statement is expressed through the equation

$$r_a = G\, R_s\, R_e + C \sqrt{(1-R_e^2)\,(1-R_s^2)} \qquad (1)$$

The first term in the above equation is considered the linear component and the second term is considered the configural or unmodeled component (Cooksey, 1996, p. 212). When all the relations in both cognitive and task systems are linear, the above equation is reduced to its linear component only (Brehmer, 1988, p. 23). Since all the relations in our system have a linear form, we use only the linear component of the above general form (i.e. $r_a = G\, R_a\, R_e$) and refer to it as the Lens Model Equation (LME) henceforth. In this equation, r_a stands for the judgmental achievement, G for the knowledge of the task, R_s for the consistency in applying one's chosen strategy, and R_e for the task predictability or control (Cooksey, 1996, p. 210). It is important to note that the variable G or knowledge of the task does not refer to mastery of a subject area but to the subject's knowledge of the requirements of the task and his or her ability to apply that knowledge to predicting the criteria (Stewart and Lusk, 1994).

The coefficient r_a (achievement) is measured through the correlation between the actual ecological criterion and the subject's actual or subjective judgments (Cooksey, 1996, p. 210). The coefficient G (knowledge of the task) is measured through the correlation between the optimal values of the criterion (values predicted by the optimal model of the ecology) and judgment values predicted by the subject's policy equation (Cooksey, 1996, p. 210). The coefficient R_s (consistency) is determined through the multiple correlations between cue values and the values of subjects' actual judgments (Hammond, 1975). Finally, the coefficient R_e (task predictability) is measured through the correlation between optimal and actual criterion values (Cooksey, 1996, p. 209). According to the above Lens Model Equation, to increase one's achievement (r_a) in a given judgment task, one has to increase his or her knowledge of the task (G) and/or consistency (R_s) in applying one's chosen strategy (subjects have no control over Re or task predictability). Given the importance of managerial decisions, learning to improve one's judgment calls for direct scientific examination of ways to improve the knowledge of the task as well as one's consistency in applying the appropriate strategy.

A growing body of research that indicates an enhancing effect of positive mood on cognition gives us reason to believe that positive mood may improve the performance of managerial judgment tasks. According to this line of research, positive mood can markedly and regularly influence one's cognitive context and structure (Isen et al., 1978; Isen and Daubman, 1984; Isen, 2000) and thus facilitate efficient decision-making (Isen and Means, 1983; Isen, 2000) and creative problem solving (Isen et al., 1987; Isen, 2000). In the light of these studies, we believe that positive mood may help human judges to make more accurate judgments. In addition, we believe that positive mood may help judges to become more consistent in applying their chosen strategies.

In the following sections, we review a series of studies on mood that will lead us to our hypotheses. We start with a brief definition to clarify how the term "mood" is used in this article and how it differs from the term "emotion". Then, we explain why in this article we concentrate on the effects of positive mood only. Finally, we review relevant studies examining the effects of positive mood on cognitive systems and processes and explain why, due to these effects, we expect to detect improved performance in our judgment task.

Mood and emotion, although both affective states, differ on the dimensions of "pervasiveness", "intensity", and "specificity" (Isen, 1984; Forgas, 1991; Moore and Isen, 1990). Emotions generally denote short-lived strong reactions that most often have both a specific cause (as in a provocative act) and a target (as in the target of anger). Mood, on the other hand, usually refers to a less intense and more diffused affective state, which is relatively enduring. Furthermore, moods seem not to be directed toward any particular object, target, or behavior (Moore and Isen, 1990; Lazarus, 1991, p. 48; Forgas, 1991).

Although research has identified a broad range of specific moods such as sadness, fear, and arousal (Russell and Mehrrabian, 1977; Watson and Tellegen, 1985), Clark and Isen (1982), Osgood and Suci (1955), and

Schwarz and Clore (1988) argue that mood states can be grouped into more general or global categories such as positive, neutral, and negative. In this paper, we investigate the effects of positive and neutral mood states.

In this article, we demonstrate the effects of positive mood on managerial judgments by contrasting it with the effects of neutral mood rather than the effects of negative mood. This choice was made based on the facts reported in the general mood literature. The mood literature suggests that positive mood exhibits more consistent effects than negative mood (Moore and Isen, 1990). For example, some studies have shown that only positive mood can increase the recall of mood congruent information (Isen, 1970; Mischel, Ebbeson, and Zeiss, 1976, cited in Moore and Isen, 1990, p.13). However, other studies have shown that both positive and negative moods can increase the recall of mood congruent information (Teasdale and Fogarty, 1979, cited in Moore and Isen, 1990, p. 13). In other words, while in both lines of studies positive mood exhibit the same effect (increased recall of mood congruent information), negative mood fails to do so. Thus, together these studies suggest that the effects of positive mood are more consistent than those of negative mood (Moore and Isen, 1990).

In the following sections we briefly review the literature on the effects of positive mood on cognition.

Recent psychological research suggests that feeling states and memory are intimately linked (Forgas, 2000, p. 11; Isen, 2000, 1993; Isen et al., 1992). For example, a number of theories have argued that cognition and feeling states both are part of one single integrated cognitive representational system (Bower, 1981; Clark and Isen, 1982). According to these models each event, concept, and feeling state is represented by a node in a large network of material in memory and is connected through associative relations to other nodes. Isen (1984) argues that this network of cognitive material has a highly flexible structure, which may indeed change its organization depending on the retrieval cues such as a feeling state, present at the time of recall. Using this conceptualization (Isen, 1984), we explain in the following paragraphs how positive mood can influence one's cognitive capability (i.e. context and structure) and thus facilitate creative problem solving. In addition, we explain how positive mood can influence one's information processing style.

A large number of studies suggest that positive mood can act as a fast and effective retrieval cue for the recall of positive memories (for a complete listing of this literature see Isen, 1985). On the other hand, numerous studies suggest that negative mood does not increase the recall of negative memories (Isen, 1970; Mischel, Ebbeson, and Zeiss, 1976, cited in Moore and Isen, 1990, p.13). Such asymmetry according to Isen (1985) may be due to the difference in the degree of interconnectivity as well as the organization of the network of negative and positive material in one's memory. That is, the network of positive material may be more interconnected than the network of negative material in one's cognitive system (Isen, 1984, 1985).

Furthermore, literature reports that mood can influence the way cognitive elements in memory are grouped together (Isen, 1993, 2000). For example, it has been shown that people in positive mood are able to perceive a greater number of similarities among stimuli when they are asked to find similarities (Isen and Daubman, 1984) and can find a greater number of differences when they are asked to do so (Murray et al., 1990). This ability to perceive a greater number of similarities as well as a greater number of differences among stimuli has been attributed to the cognitive organization and flexibility of people who are in a positive mood (Murray et al., 1990; Isen, 1993, 2000).

Positive mood has also been associated with increased creativity (Isen et al., 1987). According to Mednick (1962) creativity can be defined as the formation of unusual but useful associations. Isen, Daubman, and Nowicki (1987) argue that the rich and elaborately interconnected network of material in the memory of people with positive mood can facilitate their perception of new and unusual but useful associations (Isen et al., 1985), which in turn can assist them in their creative problem solving.

Positive mood can also influence one's information processing style (Forgas, 2000; Isen, 2000). For example, Isen and Means (1983) have shown that people in positive mood tend to make their selections without considering the same piece of information more than once when they are asked to make their decisions based on a given set of criteria. Isen, Rosenzweig, and Young (1991) have shown that people in positive mood tend to be thorough and efficient decision makers who exhibit significantly less confusion and greater integration of information when making decisions. Isen (1993, 2000) argues that this behavior may be due to the rich cognitive context of people in positive mood. That is, because of their rich cognitive context people in positive mood seem to be able to discern more dimensions of a task and thus recognize more possibilities for combination and integration (Isen, 1993, 2000).

In short, the literature reports that people in positive mood tend to have a rich and flexibly organized cognitive context (Isen and Daubman, 1984, Isen, 1985, 1993, 2000; Murray et al., 1990), which can enable them to discern unusual but useful associations (Isen et al., 1985), and thus be creative and efficient problem solvers (Isen et al., 1987, Isen et al., 1991, Isen, 2000).

It is important to note that although positive mood enhances cognitive flexibly and context, as suggested by the literature discussed above, it does not always exhibit a facilitatory effect on performance. For example, Elsbach and Barr (1999) have found that positive mood can lead to an inferior performance when using structured decision protocols, and Au et al. (2003) have shown that the same is true for a foreign exchange trading task that involves risk. The tasks used in these studies (Elsbach and Barr 1999; Au et al., 2003) require a type of cognitive processing that could indeed be impaired by an enhanced cognitive context, as explained by the authors of these papers. Our study, however, pertains to the type of situations where enhanced cognitive context and flexibility can have a facilitatory effect on performance. This is because improving a complex managerial judgment, involves discerning and estimating relationships between the cues and the criterion. Such a process (i.e. discerning and estimating relationships) can benefit from one's rich and elaborately connected cognitive context as the discussed mood literature suggests.

In the following section, we form three hypotheses. For each hypothesis we explain why we believe that positive mood can facilitate the behavioral effects that we expect to observe.

3. HYPOTHESIS

To improve their judgmental achievement, people need to adjust their subjective weights of a given set of cues to match those of the task. In addition, people need to form an appropriate strategy (i.e. organize the cue data in the appropriate way) and apply this strategy with a high degree of consistency. In other words, to increase their achievement (r_a) they have to increase their knowledge of the task (G) and/or consistency (R_s) in applying their chosen strategy.

Using the literature reviewed in the previous sections of this article, we form three hypotheses, which are discussed in the following sections.

Literature reports that subjects in positive mood are less likely than their control counterparts to review information they had already encountered (Isen and Means, 1983), tend to be less overwhelmed by the task, and show less confusion during the decision making process (Isen et al., 1991). Isen (1993, 2000) argues that this behavior (being less overwhelmed and confused) of the people in positive mood may be due to their integrative style of decision processing, where integration is based on elaboration, greater differentiation, and better understanding of the issues at hand.

Because of the above reported behavior (less overwhelmed, less confused, and not reviewing previously encountered information) we expect to observe that subjects in positive mood apply their judgmental policies differently from their control counterparts. That is, we expect them to be more consistent (R_s) in using their set of chosen cues and the weights that they have assigned to those cues. Therefore, we expect to reject the null hypothesis in favor of this alternative:

> *The subjects in the positive mood group will exhibit significantly more consistency (higher R_s) in applying their chosen strategy than their neutral mood control counterparts.*

A growing body of literature indicates that positive mood influences the way our thoughts are organized and related to each other in our memory (Isen, 2000, 1993; Isen et al., 1992; Isen et al., 1985). Studies have shown that people in positive mood tend to have a more flexible cognitive structure than their control counterparts (Isen and Daubman, 1984; Isen et al., 1985; Murray et al., 1990). That is, people in positive mood seem to be able to discern more similarities as well as more differences between objects. Moreover, studies have shown that compared to their control counterparts, people in positive mood tend to discern more unusual but useful relationships among stimuli (Isen and Daubman, 1984; Isen et al., 1987). The ability to discern more relationships, especially the unusual but useful ones, is of great importance in a judgment task where one has to determine the relationship between cues and the criterion and attach the correct relative weights to cues. Therefore, we expect people in positive mood to be significantly better in adjusting their subjective weights of a given set of cues to match those of the task. That is, we expect our subjects in positive mood to show a greater knowledge (G) of the task. Thus, we expect to reject the null hypothesis in favor of this alternative:

> *The subjects in the positive mood group will exhibit significantly better knowledge of the task (higher G) than their neutral mood control counterparts.*

According to the Lens Model Equation (LME), greater knowledge of the task (G) and consistent use of a chosen strategy (R_s) will lead to better achievement (r_a). Thus, based on the two previous hypotheses, we expect to see significantly higher achievement for our subjects in the positive mood group. Therefore, we expect to reject the null hypothesis in favor of this alternative:

> *The subjects in the positive mood group will exhibit significantly higher achievement*

(higher r_a) than their neutral mood control counterparts.

Managers generally prefer metrics other than those above (Makridakis, 1993). For example, performance can also be evaluated by measuring the accuracy of the judgments. Thus we will measure accuracy through examining the deviation of the judgments by the subjects from the optimal judgments (i.e. the mean absolute error of the judgments). For the same reasons that we discussed in the two previous hypotheses (greater cognitive flexibility, detecting more relationships among stimuli, discerning more unusual but useful relationships, being less confused and overwhelmed by the task, and greater understanding of the issues at hand), we expect the subjects in our positive mood group to make more accurate judgments. That is, we expect their judgments to exhibit less deviation from the optimal judgments. Therefore, we expect to reject the null hypothesis in favor of this alternative:

The mean absolute error of the judgments for the subjects in the positive mood group will be significantly lower than those of the control group.

In the following sections we discuss our investigations. We start by giving an overview of our method followed by a report of the statistical analysis of the experimental data.

4. METHOD

The participants were 49 male and female undergraduate business students from two sections of a third year statistics course in a major land grant university. The subjects received class credit for their participation.

First, participants were randomly assigned to two groups. The treatments (experimental and control) were then randomly assigned to these groups. The subjects in the experimental group were induced with positive mood. The subjects' mood in the control group was not manipulated.

The task used in our experiment was based on Holt, Modigliani, Muth, and Simon's (1960) model of the production-scheduling problem. The problem in our task is to decide how many units to produce given an uncertain future demand and the knowledge of the current work force size, productivity, and inventory levels. The production-scheduling problem was selected because it is a managerially relevant problem, and it has been calibrated with actual data (Holt et al., 1956, p. 163). The equation modeling in the production-scheduling decision is as follows:

(1) Production Decision $=\beta_{02} + \beta_{12} *$ (work force last month) $- \beta_{22} *$ (inventory on hand)$+ \beta_{32} *$ (the current month's demand) $+ \beta_{42} *$ (the demand for next month) $+ \beta_{52} *$ (the demand for two months ahead).

The coefficients used in the above equation were estimated by Holt, Modigliani, and Muth (1956, p. 163) for the production-scheduling decision at Pittsburgh Plate Glass. The coefficients values were β_{02}=148.5, β_{12}=1.005, β_{22}=0.464, β_{32}=0.464, β_{42}=0.239, and β_{52}=0.113. The randomness added to the task was normally distributed with a mean of zero and a standard deviation of 133. Task difficulty, measured through the correlation between the values of the optimal and actual criterion, was relatively low (average R_e = 0.76).

There were 30 trials in our experiment. In each trial, the subjects were provided with five cues (the current month's demand, the demand for next month, the demand for two months ahead, current work force size, and inventory on hand) on which to base their decision to set the current production level. All cues were normally distributed. These cues were randomly distributed with the following mean and standard deviations: current month (Mean= 2500, SD= 200), next month (Mean= 2500, SD= 200), two months ahead (Mean= 2500, SD= 400), work force (Mean= 440.92, SD= 17.64), and inventory on hand (Mean= 300, SD= 100).

The task was presented to the subjects via desktop computers. The subjects made their judgments by adjusting a slider or using a scrollbar to set their desired value. A small window on the bottom right corner of the screen displayed a message to encourage subjects to do their best. A judgment was submitted by clicking the button "I am satisfied with my current decision." Once this button was pushed the subject's judgment, the optimal judgment, and the percentage error of the subject's judgment (outcome feedback) was displayed in a dedicated section of the screen. A short history of the subject's five most recent judgments along with the optimal judgment and the percentage error were also displayed. At the same time, the window that displayed the motivational message was replaced by another window displaying the optimal value in a large font and a button labeled as "OK to Continue". This button was used to start a new trial (i.e. a new set of randomly determined and statistically independent cue values). Once subjects submitted a judgment (after they started a new trial and/or after clicking the button "I am satisfied with my decision") they were unable to go back. That is, the task was designed in a way to prevent subjects from accessing previous screens or changing their previous judgments.

Consistent with prior research (Isen et. al., 1978, 1987, 1992), subjects in the experimental group received a

surprise gift of chocolate and candy wrapped in colorful paper a few minutes prior to performing the task. Once again, consistent with prior research (Isen et. al., 1978; Isen et al., 1987; Isen et al., 1992), mood manipulation was disguised by presenting the surprise gift as a small token of appreciation. The participants in the control group did not receive a surprise gift.

Consistent with prior research (Isen and Gorgolione, 1983; Kraiger et al., 1989; Elsbach and Barr, 1999), we used a self-report survey to measure the feeling state of our subjects. We asked our subjects to rate on a five-point scale, (with 1 denoting "strongly disagree", 3 denoting "neutral", and 5 "strongly agree") how each of the words "pleased", "happy", and "glad" described their current mood. The words on our survey (pleased, happy, and glad) were adopted from the set of words used on the mood manipulation survey by Elsbach and Barr (1999). To measure positive mood, Elsbach and Barr (1999) employed words that described feeling states moderate in the dimension of arousal but high in the dimension of pleasantness. Elsbach and Barr further showed that the items on their survey were strongly related. They used these items, which measured specific mood states (glad, happy, etc.), to measure the global positive mood by grouping these items into one category and calculating their composite score.

We verified the internal reliability of the items “happy”, “pleased”, and “glad”, reported by Elsbach and Barr, using the reliability coefficient (r_{tt}) described in Kerlinger (1992, p. 410). Our test of reliability shows a strong relationship among the items “happy”, “pleased”, and “glad” (r_{tt}=0.882)**.**

This experiment was conducted over two days (Tuesday and Thursday) of the same week. The same person gave the instructions to both groups. To ensure consistency, the instructions were read from a written script. The possibility of mood contamination (i.e. the subjects on Thursday learn about the surprise gift given on Tuesday) was eliminated by conducting the control part of the experiment first. All subjects were instructed not to talk about the experiment to anyone until the following week after the experiment was completed.

On the day of the experiment, the participants gathered in their classroom. Upon arrival, the subjects received a card with a randomly assigned seat number typed on it. The random seat numbers were used to eliminate situations that might have possibly affected the mood of our subjects (e.g. sitting near a friend or in a favorite spot). Subjects were informed that this experiment investigated managerial decision making. They were told that the software package that they were about to use was designed to assist managers in making decisions. To motivate subjects to do their best, they were told that by doing their best to make a decision, whether accurate or not, they would provide invaluable input for our investigations and will help us to improve our software package.

The subjects were given a short tutorial of the task. During this, tutorial they were told that they would encounter a survey, which is part of a standard method of evaluating software packages and is routinely used. It is customary in mood studies to disguise the nature of the experimental manipulation. Thus consistent with prior research (Kraiger et al., 1989, Mackie and Worth, 1989; Isen et al., 1987), our subjects were told that the mood survey that they would encounter would be used to measure something other than their mood. After the tutorial, the subjects in the experimental group received a surprise gift of candy and chocolate. The subjects in the control group did not receive a gift. The subjects were then asked to go to their designated computers in the computer lab.

In the computer lab, the subjects activated the software package that included two practice trials, the mood survey, and the actual task that consisted of 30 trials. The software was designed in a way that participants had to complete the mood manipulation survey followed by practice trials before they could start the actual task. After finishing the task, the subjects were debriefed and asked to leave the room. The entire procedure did not exceed one hour.

5. RESULTS

To assess changes in the performance of a judgment task, it is customary to examine subjects’ performance in blocks of trials (e.g. Gillis, 1975). Thus, to examine the effect of mood on judgmental performance in this study we divided our 30 trial task into two blocks of 15 trials. During the second block of trials, subjects have already been exposed to the task and thus have gained experience using the task. According to prior research (Remus, 1984, 1987; Remus and Kottemann, 1987), subjects use the first trials (roughly about 12 trials) to gain experience with the task and adopt a decision strategy. Thus, it is reasonable to believe that the performance during the second block of our 30 trial task is representative of better quality judgments. We expect to observe improved consistency (R_s) as well as improved achievement (r_a), knowledge of the task (G), and accuracy of the judgments as articulated in our hypotheses.

Consistent with prior research (Kraiger et al., 1989; Elsbach and Barr, 1999), we calculated the composite mood score of the items (happy, glad, and pleased) on our survey for each subject. That is, we added the ratings

for each of the three items on the survey to calculate a single mood composite score for each subject. We then compared the mean of these composite mood scores for our two treatment groups. As expected and confirmed by the one tailed t-test, the mean of the composite mood scores for the positive mood group (mean=11.24) was significantly higher (t=1.959, df= 47, p=0.028) than the mean of the composite mood scores for the neutral mood group (mean= 10.00). In other words, these results attest that positive mood was successfully induced.

Isen, Clark, and Schwarz (1976) have shown that the effects of positive mood induced with a small surprise gift lasts for approximately 20 minutes. Although in our study no specific time limit for completing the task was given, all the subjects finished the experiment before the expected time (the entire procedure including instructions, mood manipulation and task did not exceed one hour). On the average, the subjects finished the task in less than 20 minutes with task duration mean of 18.25 minutes for the positive mood group and 16.83 minutes for the neutral mood group.

In the following sections we analyze the impact of mood on participants' judgments in the last block of 15 trials of our 30 trial task. Prior to this block, the subjects have already been exposed to the task and thus have gained experience doing the task. Because of this, as we have argued before, this second block of trials is more representative of better quality judgments. Regression analysis was used for each subject to capture their policy. We anticipate seeing a significant difference in judgmental performance between our two groups.

As mentioned before, hypothesis one proposes that people in positive mood will be significantly more consistent (will exhibit higher R_s) when applying their judgmental strategies. We captured the multiple correlations between the cue values and the values of subjects' actual judgments for the last 15 trials. We then compared the Fisher r transformed values for these multiple correlations. The one tail t-test revealed a significant difference (t=-1.77, df=47, p=0.04) between the mean of the Fisher transformed r values of the positive mood group (mean=1.79) and neutral mood group (mean=1.49). The result thus confirms that the subjects in positive mood were significantly more consistent in applying their judgment policy than their control counterparts in the second block of trials of our judgment task.

Hypothesis two proposes that the subjects in the positive mood group will exhibit significantly better knowledge of the task (higher G) than their neutral mood control counterparts. As in the Part I of our analysis, we measured G (knowledge of the task) through the correlation between the optimal values of the criterion and judgment values predicted by the subject's policy equation (Cooksey, 1996, p. 210). Contrary to what we expected to observe, however, the one tailed t-test did not reveal a significant difference (t=-0.34, df=47, p=0.37) between the mean of the Fisher transformed values (transformed G's) of the positive mood group (mean=1.16) and the neutral mood group (mean=1.12). Thus, our analysis did not support this hypothesis for the second block of trials of our judgment task.

The first part of hypothesis three proposes that the subjects in the positive mood group will exhibit significantly higher achievement (higher r_a) than their neutral mood control counterparts. To measure achievement we used the correlation between the actual criterion and the subject's actual or subjective judgments (Cooksey, 1996, p. 210) as we did in the Part I of our analysis. We transformed the r_a values using Fisher r transformation prior to the analysis. The one tailed t-test revealed a significant difference (t=-1.71, df=47, p=0.047) between the mean of the Fisher transformed r values (transformed r_a) of the positive mood group (mean=0.71) and the neutral mood group (mean=0.57). Thus, our experiment supported this hypothesis for the second block of trials of the judgment task.

The second part of hypothesis three proposes that the subjects in the positive mood group will make significantly more accurate judgments than their neutral mood control counterparts. Accuracy was measured using the deviation of the judgments from the correct answer (i.e. the mean absolute error of the judgments for each subject). The one tailed t-test revealed that the mean of the absolute error in the positive mood group (mean=108.87) was significantly lower (t= 2.95, df=733, p= 0.003) than the mean of the absolute error in the neutral mood group (mean=129.10). Thus the one tailed t-test confirmed that people in positive mood made significantly more accurate decisions than their control counterparts in the second block of trials in our judgment task.

6. SUMMARY AND DISCUSSION

The results of our analysis reflect an enhancing effect of positive mood on judgment accuracy, consistency and achievement. This is when subjects had already been exposed to the task and thus have gained experience doing the task (which we argue is more representative of better quality judgments). As we expected, positive mood improved the consistency, achievement as well as the accuracy of the judgments being made. However, contrary to what we expected, these effects did not reflect improvement in acquiring knowledge of the task.

In short, the results of our study indicate that although positive mood significantly improved performance in

the second half of the task. As we mentioned previously, we expected that Isen's (1984) theory to be independent of a subject's experience with the task and thus apply to both blocks. However, contrary to what we expected, the result showed that Isen's theory (1984) applied only to the second block of trials. The second block, however, contains judgments after gaining experience with the task and thus is more representative of the subjects' better part of the work (i.e. improved judgments). Since the results show that the performance of the positive mood group was significantly better than their control counterpart during the block where subjects did their better part of the work, the results show that positive mood did indeed have an impact on the subjects' ability to improve their judgments.

These results have important theoretical implications for managerial decision making models. First, The results show significant improvement in areas where a number of decision making studies reported to be problematic (e.g. Slovic and Lichtenstein, 1971; Brehmer and Brehmer, 1988, p. 97-103; Lim and O'Connor, 1996). Second, the results show that when making a complex managerial judgment, one's feeling state matters. In other words, the results help to establish mood as a mediating variable in individual managerial decision making theories.

The results of this study have important practical implications as well. As discussed previously, this study shows that human judges, under the influence of positive mood, can significantly improve their judgmental performance. Thus, organizations can benefit from such improved performance by paying attention to the feeling states of their decision makers. One may argue, however, that it is not practical to manage an individual's moods in an organization. After all, moods are malleable. An individual's mood can and are affected by events outside the control of an organization (stress at home, traffic, etc.). However, Isen and Daubman (1984) have shown than simple accommodations, such as providing comfortable chairs and refreshments in an experimental setting, can successfully induce positive mood. Thus, it is reasonable to believe that through a positive organizational climate, it is possible to create an environment where employees find themselves in a positive mood, which in turn enables them to deliver more accurate judgments and consequently better decisions.

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