

Does mood influence the realism of confidence judgments?

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Previous research has shown that mood affects cognition, but the extent to which mood affects meta-cognitive judgments is a relatively overlooked issue. In the current study we investigated how mood influences the degree of realism in participants' confidence judgments (based on an episodic memory task). Using music and film in combination, we successfully induced an elated mood in half of the participants, but failed to induce a sad mood in the other half. In line with previous research, the participants in both conditions were overconfident in their judgments. However, and contrary to our prediction, our data indicated that there was no difference in the realism of the confidence between the conditions. When relating this result to previous research, our conclusion is that there is no, or very little, influence of mood of moderate intensity on the realism of confidence judgments.

Key words: Confidence judgments, mood, realism, elated mood, episodic knowledge.

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When we are in a happy mood, life seems both easier and more pleasurable. Research has shown that mood also influences what information we encode and recall (Ellis & Moore, 1999). In the present study we investigated whether mood also affects our confidence in the veracity of our memories, and whether it influences the realism of how confident we are in our memory performance. By good “realism” we mean that answers assigned a certain confidence value of being correct (e.g. 60% sure) in the long run have the corresponding proportion of correct answers (i.e. 60% correct).

There are two ways in which mood may affect the realism of confidence judgments: first, by specifically influencing the processes of encoding and recalling the material the memory performance is based on; and second, by a more general influence on the cognitive processes affecting the confidence judgment. Below, we first review previous research on how mood affects memory. Then we discuss research results more specifically pertaining to the realism of confidence judgments.

Previous research on mood and memory has supported the notion that mood influences what information is encoded. For example, being in a happy mood when encoding information has usually been found to be associated with better recall of positively valenced information, and similar results have been shown for sad mood. This effect is called mood-congruent memory. As an example, Bower, Gilligan and Monteiro (1981) presented a short story about two people, one of whom had happy events happening to him and one who had sad events happening to him. The results showed that participants induced by hypnotism into a happy mood remembered more about the happy person, and sad participants remembered more about the sad person. Further experiments in the same study showed that the effect

could primarily be explained as an effect of better encoding of mood-congruent events, and not as a mood effect at the time of retrieval, or as an effect of identifying with the mood-congruent person. An elaborated version of the story used by Bower *et al.* in their Experiment 1 was used in the present study.

On the basis of a review of the literature, Ellis and Moore (1999) summarized the conditions under which the mood-congruency effect is likely to be evident. The mood-congruency effect seems to be fairly stable, but research has found that it is not always apparent under modest mood variations (e.g. Hartig, Nyberg, Nilsson & Gärling, 1999; Hasher, Rose, Zacks, Sanft & Doren, 1985).

The phenomenon that recall is enhanced by mood similarity at the time of encoding and retrieval is called mood-dependent memory. Although consistent with Tulving's encoding specificity hypothesis, this notion has received less unequivocal support (Bower & Mayer, 1989; Ellis & Moore, 1999). Eich and Macaulay (2000) summarized conditions under which the mood-dependent effect is more likely to hold.

Various researchers have presented suggestions concerning general limitations on the effect of mood on memory. For example, Gilligan and Bower (1984) argued that recognition memory might be untouched by mood effects. However, Davies (1986) and Eich and Macaulay (2000) reported exceptions to this assertion. Other researchers have suggested that mood might affect performance less on semantic memory tasks than on episodic memory tasks (d'Ydewalle & Peeters, 1987). Furthermore, it is desirable that the material is self-referential and that the intensity of the mood is sufficiently high (Ellis & Moore, 1999).

Since previous research (Ellis & Moore, 1999; d'Ydewalle & Peeters, 1987) has suggested that episodic knowledge may

be more mood-sensitive than semantic knowledge, it is of interest to investigate whether mood will affect the realism of confidence judgments of performance on an episodic task. For this purpose, in the present study, we investigated the realism of confidence judgments of one's own memory performance after having read a short story.

We next discuss how mood affects judgment (in the present study, more specifically, metacognitive confidence judgments of the correctness of one's own answers to questions on the material read in a story). Different, increasingly complex, theoretical models of how mood affects cognitive processes have been suggested over the years. An important dimension on which the theories vary is the degree to which the influence of emotion on cognitive processes is seen as direct or is achieved via the mediation of content nodes in memory (see Forgas, 2000; Teasdale & Barnard, 1993).

Previous research has given improved empirical descriptions of the effects of mood on cognitive processes. For example, people in an induced state of happiness tend to give more praise and less criticism compared than people in an induced state of sadness (Jones & Thelen, 1978; Forgas *et al.*, cited in Gilligan & Bower, 1984). In the Jones and Thelen study this was the case for self-evaluations, and in the study by Forgas *et al.* this was true for both self-evaluations and the evaluations of others.

Isen (1987) presented early results on mood effects on cognitive processes that, among other things, showed that an induced happy mood was associated with more creative and innovative problem solving compared with a sad mood. This suggests that a happy mood brings more diverse material to mind than, for example, a sad mood. Isen summarized results from many different studies in the following way: "positive affect influences cognitive organization. It appears to promote a more flexible, more integrated cognitive organization that results in ideas seeming not only more varied but also more related than they would under other circumstances" (p. 236). Results from two experiments presented by Sinclair and Marks (1995) were in line with these conclusions, and showed interesting processing differences between people in an induced state of happiness or of sadness. All participants were asked to judge the magnitude and direction of the correlations in nine scatter plots. They were also asked to explain (including giving examples of) the correlation concept. The happy participants were found to be less accurate, used fewer digits in their correlation estimates, and gave less detailed and less comprehensible explanations of the correlations than did sad participants. However, the explanations given by the happy participants were found to be more creative than those given by the sad participants.

Bless (2000) reported results in the same direction. These results suggested that a happy mood, compared with a sad mood, triggers more use of general knowledge structures (in general, structures which have proven generally adaptive), for example heuristics. In contrast, a sad mood was assumed to be associated with problematic situations. In order to deal

with such situations the person has to focus on the specifics of the situation, "the data at hand" (p. 203).

Reliance on general knowledge structures may free processing resources for people in a happy mood. Bless' results show that such resources can be used for more detailed processing of stereotype *inconsistent* information (see also Berkowitz, Jaffe, Jo & Troccoli, 2000). In general, it seems likely that the free resources associated with a happy mood can be used for processing other aspects of the situation, beyond the general knowledge structures employed, for example to arrive at more creative answers, as was found by Sinclair and Mark (1995) and Isen (1987). Bless also presented arguments and data indicating that a positive mood does not necessarily, as has previously tended to be assumed, cause a decrease in processing motivation.

In order to understand the relation between mood and the realism of confidence judgments, it is also relevant to consider results from previous research with a bearing on the processes involved when confidence judgments are generated. Most theories concerned with the realism of confidence judgments assume that the content that is activated in short-term memory during performance of the confidence-rated task is important for the realism of the confidence judgments given. This conclusion mostly stems from research on confidence judgments of answers to general knowledge questions. However, there is some disunity in this area with respect to how broad a range of material in memory is assumed to affect the level of the confidence judgment. Brunswik-inspired approaches tend to assume that it is mostly memory materials specifically related to the question answered which will affect the confidence judgment (Gigerenzer, Hoffrage & Kleinbölting, 1991; Juslin, 1994). However, results from other research suggest that other types of content in short-term memory may also affect the level of the confidence judgment (Allwood & Granhag, 1996a; Arkes, Christensen, Lai & Blumer, 1987).

Furthermore, some research has suggested that more spontaneous, and perhaps broader, processes might be connected with higher degrees of realism in confidence judgments. Allwood and Montgomery (1987), in two experiments, found higher realism for questions self-diagnosed as answered with an "intuition" strategy ("The answer felt probable but I did not have any other support for it") as compared with questions answered by use of an "inference" strategy ("The answer seemed probable due to other things I thought of").

In contrast, sad mood and more detailed and deliberate processes may not be beneficial for good realism in confidence judgments (Allwood & Björhag, 1990, 1991; Allwood & Granhag 1996b; Fischhoff & MacGregor, 1982). Allwood and Björhag (1991) investigated the relation between mood and the realism of confidence judgments of one's own answers to general knowledge questions. The results showed no differences at all between the conditions as measured by different calibration measures (described below).

Two experiments by Allwood and Granhag (1996b), in contrast to the well known study by Koriat, Lichtenstein and Fischhoff (1980), showed that providing participants with arguments against their answer, or asking them to generate arguments against their answer, did not improve the realism of their confidence judgments. Fischhoff and MacGregor (1982) reported the same lack of effect for self-generated arguments against the selected answer. Moreover, Allwood and Björhag (1990) found that high values on the Need for Cognition (NfC) scale were not related to good realism in one's confidence judgments.¹

On the basis of the research reviewed above, we hypothesized that participants in an elated mood would show a higher degree of realism than subjects in a neutral or sad mood. The reasoning was firstly that a happy mood has been shown to be associated with broader, and less deliberate, cognitive processes. The results presented by Allwood and Montgomery (1987) suggest that such processes might be conducive to realism in this respect. In contrast, previous research has indicated that deliberate and detailed processes with a more narrow activation breadth are not helpful in achieving good realism in confidence judgments (e.g. the NfC results in Allwood & Björhag, 1990, and in Jonsson & Allwood, 2002; and lack of effect of arguments reported in Allwood & Granhag, 1996b, and in Fischhoff & MacGregor, 1982). These types of cognitive processes appear to be characteristic for persons in a sad mood (Bless, 2000) and, as noted above, Allwood and Björhag (1991) found that sad mood did not improve the realism of confidence judgments.

Finally, we also investigated whether mood affects the realism of confidence judgments (made after each performance item) differently compared with how it affects the realism of frequency judgments (a type of rating made after all the individual performance items have been carried out). In a frequency judgment the participants are asked to judge how many out of all items answered they think they have answered correctly. Previous research has shown that when the participants are *overconfident* in their confidence judgments, they tend to be fairly realistic (Allwood & Granhag, 1996a; Gigerenzer *et al.*, 1991), or otherwise tend to underestimate (Granhag, 1997; Granhag, Strömwall & Allwood, 2000; Treadwell & Nelson, 1996) their overall performance. One possible explanation for this is that, having distanced themselves somewhat from most of their performance, the participants in connection with their frequency judgments consider a broader range of evidence compared with what is the case when they give confidence judgments (Allwood & Granhag, 1996a).

In order to measure the degree of realism in the participants' confidence judgments, we used two measures: calibration and over/underconfidence.² These measures are only briefly described here; for a more complete description, see, for example, Lichtenstein, Fischhoff and Phillips (1982). *Calibration* reflects the overall relation between the level of

the confidence ratings and the accuracy. The formula for computing calibration is:

$$\text{Calibration} = 1/n \sum_{i=1}^T n_i (r_{im} - c_i)^2 \quad (1)$$

Here, in (1), n is the total number of questions answered, T is the number of confidence classes used (e.g., 50–59, 60–69, 70–79, etc.), c_i is the proportion correct for all items in the confidence class r_i , n_i is the number of times confidence class r_i was used and r_{im} is the mean of the confidence ratings in confidence class r_i . Thus, calibration is computed by first dividing participants' confidence ratings into a number of confidence classes. Next, for each confidence class, the difference is taken between the mean confidence for the items and the proportion of correct items. Finally, the squared differences multiplied by the number of responses in the confidence class are summed over confidence classes and divided by the total number of items.

Over/underconfidence is computed in the same way, except that the differences are not squared. The measure indicates whether an individual is overconfident (positive value) or underconfident (negative value). Both calibration and over/underconfidence are perfect when their value is zero.

METHOD

Participants

A total of 80 first-year psychology students participated in the study. Their mean age was 26 years (range 19–46 years). There were 54 women and 26 men. Each participant was paid 50 SEK (approximately US\$6).

Design

The participants were randomized into two groups. In one group we attempted to induce an elated mood and in the other a sad mood. All other parts of the treatment were the same for both groups.

Materials

Mood induction. In order to affect the participants' mood, we first presented the two groups with mood-relevant music only. After this, the participants listened to music in combination with watching a short film clip. The film clip was the same in both conditions and consisted of short sequences of a stormy ocean with sailing boats. There was no conversation in the film and it lasted for a total of four minutes. The film was added since previous research has shown films to be a potent mood inducer (Westermann, Spies, Stahl & Hesse, 1996). Next, participants listened to music as they read a short story about two young men, one of them successful (Thomas) and the other unsuccessful (Peter) (see below). The music was also played during a filler task (reading a neutral text). For both groups we used classical music that in earlier studies had proved to be effective, in either an elated or a sad direction. Examples of music played in the elated condition are Mozart's *Eine Kleine Nachtmusik* and Vivaldi's "Spring" from the *Four Seasons*. For the sad condition we played Beethoven's *Monscheinsonate* and Albinoni: *Adagio*.

Texts. Two texts were used. The first was a short story based on a story used by Bower *et al.* (1981) but extended and modified for the present study. The original version consisted of 1,000 words and the expanded version consisted of 2,502 words. The story was about two men, Thomas and Peter. They were old friends and on this specific day they were having a game of tennis. The differences between them – Thomas having a lovely girlfriend and a good financial situation, and Peter just having separated from his girlfriend and having financial problems – were intended to draw on either the elated group's attention or the sad group's attention.

The second text was chosen for its neutral content, the contents describing a historical part of a city and consisting of 4,018 words. This text was used as a filler task between the short story about Thomas and Peter and the following questionnaire of 54 knowledge questions relating to the first story.

Knowledge questions and confidence judgments. A total of 54 two-alternative knowledge questions were created relating to the two men (Thomas and Peter) in the story. Twenty-four of the questions concerned Thomas and 24 questions concerned Peter. The remaining six questions were neutral, concerning the surroundings in which the two men interacted. The 48 questions about Thomas and Peter were randomized through out the whole set of the 54 questions. Directly after answering a question, the subject made a confidence judgment on a scale ranging from 50% to 100%. It was explained to the participants that 50% meant that he/she was guessing and 100% meant that he/she was absolutely sure that the answer was correct.

Photographs. In order to make events in the text appear more real, two photographs of the men were included in the text. One of them showed a dark-haired, English-looking gentleman, sitting down. The photograph showed his body from the waist up. The other photograph showed a very well built man in a t-shirt standing up. The photograph showed his body from the knees up. The names Thomas and Peter were alternated under the photographs. However, in the text it was always Thomas going through a good period of his life and Peter going through a bad period of his life.

Mood scale. The participants' mood was measured on three occasions during the experiment by use of the short version of a scale developed by Sjöberg, Svensson and Persson (1979). Of the three dimensions in the scale we used the two dimensions pleasantness and activation, involving 28 adjectives. For each adjective the participants rated on a scale with four steps how they felt at the moment of responding. The participants filled in the scale on three occasions. The scale took approximately two minutes to complete.

Procedure

The participants went through the experiment individually. Initially, each participant received general instructions about the study, and thereafter filled in the mood scale (time 1). After this, the participants were told that they would be listening to music and watching a videotape for a short while. Music only was then played for three minutes, and after this the participants watched the short film and listened to music for four more minutes.

Then the participants filled in the mood scale a second time (time 2) and were given written instructions about the short story they were going to read. They were informed that they had seven minutes in which to read the story. When the participants read the story about Thomas and Peter, new music was played. After five minutes the participants were told that they had two more minutes to finish reading the story. The participants then received the filler task, that is the second, neutral text, which they read for ten minutes. After this no more music was played.

At this time the participants received instructions about the knowledge questions and how to give their confidence judgments. They were instructed to answer each of the 54 knowledge questions by choosing one of the two alternatives, of which one always was correct. After each question the participants made a *confidence judgment* pertaining to the correctness of the chosen alternative, on a scale ranging from 50% (guessing) to 100% (absolutely sure). When finished with the questionnaire, the participants also made a *frequency judgment*, that is they estimated how many out of the 54 questions they had answered correctly.

Finally, the participants filled in the mood scale a third time (time 3).³ For participants in the sad mood condition, elated music was then played in order to change their mood to a happy one before they left the experiment. Before leaving, the participants were asked not to discuss the content of the experiment with anyone.

RESULTS

First we present the results of the mood scales in order to indicate the degree to which the mood manipulation was successful. Then we present the analyses of the degree of realism in the participants' confidence judgments and their frequency judgment.

Mood ratings

The results for the mood ratings are shown in Table 1. For the pleasantness dimension, the participants in the elated condition showed greater pleasantness towards the end of the mood induction (time 2) compared with their first mood rating (time 1) and compared with the participants in the sad mood condition (time 2). A mixed 3 (time: time 1 vs. time 2 vs. time 3) \times 2 (mood condition: elated vs. sad) ANOVA showed a significant interaction effect $F(2, 156) = 3.60$, $p < 0.03$. This result shows that participants in the elated condition reported a higher degree of pleasantness at time 2, that is towards the end of the mood induction, compared with participants in the sad mood condition. Participants in the sad condition did not respond to the mood induction – their feelings of pleasantness did not differ between their three ratings. No other effects were found for the pleasantness dimension.

For the second dimension, activation, Table 1 shows that the degree of activation dropped for both the elated and sad

Table 1. Means for the pleasantness and activity dimensions of mood at three different points in time during the experiment in the elated and sad conditions

Mood dimensions/point in time	Elated	Sad
<i>Pleasantness</i>		
Time 1	39.05	37.82
Time 2	40.48	37.35
Time 3	38.82	38.77
<i>Activation</i>		
Time 1	49.55	50.45
Time 2	48.50	48.65
Time 3	46.60	47.08

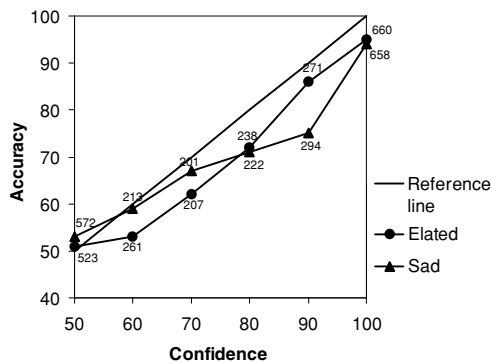


Fig. 1. Calibration curves for the elated and the sad condition. The numbers inside the graph are the frequencies of each confidence level in each condition.

mood conditions between time 1 and time 3. A mixed ANOVA, constructed as the ANOVA reported above, showed a significant main effect for the factor time, $F(2, 156) = 6.37$, $p < 0.002$. This means that the two conditions did not differ significantly with respect to the degree of activation, but that both conditions showed lowered activation at time 3 compared with time 1.

Confidence ratings

Fig. 1 shows the calibration curves for the two conditions (elated and sad). The x-axis shows six different confidence intervals (50–59, 60–69, 70–79, 80–89, 90–99, 100) and the y-axis shows the percentage of correct answers. The numbers given above the confidence intervals in Fig. 1 show the frequencies for each level of confidence. The diagonal represents perfect calibration. As can be seen, participants in both conditions showed a slight overconfidence. However, the line representing the elated condition follows the diagonal with little deviation, representing close to perfect calibration.

Table 2. Means of the dependent measures for the elated condition and the sad condition ($n = 40$ in each condition)

	Elated	Sad
Calibration	0.021*	0.034
Over/underconfidence	0.041	0.043
Resolution	0.046	0.048
Proportion correct	0.725	0.722
Confidence	0.766	0.765

Note: * $p < 0.05$ compared with the sad condition.

The results for the measures of calibration, over/underconfidence, resolution, proportion correct and confidence for each of the two conditions are shown in Table 2. The results for the two conditions were very similar for all dependent measures, except calibration.

Five one-way between-subjects ANOVAs were used in order to compare the elated condition with the sad condition with respect to calibration, over/underconfidence, resolution, proportion correct and confidence. The only significant effect found was for calibration ($M = 0.021$ for the elated condition and $M = 0.034$ for the sad condition), $F(1, 78) = 5.34$, $p < 0.024$. This indicates that the elated condition was better calibrated than the sad condition.

However, further scrutiny of the data did not sustain an interpretation that an elated mood was behind the better calibration in the elated condition. The histograms shown in Fig. 2 demonstrate that the range of values was narrower in the elated condition than in the sad condition. Fig. 2 also shows that the difference between the conditions was dependent on five individuals (out of 40) in the sad condition.

In order to further investigate the relation between mood and realism in the confidence judgments, we also correlated the participants' hedonic mood values with each of the two calibration measures. No significant correlations were found.

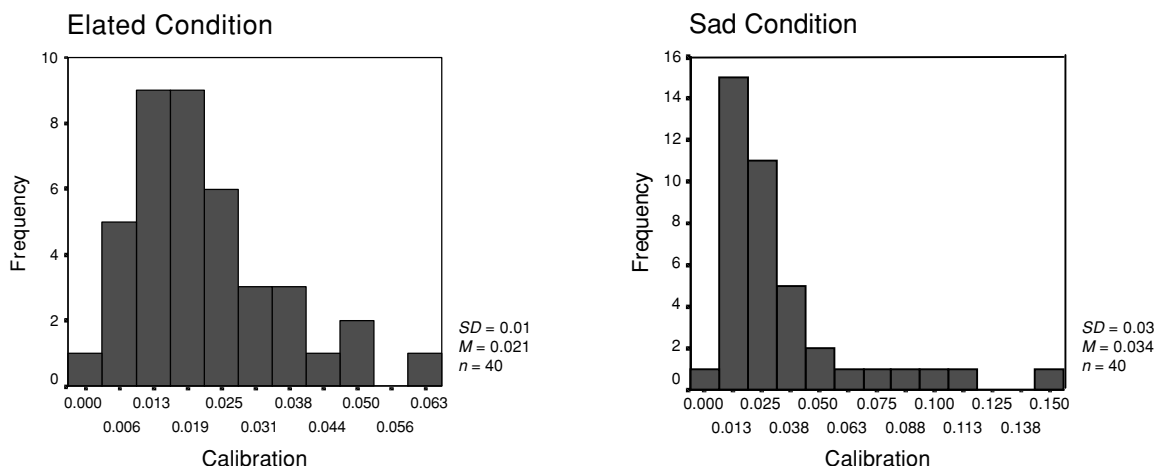


Fig. 2. Distribution of calibration values in the elated and sad conditions.

In order to detect mood-congruency effects, five mixed 2 (mood condition: elated vs. sad) \times 2 (question type: happy content vs. sad content) ANOVAs were computed. The mood-congruency effects should appear as interaction effects. The dependent measures were again calibration, over/underconfidence, resolution, accuracy and confidence. Only the 48 questions relating to valenced content were included. No interaction effects were found.

Frequency judgments

After having filled out the questionnaire, the participants estimated how many of the 54 questions they believed themselves to have answered correctly. The absolute values were transformed into percentages correct. The mean for the elated condition was 62.0% (actual accuracy, $M = 72.5\%$) and for the sad condition it was 63.9% (actual accuracy, $M = 72.2\%$). In a paired sample t -test, no significant difference was found between the two conditions. Paired sample t -tests showed that the participants in both conditions significantly underestimated their actual performance when assessing overall performance, $t(39) = 4.42$, $p < 0.001$, and $t(39) = 3.06$, $p = 0.004$, respectively.

Of the 40 participants in the elated condition, 10 (25%) overestimated and 30 (75%) underestimated their actual performance, and of the 40 participants in the sad condition, 13 (32.5%) overestimated, 25 (62.5%) underestimated, and 2 participants were correct in their frequency judgments. Eight of the 40 participants in each condition (20%) gave lower than chance estimates.

Pearson correlations between frequency estimates and accuracy in the two conditions showed that the frequency judgments were positively correlated with accuracy ($r = 0.485$, $p < 0.002$) in the elated condition. The corresponding correlation in the sad condition was not significant.

DISCUSSION

Despite a large number of studies on the realism of confidence judgments in different contexts, very few studies have investigated the relation between mood and the realism of confidence judgments (for an exception, see Allwood & Björhag, 1991). Overall, a large corpus of research has shown that there is a strong association between mood and cognition, but it is not yet clear how these results extend to the area of realism in confidence judgments. The present study aimed to improve understanding in this area.

Specifically, we set out to investigate how mood influences the relation between accuracy and confidence judgments. Generally speaking, mood might influence the degree of realism in people's confidence judgments, both through the cognitive processes involved when the to-be-remembered material is encoded and recalled, and through a more general effect on the cognitive processes at work when confidence is assessed.

Mood induction

The mood ratings filled out towards the end of the mood induction showed that the participants in the elated condition were in a more pleasant mood than were the participants in the sad mood condition. In short, we were successful in creating a difference in mood between participants in the two conditions. However, the results also showed that we failed to induce a negative mood in the participants in the sad mood condition. Hence, the forthcoming discussion will treat the sad mood condition as a control condition (comprising participants in a rather neutral mood), to which we will compare the performance of the participants in the elated mood condition.

No mood-congruency effect was found. This is in line with previous results and suggestions in the literature, according to which mood-congruency effects may not be evident under modest mood variations (e.g. Ellis & Moore, 1999; Hartig *et al.*, 1999; Hasher *et al.*, 1985).

Mood and realism of confidence

We predicted that participants in whom a happy mood had been induced would show a higher degree of realism in their confidence judgments than would participants in a neutral or sad mood. This prediction did not receive substantial support from the results. Although the participants in the elated condition were significantly better calibrated than were the participants in the sad mood condition, a closer inspection of the data suggested that this impression does not bear scrutiny.

The data show that the difference was created by a minority of the individuals in the sad condition. Furthermore, the correlations between hedonic mood value and each of the two calibration measures did not reach significance. Accordingly, we suggest that a more reasoned conclusion from the results is that the more elated participants did not show any better realism in their confidence judgments than the less elated participants. This conclusion is in line with the results presented by Allwood and Björhag (1990), who also investigated modest mood variations and did not find any difference in realism between participants in neutral and sad conditions. In brief, mood of a fairly weak intensity level may not have any effects on the realism of confidence judgments. Previous studies, for example that by Hasher *et al.* (1985), in the mood and memory research literature similarly found no effects of moderate mood variations on memory.

Frequency judgments

The results obtained for the frequency judgments showed that participants in both conditions significantly underestimated their actual performance when they were asked to summarize how well they thought they had done over all questions. This finding is in line with what has previously

been found when studying frequency judgments made on the basis of episodic memory (Granhag, 1997; Granhag *et al.*, 2000). However, to our knowledge, the current study is the first to show that assessments of overall performance in the context of an episodic memory task can actually be less realistic than assessments of item-specific confidence. In short, our finding lends further support to the notion that confidence judgments and frequency judgments are products of different psychological processes (Allwood & Granhag, 1996a; Gigerenzer *et al.*, 1991; Griffin & Tversky, 1992, see also Treadwell & Nelson, 1996).

Conclusions

Finally, returning to the question posed in the title, the results of this study and of the previous study by Allwood and Björhag (1990) suggest that modest levels of elated and sad mood do not influence the realism of confidence judgments. Obviously, there are still a large number of issues that need to be investigated within this domain. Specifically, we believe that an important aim of future research will be to address issues related to the link between mood and realism in confidence judgments at more intensive mood levels than the ones investigated in the present study. Furthermore, we suggest that the relation between mood and realism in confidence judgments should be investigated for answers based on different types of knowledge (e.g. semantic, episodic, and implicit) and on different degrees of self-involvement.

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NOTES

¹ This latter result has been replicated by Jonsson and Allwood (2002). We found no correlation between NfC and realism in confidence judgments for a diagram test which previously to a large extent has been found to draw on fluid intelligence, and we found a negative correlation between the two for a vocabulary test drawing on crystallized intelligence.

² We also used the measure of resolution (also called discrimination, see, e.g., Lichtenstein, Fischhoff & Phillips, 1982, for the formal definition), but as this measure did not give rise to any additional interesting results that changed the overall conclusions, they are not discussed.

³ After the mood scale was filled out at time 1 and time 3, the participants also filled out the Rosenberg Self-esteem scale. However, since this scale did not provide any interesting findings these results are not presented here.

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