

## **Case Study: Hills, Werno and Lewis (2011)**

There has been a great deal of research conducted on how mood affects cognitive and perceptual processes. Much of this work indicates the detrimental effects of sad mood on cognitive processing. However, many of the studies showing such deleterious effects of negative mood on cognition used cognitively demanding tasks. When using simpler tasks, the differences in cognitive performance due to mood are less obvious. More subtle processing differences have been reported, such as the fact that happy people tend to focus on the “gist”, rather than on details of a scene.

Face perception is an expert human cognitive ability. It encompasses a wide variety of cognitive and perceptual systems and recruits a vast network of brain regions. This suggests face perception is a complex task and therefore should be negatively affected by mood. However, existing data are inconclusive regarding this point. Ridout et al. (2003) have shown that patients with major depression recognised more sad faces than happy faces but no differences in overall recognition performance. This suggests depression is associated with a mood-congruency bias (Bower, 1981). Furthermore, Jermann et al. (2008) found depression was not associated with recognition of facial identity, but did affect recollection of facial expressions. However, Jermann et al.’s study confounded learning type (incidental and intentional) with recognition type (identity and expression respectively). Finally, sad-induced participants show less expert face processing than happy-induced participants (Curby et al., 2009).

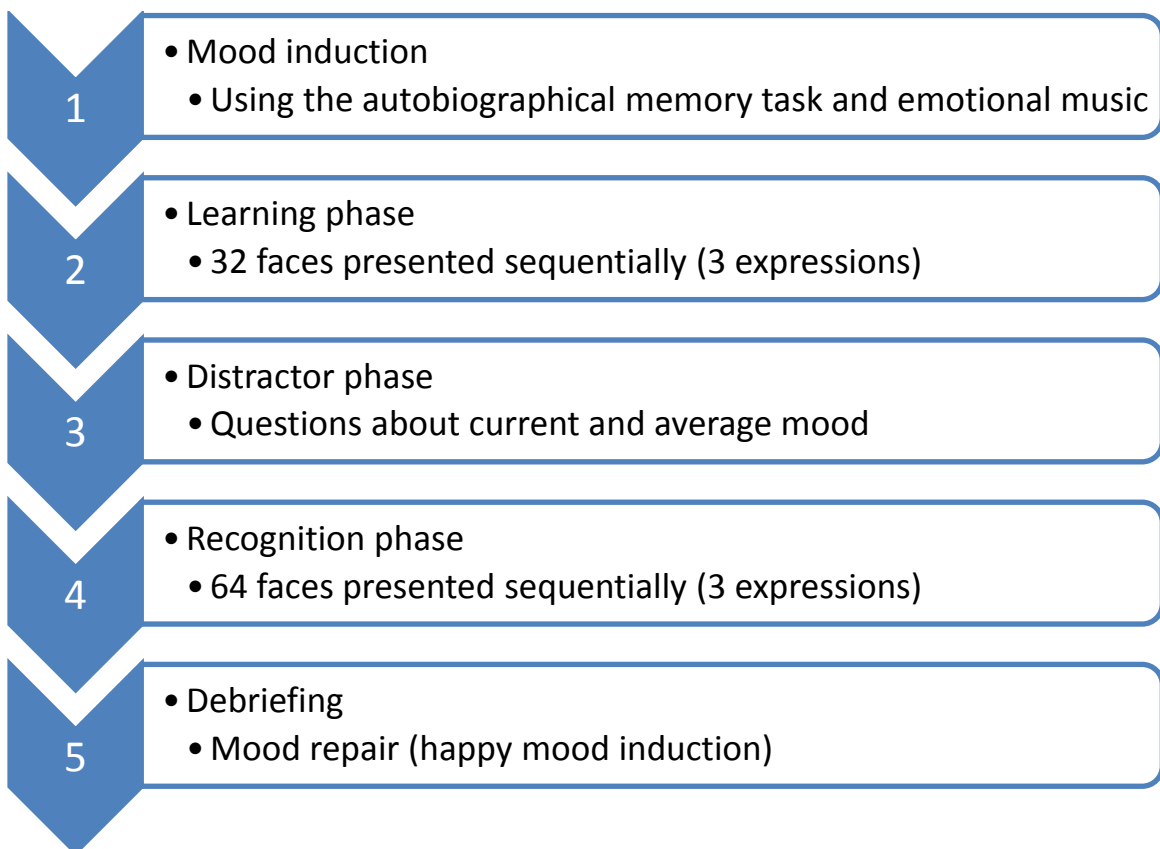
These inconsistent results were tested by Hills et al. (2011) in three experiments. They aimed to address whether mood affected face recognition accuracy or not (and whether this was moderated by type of learning) and whether there was evidence of a mood-congruency bias in sad-induced participants. To do this, they conducted an old/new recognition paradigm on participants who were induced in happy, sad or neutral moods.

### **Method**

Three experiments were conducted using the same basic procedure:

Experiment 1	Experiment 2	Experiment 3
<ul style="list-style-type: none"> <li>• Conditions: <ul style="list-style-type: none"> <li>• Happy induction</li> <li>• Sad induction</li> <li>• Neutral induction</li> <li>• No induction</li> </ul> </li> <li>• Types of face: <ul style="list-style-type: none"> <li>• Neutral expression</li> </ul> </li> <li>• Type of learning: <ul style="list-style-type: none"> <li>• Incidental</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Conditions: <ul style="list-style-type: none"> <li>• Happy induction</li> <li>• Sad induction</li> <li>• Neutral induction</li> </ul> </li> <li>• Types of face: <ul style="list-style-type: none"> <li>• Happy expression</li> <li>• Sad expression</li> <li>• Neutral expression</li> </ul> </li> <li>• Type of learning: <ul style="list-style-type: none"> <li>• Incidental</li> <li>• Remember/know procedure</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Conditions: <ul style="list-style-type: none"> <li>• Happy induction</li> <li>• Sad induction</li> <li>• Neutral induction</li> </ul> </li> <li>• Types of face: <ul style="list-style-type: none"> <li>• Happy expression</li> <li>• Sad expression</li> <li>• Neutral expression</li> </ul> </li> <li>• Type of learning: <ul style="list-style-type: none"> <li>• Intentional</li> <li>• Remember/know procedure</li> </ul> </li> </ul>

The procedure was as follows:



Hills et al. (2011) demonstrated in Experiments 1 and 2 that sad people were more accurate than happy people at face recognition and produced more remember responses than happy participants. Happy people were less accurate, were faster and relied more on feelings of

familiarity during face recognition than sad participants in Experiments 1 and 2. There were no differences in Experiment 3.

These results suggest that happy people use more heuristics in face recognition, relying on feelings of familiarity to make recognition judgements, whereas sad people made more effort to be accurate. Surprisingly, sad people showed better face recognition, despite the fact that they have been shown to use less expert face recognition processes. This suggests that either measures of holistic processing do not correlate with face recognition accuracy (which has been found) or that sad participants engage in other forms of processing to ensure accuracy in face recognition. Mood congruency was observed for happy participants more strongly than sad participants (consistent with previous research). Furthermore, these results only occur when participants were not intentionally trying to learn the faces.

These results are consistent with sad mood being associated with defocused attention. It may mean that sad people encode areas of the face they would not normally do. Indeed, Hills and Lewis (2011) have shown that sad people can detect changes to areas of faces that happy people cannot.

There are some limitations to the work of Hills et al. (2011). First, in all of their studies, the happy mood induction was less effective than the sad mood induction. This could potentially be a confound as the intensity of the emotional state may cause differential effects in face recognition. Second, the mood induction music employed has effects on engagement, arousal and interest in addition to happiness and sadness: the happy mood induction made people more entertained and interested than the other conditions. Third, the precise mechanisms of sad participants' improved (or happy participants' reduced) face recognition ability have not been explained. Finally, Hills et al. were not able to identify whether this was an effect due to encoding or recognition.

## References

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