



A meta-analytic review of mood-congruent implicit memory in depressed mood



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HIGHLIGHTS

- This study evaluates theories related to implicit mood-congruent memory in depression.
- Self-relevant encoding enhanced implicit memory in clinical depression.
- Matched encoding and recall tasks facilitated implicit mood-congruent recall.
- Depth of processing did not impact the relationship between mood and implicit memory.
- Age and depression measure scores moderated implicit memory effect sizes.

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ABSTRACT

In studies of explicit memory, researchers have reliably demonstrated that mood-congruent, depressive information is especially likely to be recalled by individuals exhibiting depressed mood. Results from studies of *implicit* mood-congruent memory in depressed mood, however, have been largely discrepant. The current research reviews 20 studies of implicit mood-congruent memory for emotionally valenced words in the context of dysphoria and clinical depression. Meta-analytic techniques were used to summarize this research. Results indicated that depressive groups exhibited preferential implicit recall of negative information and nondepressed groups exhibited preferential implicit recall of positive information. Also, depressive implicit mood-congruent memory for negative information was associated with recall and encoding tasks that matched with regard to the perceptual versus conceptual processes required. Furthermore, self-relevance emerged as an important moderator for implicit recall in analyses that compared *clinically* depressed groups to nondepressed groups. These results provide partial support both for the transfer appropriate processing framework of memory and cognitive theories of depression that emphasize self-relevant information. Finally, certain participant characteristics, particularly age and severity of depressive symptoms, emerged as important moderators of the effect of group status on depressive implicit recall biases.

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1. Introduction

A central premise of cognitive models of depression is that depressed mood is linked to a number of alterations in cognitive processes such as attention, self-perception, and memory (e.g., Beck, 1967; Ingram et al., 2011). With regard to memory-related alterations, researchers have reliably found that explicit recall for depression-congruent information is greater than recall for depression-incongruent information among individuals experiencing a depressed mood state (see Matt, Vazquez, & Campbell, 1992). This process is part of a larger phenomenon known as the mood-congruent memory effect which suggests that emotional information congruent with current mood is more likely to be recalled than information incongruent with current mood (Bower, 1981). Depressive mood-congruent memory bias is thought by many researchers to contribute to the onset and maintenance of depressed mood (e.g., Blaney, 1986; Gotlib, Roberts, & Gilboa, 1996; Ingram, 1984), although definitive evidence is not yet available to indicate whether depression-congruent memory biases contribute to or are caused by negative mood.

Using a meta-analytic approach, the current study reviews mood-congruent implicit memory effects associated with depressed mood. Following a brief literature review, meta-analytic results are presented. Researchers have traditionally attended to two components of depression-related mood-congruent memory effects: 1) enhanced recall of negative information among individuals exhibiting depressed mood and 2) enhanced recall of positive information among individuals assigned to nondepressed control groups. Therefore, findings associated with both depressive group advantages in the implicit recall of negatively valenced information and also nondepressed group advantages in the implicit recall of positively valenced information are discussed. Also, moderators associated with study participant characteristics and theoretically relevant study variables are explored.

2. Explicit mood-congruent memory in depressed mood states

Depressed mood-congruent explicit memory biases have been found in many studies for which participants are explicitly asked to recall previously encoded information (see Gotlib et al., 1996 for a review). The meta-analysis of explicit mood-congruent memory by Matt et al. (1992) revealed that individuals with major depressive disorder tended to exhibit preferential recall of negative information, those with dysphoria exhibited preferential recall of neither positive nor negative information, and nondepressed control participants tended to

preferentially recall positive information. Furthermore, depression-related recall biases were related specifically to depressive negative information rather than other types of negative information, such as danger-related cues (see e.g., Gotlib et al., 1996). Therefore, the mood-congruent memory effect in explicit recall appears to be a reliable depressive cognitive bias, typically more pronounced among those with clinical rather than subclinical presentations of depressed mood, and most likely to be demonstrated when the negative information to be recalled is relevant to the depressive mood state.

Cognitive theories of depression have explored the mechanisms by which the mood-congruent memory biases occur as well as contribute to the etiology and maintenance of depressed mood. An early theoretical paper by Ingram (1984), for instance, discussed mood-congruent information processing phenomena that may contribute to the etiology and maintenance of depression. Expanding Bower's network theory of affect (1981), Ingram suggested that different mood states are associated with particular memory nodes within the neural network structures. The priming of particular depression-consistent information processing structures by the depressive mood state, then, is likely associated with greater depth of processing for depressive, mood-congruent information. The assumption is that information that is more deeply and elaborately processed will be more likely to influence attitudes, interpretations of events, and subsequent mood states.

Much depression research has focused on the relationship between depressed mood and explicit cognitive processes such as explicit recall and explicit attitudes. By comparison, depressive biases in implicit cognitive processes have been inadequately explored (Friedman & Whisman, 2004). Furthermore, some theories about depressive cognitive processing have suggested that it may be through implicit processes, rather than explicit processes, that depressed mood is engendered and maintained (e.g., Watkins, 2002). A 2004 literature review by Friedman and Whisman suggested that depressed mood is likely to exert important influences on three primary areas of implicit cognitive functioning: attentional allocation, implicit attitudes, and implicit memory. Depressive biases in these areas of cognitive functioning, then, may cause individuals with depressed mood to pay more attention to, have attitudes consistent with, and exhibit greater recall of negative information they encounter both in the world around them and also within their own internal psychological world. Joorman and Gotlib (2010) assert that implicit mood-congruent memory biases in the context of depressed mood are not only likely to impact the selection and encoding of biased information sets, but are also likely to engender maladaptive emotion regulation strategies among individuals with depression.

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