

# Mood-Congruent Judgment Is a General Effect

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Mood congruency refers to a match in affective content between a person's mood and his or her thoughts. The mood-congruent judgment effect states in part that attributes will be judged more characteristic, and events more likely, under conditions of mood congruence. Thus, the happy person will believe good weather is more likely than bad weather (relative to such a judgment in a state of mood incongruence). Three studies showed that the effect generalizes to non-self-relevant judgments with natural mood. Study 1 ( $N = 202$ ) generalized it across a variety of specific emotions, Study 2 ( $N = 1,065$ ) generalized it across a variety of tasks, and Study 3 ( $N = 524$ ) generalized it to a nonlaboratory, statewide sample. The three studies redefine mood-congruent judgment more broadly and thereby inform the debate about its underlying mechanisms. The relation between mood-congruent judgment and personality is discussed.

Mood congruency refers to a match in valence between a person's mood and his or her thoughts. The mood-congruent judgment effect occurs when mood-congruent thoughts, such as those of causes, attributes, or outcomes, seem more applicable or likely than comparable non-mood-congruent thoughts. For example, a happy person will expect sunnier weather for a picnic than a sad person, because sunny weather is congruent with the happy mood (Bower, 1981). Mood-congruent judgment may influence additional types of judgments, increasing the salience of mood-congruent ideas, as well as increasing the apparent typicality of mood-congruent category members. The relation of these latter two changes in judgment to the original effect is as of yet unclear (Mayer, Mamberg, & Volanth, 1988).

In fact, one view of the mood-congruent judgment effect is that it is a narrow influence occurring only under some circumstances. According to this view, the effect may be fairly specific to probabilities and evaluations (Johnson & Tversky, 1983), to self-relevant judgments (Forgas, Bower, & Krantz, 1984; Pietromonaco & Markus, 1985), or to information highly applicable to the judged target (Erber, 1991). Moreover, the effect has been

considered to occur only in specific social situations (Forgas & Bower, 1987; Forgas & Moylan, 1987), with only some groups (Salovey & Birnbaum, 1989), in only certain pathological mood states (Alloy & Ahrens, 1987) and in only specific emotion states (Forgas & Bower, 1987; Forgas & Moylan, 1987). From this perspective, mood-congruent judgment may consist merely of a weak collection of effects that are due to several different underlying mechanisms.

A second view, however, is that the mood-congruent judgment effect reflects a distinct, unified, fundamental alteration in cognition. According to this view, mood-congruent judgment automatically occurs for every judgment for which there is a class of legitimate responses that can be distinguished according to their mood congruence. The effect would fail to occur only when a second process interferes, such as one involving management of mood (Forgas, 1991; Isen, Shalke, Clark, & Karp, 1978; Mayer & Gaschke, 1988). A view of the mood-congruent judgment effect as unified and general leads to the possibility that it exerts pervasive, substantial, and uninterrupted influences on personality (Mayer et al., 1988; Mayer & Volanth, 1985).

The question of which of the above viewpoints is closer to the truth depends on the answer to several often descriptive questions concerning the causes and form of the effect. From an empirical standpoint, questions exist as to whether the effect generalizes (a) beyond experimental mood inductions and pathological states to natural mood, (b) beyond specific emotions (e.g., happiness) or pleasant emotions to all emotions, (c) beyond self-relevant judgments to all judgments, (d) beyond certain tasks involving likelihood and probability to more diverse tasks, and, finally, (e) beyond students in universities to most individuals anywhere.

Issues concerning the generality of the mood-congruent judgment effect and the implications of that generality to the effect's causes and influences are discussed next; this discussion is followed by a report of three studies that examined mood-congruent judgment.

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## Scope of the Mood-Congruent Judgment Effect

### *Generalizing the Effect Beyond Experimental Mood Inductions and Pathological States*

The first issue to be considered is whether mood-congruent judgment can be generalized from the laboratory and the clinic to natural mood and what the theoretical significance of such generalization is.

### *Generalizing From Experimental Studies*

There is clear evidence that mood-congruent likelihood judgments exist in the context of laboratory mood inductions. Such laboratory inductions typically have participants think about a series of happy (or sad) events while listening to mood-promoting music. Experimentally induced moods have commonly produced mood-congruent judgment for both self- and non-self-relevant judgment (Forgas & Bower, 1987; Forgas & Moylan, 1987; Gouaux, 1971; Gouaux & Summers, 1973; Grifitt, 1970; Isen et al., 1978; Johnson & Tversky, 1983; Ketelaar, 1989; Salovey & Birnbaum, 1989; Sinclair, 1988), although effects have been strongest for self-relevant judgments (Forgas et al., 1984; Forgas, Bower, & Moylan, 1990). There is, however, some debate as to whether experimental mood inductions create adequate parallels to real moods. Mood inductions may create effects other than those that are due to mood if the mood-inducing stimuli (e.g., sad stories) also serve to prime whatever judgments are made. The cognitive contents of such inductions may directly remind people of positive or negative information and thereby bring about an apparent mood-congruent judgment effect in the absence of real mood influence (e.g., Blaney, 1986; Perrig & Perrig, 1988; Polivy & Doyle, 1980). Generalizing the effect to natural mood is therefore critical in determining whether the effect can be obtained in the absence of the priming aspects of the mood inductions.

### *Generalizing From Depressed Populations*

There is also some evidence that mood-congruent probability judgment—at least in its self-relevant form—occurs among mood-disordered individuals. Clinical researchers have identified unrealistic judgments and memories as important components of depressed psychopathology (Abramson, Seligman, & Teasdale, 1978; Beck, 1967; Ellis, 1962; but see Wortman, & Dintzer, 1978, p. 86). Studies of depressed individuals have examined self-relevant hopelessness (e.g., “I will never have a good relationship”) rather than the more general, non-self-relevant hopelessness (e.g., “It is unlikely that anyone will have a good relationship”) that defines the complete effect (see Alloy & Ahrens, 1987, for an exception). Because non-self-relevant judgments far outnumber self-relevant ones, the generalization of the effect beyond self-relevance is an important goal. An additional limitation of studying depressed individuals is that effects may be due to their psychopathology rather than to their mood. Depressives are identified in part because of the style of irrational thinking they exhibit on questionnaires (Beck, 1967), and it may be that such thinking, rather than mood, contributes to alterations in cognition. Once again, the generalization

to natural mood would clarify the relevance of mood to the effect.

### *Generalizing to Natural Mood*

Whereas mood-congruent judgment has been demonstrated with laboratory inductions and depressed populations, its status with regard to natural mood is less clear. Although reports of significant correlations between pleasant-unpleasant judgment and natural mood have appeared (Espe & Schulz, 1983; Mayer & Bremer, 1985; Mayer et al., 1988, Study 2; Mayer & Volanth, 1985), there have also been failures or partial failures to replicate the effect with natural mood (Bargh & Tota, 1988; E. Diener, personal communication, September 6, 1990; Mayer et al., 1988, Study 1; Pietromonaco & Markus, 1985). Pietromonaco and Markus, for example, concluded that the effect “is restricted to thoughts about oneself and does not extend to thoughts about others” (p. 804). Such mixed findings call the importance of the effect into question, because the mood-congruent effect will be irrelevant to everyday personality functioning if it is uninfluenced by natural mood. Moreover, failure to find mood-congruent judgment with natural mood undermines confidence in the existence of the effect.

### *Generalizing Beyond Specific Moods and Specific Valences*

A second question of importance to the generality of mood-congruent judgment concerns which moods cause the effect. Evidence from some experimental studies suggest that mood-congruent judgment occurs only in pleasant-valenced moods (e.g., is asymmetrical; Forgas & Bower, 1987). Negative emotions are diverse and may act on judgment in opposition to one another. For example, anger might make positive outcomes seem more likely so as to motivate attack behaviors and thus would operate on judgment in a direction opposite to sadness. The finding that mood-congruent judgment occurs more strongly in pleasant moods may be critical to an understanding of the mechanisms that cause the effect, because there is firm evidence that mood-congruent memory (i.e., better memory for mood-congruent material) also occurs more strongly in pleasant moods (Blaney, 1986; Isen et al., 1978; Mayer, Gayle, Meehan, & Haarman, 1990; Mayer & Salovey, 1988; Singer & Salovey, 1988). Bower (1981) originally suggested that mood-congruent memory causes mood-congruent judgment. He contended that happy people perceive positive events as more likely because their happy mood cues recall for more positive past events (e.g., the availability heuristic; Bower, 1981; Johnson & Tversky, 1983). Bower’s explanation of the effect, which relied on spreading activation theory (Collins & Loftus, 1975), predicted symmetrical findings for both happy and sad moods, although the theory can be modified to accommodate asymmetries (Erber, 1991). Despite the original prediction of symmetry, Bower’s specific point that mood-congruent memory underlies mood-congruent judgment would be strongly supported were the mood-congruent judgment and memory effects to share the same asymmetry.

But other natural-mood studies have found mood-congruent

judgment occurs equally in pleasant- and unpleasant-valenced moods (Mayer et al., 1988). If mood-congruent judgment is symmetrical, whereas mood-congruent memory is asymmetrical, it would suggest the judgment and memory effects are caused by different underlying mechanisms.

### *Generalizing Beyond Self-Relevance*

Another issue concerning the breadth of mood-congruent judgment, discussed earlier, is whether the effect generalizes from self-relevant judgments to all other valenced judgments (Forgas et al., 1990; Pietromonaco & Markus, 1985). If only self-relevant judgments are altered, a redefinition of the effect would be required. Furthermore, the effect could be explained independent of mood by recourse to such self-relevant mental structures as depressive schemata.

### *Generalizing Beyond Likelihood and Probability Judgments*

An increasingly diverse set of judgment tasks appear to exhibit mood congruence. The most common operationalizations of the effect include judgments of the causes, attributes, and outcomes of people's behaviors or events (see Forgas, 1991, for a review). But even broader possibilities exist. Pure internal images and feelings seem to be mood congruent (e.g., "How many thoughts and images does the word DAWN bring to mind?"), as do the judged members of categories (e.g., "What is the best example of a city: Paris, Calcutta, or Omaha?"). One factor analysis showed that these latter two types of questions, along with more traditional probability and person-perception questions, split over several difficult-to-interpret mood-congruent judgment factors, suggesting more than one effect might exist (Mayer et al., 1988). That factor analytic study analyzed the four total scores (e.g., one for each group of items, as well as several other variables). A factor analysis at the level of items rather than total scores would provide far clearer information concerning whether one or more effects are operating. The particular mechanisms that can plausibly account for the effect may change depending on whether there is more than one type of mood-congruent judgment.

### *Generalizing to Nonstudent Populations*

Finally, the increasingly powerful claims made for the effect would be better substantiated were one confident that the mood-congruent judgment effect reliably generalizes from students in universities to people in the community, with natural mood. Some studies have already examined this issue with quasi-experimental inductions (Forgas & Moylan, 1987; Isen et al., 1978; Schwarz & Clore, 1983). For example, Forgas and Moylan interviewed moviegoers outside of theaters showing happy and sad mood-inducing movies. But the movies themselves could be thought to introduce cognitive primes, and the effect was found only in pleasant moods. A complete demonstration in the general population absent any quasi-experimental induction would further increase confidence in the effect.

## Present Studies

The questions discussed above concern the generality of mood-congruent judgment and, by implication, its definition and mechanisms. The present article reports three large-sample correlational studies designed to address these and related issues.

### *Procedural Issues*

Perhaps the most critical question is whether the mood-congruent judgment effect generalizes to natural mood. Testing the effect's generality also requires sampling a number of diverse tasks over a number of diverse moods. Whereas experimentation would require inducing a large number of moods, the correlational approach assumes that moods are already randomly assigned to subjects and need only be measured. The correlational approach is, therefore, more efficient in this case—an important attribute given that a large sample size is needed to draw any substantive conclusions concerning the factorial structure of the tasks investigated. Therefore, in these studies, a correlational approach is used to compare self-reported natural mood with judgments.

Natural-mood studies also permit the comparison of mood-congruent judgment with dispositional variables such as optimism–pessimism, so as to ensure it is distinct from such self-report measures. In the past, researchers have sometimes equated pleasant–unpleasant judgment with self-reports of optimism–pessimism. Contradicting this is recent research that suggests that optimism–pessimism is a perceived experiential state very closely related to mood (Clore, Ortony, & Foss, 1987; Mayer, Salovey, Gombert-Kaufman, & Blainey, 1991). Cross-sectional studies such as these can ensure that mood-congruent judgment is not simply duplicative of optimism–pessimism.

### *Overview*

Three studies explored the generality of mood-congruent judgment. All three examined non-self-relevant judgment under conditions of natural mood—a version of the effect researchers are uncertain exists. All three studies investigated whether the natural mood-congruent judgment effect generalizes to both pleasant and unpleasant moods. In Study 1, we attempted to generalize the effect to several specific emotions (e.g., happiness, anger, fear, and sadness). In Study 2, we attempted to generalize the effect across varied pleasant–unpleasant cognitions by examining the factorial structure of those cognitions. In Study 3, we attempted to generalize the effect to a new context, with a noncollege sample.

### Study 1: Generality Across Emotions

Study 1 examined the generality of mood-congruent judgment across specific emotions. First, both mood and mood-congruent probability items were classified by specific emotions. Mood-congruent probability items were used exclusively in Study 1 because they seemed most amenable to construction according to specific emotional content. A mood scale measuring anger, for example, could be correlated with probability-

estimation items with anger content, to see whether the resulting correlation would be similar to that found with other moods. The present perspective is that each emotion will individually contribute to the general effect according to its pleasant-unpleasant quality. If the effect is general across emotions, then the strongest relationship should be found between mood-congruent judgments and a pleasant-unpleasant mood factor. The broad pleasant-unpleasant mood dimension should provide optimal prediction because it summates across each specific emotions' predictive contribution.

Study 1 was also an exploratory investigation in which additional variables were manipulated to assess whether they might enhance or discourage the effect. For example, given that knowledge of an event's exact probability should eliminate mood's influence, we hypothesized that vague questions would yield stronger mood-judgment relationships (cf. Fiedler, 1991; Forgas, 1991). In addition, we hypothesized that the full non-self-relevant effect would be present even under conditions in which participants were explicitly instructed to be objective (as opposed to self-referential).

Finally, measures of optimism-pessimism and neuroticism (Eysenck, 1973) were included so as to clarify those variables' relation to mood and mood-congruent judgment.

### Method

#### Subjects

Subjects were 202 students (129 men and 73 women) at the State University of New York at Purchase (SUNY-Purchase), who participated in a standard introductory psychology subject pool.

#### Design

There were two manipulations: (a) subjective versus objective problem-solving instructions and (b) vague versus specified item phrasing. Instruction condition was between subjects; item phrasing was within subjects. They were both counterbalanced. Each subject received a booklet consisting of the probability-estimation scale, a mood scale, and measures of optimism-pessimism and neuroticism.

#### Mood-Congruent Judgment Scales

*Instruction pages.* Two instruction pages were used, depending on the experimental condition. Subjects in the *objective problem-solving* condition were instructed to "answer the questions as objectively as possible . . . based on your knowledge of events from newspapers, reports, textbooks . . . [and so on]." Subjects in the *subjective problem-solving* condition were instructed to "answer the questions by relating them to your personal experiences, or those of your friends . . . [and] by first imagining the situation as it might happen to you or someone you know."

*Probability-estimation items.* Stimuli were 48 statements concerning illness, health, and professional, economic, and social events. Half of the statements described events of a positive valence (12 happiness and 12 challenge); half described events of a negative valence (6 fear, 6 anger, 6 guilt, and 6 sadness). The mood-congruent probability items were written especially for this study and edited until we agreed that they accurately represented the emotional content specified. Half were in *vague* and half in *specified* form.

Vague items included few details and asked for probabilities in percentage form. Specific items, in contrast, typically included more de-

tail, including a sample size and requested probabilities in frequency form. Three examples were as follows:

[Guilt-vague:] "What is the likelihood of forgetting to send a Mother's Day card?"

[Guilt-specific:] "In a small college of 1,000 students, how many students will forget to send their mother a card for Mother's Day this year because of poor family relations or forgetfulness?"

[Happy-vague:] "What is the probability of a person marrying his or her true love and the couple living together joyfully for the rest of their lives?"

Eight different booklet forms were then created in which half of the items, counterbalanced for emotion content, were vague and half were specified. Because the response formats for vague and specified questions were different, and these appeared in different combinations in different booklet forms, scoring procedures required standardizing each item across the subsample that received it. Then, a person's given score on a part of the test (e.g., angry-specified or happy-vague) was computed by summing the relevant set of standardized items representing a given scale that the particular individual had received. Because the means and variance used in the item-standardization procedure involved some error that was due to different participants answering different items, the effects reported below are probably slightly attenuated.

#### Mood and Mood-Related Scales

*Differential Mood Scale.* A mood adjective scale was constructed that consisted in part of subscales corresponding to each of the emotional contents of the mood-congruent judgment items: (a) Happy (*lively, joyful, and happy*), (b) Challenged (*determined, daring, and challenged*), (c) Angry (*fed up, grouchy, and angry*), (d) Afraid (*scared, frightened, and nervous*), (e) Sad (*gloomy, depressed, and sad*), and (f) Guilty (*ashamed, regretful, and guilty*). Four additional scales were included so as to adequately sample from an Aroused-Calm dimension of mood: (g) Loving (*caring, accepting, and loving*), (h) Aroused (*active, peppy, and alert*), (i) Relaxed (*calm, content, and relaxed*), and (j) Tired (*sleepy, drowsy, and tired*), for 30 adjectives in all. Subjects were asked to indicate on a 6-point scale from (1) *definitely feel* to (6) *definitely do not feel* how well each adjective described their mood.

*Brief Mood Introspection Scale (BMIS).* The BMIS is a 16-adjective measure that yields four factor-valid scales: Pleasant-Unpleasant and Arousal-Calm mood, as well as their rotated variants, Positive-Tired and Negative-Relaxed mood (Mayer & Gaschke, 1988). The BMIS was embedded in the longer Differential Mood Scale described above. The 6-point response scale was approximately corrected to match the more common 4-point version of the scale by multiplying scores by four sixths.

*Optimism-Pessimism scale.* This 8-item scale was intermixed with a longer scale.<sup>1</sup> Sample items of the optimism-pessimism scale included "I have a very positive outlook at this moment" and "I am

<sup>1</sup> A Meta-Mood Experience Scale was included for exploratory purposes in Studies 1 and 2 only, and results for the scale are reported in footnotes 4 and 7. The revised 70-item form (Mayer & Stevens, 1992, Study 1) of the Meta-Mood Experience Scale (Mayer & Gaschke, 1988) included evaluations of (a) how clear, (b) how typical, and (c) how acceptable the mood was, and (d) how much influence the mood had on thinking, as well as (e) attempts to improve the mood and (f) attempts to bring down a too-good manic mood. The scale coefficient alpha reliabilities ranged from  $r(700) = .65$  to  $.90$ , and scale intercorrelations were below  $r(700) = .30$  (Mayer & Stevens, 1992), indicating their substantial independence of one another.

feeling quite pessimistic about things right now." The coefficient alpha reliability was  $r(201) = .90$  for the sample.<sup>2</sup>

*Brief form of the Eysenck Personality Inventory.* A very brief but reliable form of the Eysenck Personality Inventory was also administered, so as to include a 6-item measure of neuroticism (Eysenck, 1973).

### Procedure

Each subject received a 13-page booklet consisting of instructions and the scales in the order discussed above. The instruction page noted that participants would be asked to respond to items requesting either probability or frequency estimates and provided instructions for how to respond to each. The mood, optimism–pessimism, and personality scales were located at the end of the booklet, to prevent subjects from being cued to the mood-related hypotheses of the study. Subjects were tested in small groups. The experimenter instructed the subjects to work consecutively through their booklets without skipping ahead or returning to a completed section.

## Results and Discussion

### Scoring of Variables

A participant's score on a specific-emotion judgment scale was calculated by adding up the participants' responses to all the items of that specific type (e.g., anger). A participant's specific moods were scored similarly by summing their responses to the mood adjectives that made up a specific mood. Participants' pleasant–unpleasant mood-congruent judgment was calculated by subtracting their scores on all the unpleasant judgment scales (anger, fear, sadness, and guilt) from their scores on the pleasant scales (happy and challenge). The participant's pleasant–unpleasant mood was scored on the Pleasant–Unpleasant scale of the BMIS that had been embedded in the longer mood scale.

### Relation of Mood-Congruent Judgment to Mood

The generality of mood-congruent judgment across moods can be seen in Table 1. The diagonal of the correlation matrix indicates that correlations between specific emotions and their correspondent judgments were uniformly positive, four of six significantly so. Also supporting the general effect, the correlation between pleasant–unpleasant mood and judgment was higher than that between the six specific emotions and their correspondent judgments. Pleasant–unpleasant mood-congruent judgment and mood intercorrelated,  $r(194) = .27$ ,  $p < .005$ . The average of the six correlations representing the corresponding emotions and judgments (e.g., happy moods and happy events) was  $r(196) = .14$ , well below that of the general dimensional representation (see Table 1). This disadvantage was not due to lower reliabilities. Although the specific emotion scales were briefer, which typically attenuates reliability, they also sampled from a narrower and more cohesive item sample, which typically raises reliability. The specific-emotion scales were in fact approximately equivalent in alpha reliability to their comparative global pleasant–unpleasant mood or judgment scales.

### Conditions Influencing the Effect

Next, several tests were made of which conditions influenced the mood-congruent judgment effect.<sup>3</sup> Pleasant–unpleasant judgment and mood intercorrelated at similar levels, but with greater strength with vague than with specified items,  $r(197) = .28$ ,  $p < .001$  versus  $r(195) = .19$ ,  $p < .005$ , respectively;  $z = 1.92$ ,  $p < .05$ ; equally under instructions that stressed subjectivity or objectivity,  $r(103) = .24$ ,  $p < .01$  versus  $r(91) = .30$ ,  $p < .005$ ;  $z = .41$ , *ns*; among women and men,  $r(70) = .37$ ,  $p < .001$  versus  $r(124) = .20$ ,  $p < .05$ ;  $z = 1.13$ , *ns*; and, under pleasant and unpleasant moods,  $r(95) = .17$ ,  $p < .05$  versus  $r(99) = .18$ ,  $p < .05$ ;  $z = .07$ , *ns*. This latter breakdown was at the mean ( $z$ -score = 0) of the sample, which represents a midpoint in the distribution of natural moods. Thus, mood-congruent judgment generalized to both pleasant and unpleasant moods in this study.

### Predictions Concerning Mood-Related Constructs

Mood-congruent judgment was distinct from optimism–pessimism,  $r(196) = .25$ ,  $p < .001$ . As predicted, optimism–pessimism was more closely related to mood,  $r(202) = .66$ ,  $p < .001$ . Unsurprisingly, given the conceptual overlap among the variables, both optimism–pessimism and neuroticism also predicted pleasant–unpleasant judgment. Because of their conceptual overlap, it would not make sense to partial out the variance of one variable from another (e.g., neuroticism from mood), because much of the variance legitimately belongs to both.<sup>4</sup>

### Summary

Mood-congruent judgment generalized across the specific emotions tested, and no specific emotion outperformed the more general pleasant–unpleasant dimension in the prediction of mood-congruent judgment. Optimism–pessimism correlated far more highly with mood than with pleasant–unpleasant judgment, consistent with prior research indicating that it is an affectively valenced felt sense closely related to mood itself (Clare et al., 1987; Mayer et al., 1991). Mood-congruent judg-

<sup>2</sup> We were unaware of the Life Orientation Test published earlier by Scheier and Carver (1985). The Optimism–Pessimism scale has substantial content overlap with their 12-item scale.

<sup>3</sup> Formulae for these tests are from Cohen and Cohen (1975, pp. 51–53, Formulae 2.8.5 and 2.8.8). Repeated measures comparisons are more likely than others to yield significant results. To maintain statistical power, the alpha levels are not adjusted; this will make differences easier to find and provide the most stringent tests of our hypotheses that predict the effect is general across various conditions. With the exception of the present finding, which was predicted a priori and not further pursued, possible chance results were also identified through lack of replication across studies.

<sup>4</sup> In an exploratory analysis, the seven subscales of meta-experience (see footnote 1) showed no incremental prediction of mood-congruent judgment over that provided by pleasant–unpleasant mood, optimism–pessimism, and neuroticism, as tested by a two-stage hierarchical regression in which the Meta-Mood Experience subscales were entered on the second step (Step 1: adjusted  $R[5, 188] = .37$ ,  $p < .001$ ; Step 2: adjusted  $R[11, 182] = .37$ ;  $\Delta F = 1.1$ , *ns*).

Table 1  
*Intercorrelations of Mood-Sensitive Judgment and Moods: Study 1*

Mood and other scales	Judgment type							Pleasant-unpleasant mood
	Happy	Challenge	Fear	Anger	Sad	Guilt	Pleasant-unpleasant	
<b>Mood</b>								
Happy	.16*	.10	.12*	.10	-.07	.02	.08	.74**
Challenge	-.01	.10	.13*	.13*	.13*	.08	-.09	.11
Fear	-.16*	-.01*	.09	.13*	.09	.19**	-.20**	-.56**
Anger	-.19**	-.05	.11	.15*	.11	.29**	-.29**	-.73**
Sad	-.20**	-.06	.09	.07	.15*	.20**	-.24**	-.73**
Guilt	-.17	-.04	.06	.13*	.09	.16*	-.21**	-.50**
Pleasant-unpleasant	.26**	.09	-.04	-.07	-.13*	-.19**	.27**	1.00
<b>Other</b>								
Optimism-Pessimism	.17**	.08	-.10	-.08	-.17**	-.18**	.25**	.66**
Neuroticism	-.11	-.16*	.14*	.24**	.27**	.20**	-.34**	-.26**

\*  $p < .05$ . \*\*  $p < .005$ .

ment generalized to different instruction conditions and among subjects in both pleasant and unpleasant moods.

### Study 2: Structure of the Pleasant-Unpleasant Judgment Domain and Its Relation to Mood

Study 1 examined the generality of the mood-congruent judgment effect across moods; Study 2 examined the generality of the effect across judgment tasks. In Study 2, we investigated whether there was a single pleasant-unpleasant judgment dimension (underlying factor) that could be used to summarize a variety of pleasant-unpleasant judgment measures. Two tasks measured the plausibility-likelihood judgments most common to the area: a probability task composed of items measuring judgments of politics, health, and other events (e.g., "What is the likelihood of nuclear war?") and a person-perception task that briefly described a fictitious character and then measured behavioral interpretations, character evaluations, and causal attributions concerning the person (e.g., "Did Bill major in English because it was the easy thing to do?"). To these were added two tasks that are also mood congruent but are relatively distinct from commonly used tasks: internal salience ratings of stimuli (e.g., "How many thoughts and images does DAWN bring to mind?") and categorization tasks (e.g., "What's the best example of a city: Paris, Calcutta, or Omaha?"). Examining the intercorrelations among individual items of the four types of mood-congruent judgment should enable us to see whether the items can be described by a single pleasant-unpleasant factor structure; such a result would indicate that one general mood-congruent judgment effect was operating. Conversely, multiple factors might emerge that would suggest the tasks reflect more than one effect.

### Method

#### Subjects

The total sample was composed of 1,065 students (584 women, 479 men, and 2 persons with information missing), from both a new and an

archival sample, representing diverse universities and colleges from the eastern, midwestern, and western United States.

*New sample.* Three hundred and five participants from Pace University, SUNY-Purchase, and Westchester Community College completed four scales of mood-congruent judgment, along with mood and mood-related scales.

*Archival sample.* The new sample was supplemented with an archival sample assembled from earlier data sets in which mood-congruent judgment tasks had been used. The 760 supplementary subjects in this sample included 194 from Mayer and Volanth (1985) and 566 from Mayer et al. (1988). Participants in the supplemental sample had all performed two or more of the mood-congruent judgment tasks and had taken either the BMIS or a longer scale with items from the BMIS embedded in it.

To retain as much information as possible, each interitem correlation of the factor matrix was based on the maximum number of people who completed the items. The effective sample size for the individual mood-congruent tasks, therefore, varied from a minimum of 612 to a maximum of 963.

### Pleasant-Unpleasant Judgment Task Scale

The pleasant-unpleasant judgment tasks included two or more of the tasks described below, with the majority of individuals, including all those in the new sample, performing all four tasks. These tasks are also described elsewhere (Mayer et al., 1988, Study 2).

*Probability estimation (first task).* This task measured people's estimates of the likelihood of 16 positive or negative future events concerning war, illness, health, and social success. Participants responded by filling in blanks with a percentage likelihood from 0 to 100. Scoring was for the sum of the likelihoods, with negative items scored negatively. The probability of pleasant events was expected to rise with good mood; that for unpleasant events was expected to fall (time: 5 min).

*Example choice (second task).* This task measured which category members people thought were most typical. Participants were presented with a set of 18 categories (e.g., possessions, personality, type of worker), each followed by three possible examples that varied in affective tone. Thus, the category *possessions* was followed by *gun*, *musical instrument*, and *computer*. Instructions were to "choose the most typical example of the category." Scoring was for the pleasantness of the examples chosen (as rated by independent judges) and was expected to rise with good mood (time: 5 min).

*Person perception (third task).* This task measured people's evaluations, causal attributions, behavioral interpretations, and trait ascriptions of others. Participants read a one-paragraph fictitious biography and then evaluated 7 statements about the character's past or future life. They then repeated this procedure for a second brief biography. Seven of the 14 statements were phrased in pleasant ways (e.g., "People who met Kathy would think she was interesting") and 7 statements were phrased in unpleasant ways (e.g., "Bill majored in English because it was the easy thing to do"), counterbalanced over forms. Responses were along a 5-point scale from *strongly agree* to *strongly disagree*. The total score was the total agreement with statements about the person, with responses to negative statements reverse scored. This score was expected to rise with pleasant mood (time: 7 min).

*Word ratings (fourth task).* This task measured people's perception of their internal responses to positive and negative stimuli. Participants rated a set of 15 words on the number of thoughts, images, and concepts brought to mind. Scoring was for the number of rated concepts for the 6 pleasant and 6 unpleasant items, with the unpleasant items scored in the reverse direction. Three neutral items were not used in scoring. This score was expected to rise with pleasant mood (time: 5 min).

### Other Test Materials

The BMIS, the Optimism-Pessimism scale, and the Eysenck Personality Inventory (Brief Form) were repeated from Study 1 without change.

### Procedure

All the new participants completed the Pleasant-Unpleasant Judgment Task Scale followed by the BMIS, the Optimism-Pessimism scale and Neuroticism scale. The data collection procedures for the archival samples are reported elsewhere (Mayer et al., 1988; Mayer & Volanth, 1985) and were similar to the procedures used for the new participants tested for this study. All individuals were tested in groups, and instructions were in the test booklets.

## Results and Discussion

### Factor Structure of the Mood-Congruent Judgment Task Scales

We subjected all items from the four Pleasant-Unpleasant Judgment scales to a principal-axis factor analysis with varimax rotations. Beforehand, negative items were reversed in such a fashion that all items were scored in the positive direction. The eigenvalues for the first 5 factors (3.9, 3.2, 2.4, 2.3, and 2.0) suggested that a two-factor solution would be appropriate; this is shown in Table 2. These factors explain 18% and 15% of the variance of the first 10 factors, respectively.

The first factor loaded items almost exclusively from the word-rating task. The pattern of positive and negative items suggest that this factor reflected bias in the use of the response scale (the negative items were reverse scored but still loaded negatively). Some people tended to use the upper regions of the scale, whereas others tended to use the lower. This was especially likely because the word rating task had the longest scale (11 points), compared with those of the other tasks and would thus be most sensitive to such bias. In addition, the response-bias factor as a whole had no correlation with mood (see below). The second factor of the two-factor solution was the hypothe-

sized single pleasant-unpleasant dimension of judgment. As predicted, pleasant-unpleasant judgment represented items from all tasks hypothesized to be mood congruent: 7 items were from the word-rating task (representing 58% of the task's original items); 5 from the probability estimation task (31%), 11 from the example choice task (61%), and 5 from the person perception task (36%). The loadings of a substantial portion of items from all tasks indicates that the single pleasant-unpleasant judgment factor plausibly accounts for the effects across the diverse judgment tasks (Gorsuch, 1983).<sup>5</sup>

### Scale Construction

A factor-based scale, using items from each of the four original scales, was constructed to represent pleasant-unpleasant judgment in subsequent analyses.<sup>6</sup> Items were again standardized so as to equally weight them in the composite scale (because items from different tasks used widely varying response scales). Cognitive-style scales such as the present one typically show only modest reliabilities (i.e., in the .40-.70 range). Within this context, the present mood-congruent judgment scale attained a respectable coefficient alpha reliability of .63, sufficient for this type of research.

### Relation Between Factors and Mood

Each of the tasks individually correlated with pleasant-unpleasant mood at significant levels in the new sample alone (probability estimation,  $r[305] = .23, p < .001$ ; person perception,  $r[305] = .22, p < .001$ ; example choice,  $r[305] = .18, p < .001$ ; and word ratings,  $r[305] = .40, p < .001$ ). These corresponded to earlier results with these tasks. The correlation between overall pleasant-unpleasant mood and pleasant-unpleasant judgment in the new sample was  $r(305) = .39, p < .001$ ; and for the combined sample who received the complete set of tasks,  $r(508) = .39, p < .001$ . A factor scale constructed on the basis of the first response-bias factor of the above factor analysis showed no significant correlation with mood,  $r(502) = .03, ns$ .

To test whether the pleasant-unpleasant mood dimension was, once again, the single best predictor of the overall pleasant-unpleasant judgment dimension, we conducted two additional multiple regressions to predict pleasant-unpleasant judgment. In each, entered first was pleasant-unpleasant mood and entered second (in one regression) was either an alternative

<sup>5</sup> An alternative three-factor solution was also possible. This solution had a first Response Bias factor identical to that of the two-factor solution. Its second factor loaded positively phrased questions, whereas its third factor loaded negatively phrased questions. It produced mood-judgment correlations marginally lower than those obtained with the single pleasant-unpleasant factor.

<sup>6</sup> Scale items were chosen on the basis of the values from the factor score coefficient matrix. This matrix contains the regression weights for the linear composite defining a given factor score. The use of values from the factor matrix is preferable to the use of factor loadings because the regression weights partial out influences from preceding factors and therefore enhance the orthogonality of the resulting factor-based scales under many conditions. Items with beta weights greater than  $\pm .06$  were used, which selected roughly the best third of the items on a given factor.

Table 2  
Two-Factor Principal-Axis Factor Analysis, With Varimax Rotation, on the Mood-Congruent Judgment Domain

Item	Factor	
	1	2
[R] Pain (thoughts brought to mind)	.62	.25
Generous (thoughts brought to mind)	-.55	—
[R] Fail (thoughts brought to mind)	.55	.22
[R] Destroy (thoughts brought to mind)	.54	.22
Peace (thoughts brought to mind)	-.52	.22
Wisdom (thoughts brought to mind)	-.52	—
Happy (thoughts brought to mind)	-.51	.25
Dawn (thoughts brought to mind)	-.49	—
[R] Disappoint (thoughts brought to mind)	.46	.22
[R] Wreck (thoughts brought to mind)	.43	—
[R] Trash (thoughts brought to mind)	.38	—
Flower (thoughts brought to mind)	-.34	.21
What is the probability of a marriage resulting in long-term happiness for both members of the couple?	—	.36
Example of emotion (anger, sadness, or caring)	—	.34
What is the probability that a 30-year-old will be involved in a happy, loving romance?	—	.31
Example of emotion (fear, joy, or surprise)	—	.31
Example of a type of worker (conscientious, lazy, or honest)	—	.31
[R] Kathy's husband would resent her returning to school.	—	.31
Example of a personality (unhappy, nervous, or lively)	—	.30
What is the probability of the economy improving in the next 3 years?	—	.30
What is the probability of at least one of the friendships of an 18-year-old lasting for the rest of that person's life?	—	.29
Example of a type of worker (industrious, white collar, or lazy)	—	.26
Example of an attitude (optimistic, unfriendly, or charitable)	—	.25
Example of an attitude (pessimistic, realistic, or good)	—	.25
Kathy is interesting and intellectually stimulating.	—	.24
Example of possessions (gun, musical instrument, or computer)	—	.23
Example of a personality (dishonest, sincere, or shy)	—	.23
[R] Kathy's husband will end up taking a job he is not happy with.	—	.23
Example of facial expressions (smiling, frowning, or blushing)	—	.22
Example of habits (smoking, watching TV, or studying)	—	.22
[R] Bill will end up getting a divorce.	—	.21
[R] What is the probability that there will be an atomic war in the next 5 years?	—	.20
Kathy will have considerable success at her chemistry career.	—	.20
Percentage of variance of the first 10 factors explained	18%	15%

Note. Loadings less than .20 and items with all loadings less than .20 are not included. [R] = item was reverse scored.

positive-tired, negative-relaxed set of mood dimensions suggested by Watson and Tellegen (1985) or (in the other regression) the 16 individual mood adjectives of the BMIS. There was a negligible improvement in adding separate positive-tired, negative-relaxed mood dimensions into the regression, although given the sample size, it reached statistical significance, adjusted  $R(1, 506 \text{ to } 3, 504) = .39-.40$ ;  $\Delta F = 3.3, p < .03$ . In the second regression there was no improvement at all using the 16 individual mood adjectives, adjusted  $R(1, 506 \text{ to } 16, 491) = .39-.40$ ;  $\Delta F = 1.5, ns$ ; nor was the beta weight associated with

any individual adjective significant by itself. Thus, as with Study 1, the pleasant-unpleasant mood dimension matched or exceeded alternative measures for predicting pleasant-unpleasant mood-congruent judgment.

Splits of the sample again indicated the generality of the effect. Men and women showed nearly identical correlations between pleasant-unpleasant mood and judgment,  $r(220) = .42, p < .001$  versus  $r(288) = .37, p < .001$ , respectively;  $z = .56, ns$ ; as did people in pleasant and unpleasant moods,  $r(247) = .23, p < .001$  versus  $r(261) = .28, p < .001$ ;  $z = .83, ns$ .

### Prediction Concerning Mood-Related Constructs

Once again as predicted, optimism–pessimism was far more highly related to mood,  $r(302) = .70$ ;  $p < .001$ , than to mood-congruent judgment,  $r(302) = .40$ ;  $p < .001$ . Neuroticism had modest relations with both (for mood-congruent judgment,  $r[504] = -.29$ ,  $p < .001$ ; for mood,  $r[508] = -.39$ ,  $p < .001$ ).<sup>7</sup>

### Summary

Four different mood-congruent tasks were factor analyzed at the item level. A two-factor structure was obtained in which the first, Response-Bias factor, was unrelated to mood. The presence of such a response-bias factor illustrates the importance of careful item counterbalancing in this area. The second, Pleasant–Unpleasant Judgment factor incorporated items from all four tasks, which was consistent with the operation of a single mood-congruent judgment effect. This Pleasant–Unpleasant Judgment factor correlated with mood and was symmetrical in that its correlations appeared among people in both pleasant and unpleasant moods.

### Study 3: Generalization to a Statewide Sample

Mood-congruent judgment appears general in its effect. If truly general, however, it should occur outside of an experimental context and in different subject populations. The context of laboratory research may have encouraged participants in Studies 1 and 2 to be particularly sensitive to their feelings or to have complied with perceived experimental demand (see Mayer et al., 1988, however, for evidence against demand accounts). It could further be argued that psychology undergraduates were more open to their moods because of their education, youth, or other reasons (Sears, 1986). As noted in the introduction, some studies have already investigated the generalization of the effect to community samples (Forgas & Moylan, 1987; Schwarz & Clore, 1983) by taking advantage of quasi-experimental mood inductions.

Study 3 examined whether the mood-congruent judgment effect could be found with entirely unmanipulated moods outside of a university setting among a representative, statewide sample of New Hampshire residents. To that end, very brief mood and mood-congruent judgment scales were embedded in an otherwise general survey of state residents. On the basis of results from Studies 1 and 2, it was predicted that mood and judgment would intercorrelate and that various demographic variables—such as age, sex, income, and education—would have little or no effect on their interrelation.

### Method

#### Subjects

Subjects included all respondents to the Annual Omnibus Survey of New Hampshire, a telephone survey conducted under the auspices of the Institute for Policy and Social Science Research at the University of New Hampshire. Subjects were selected randomly from all state telephone directories. Constants were added to phone numbers so as to include individuals with unlisted numbers. Participants were called in the early evening by trained telephone surveyors. Five hundred sev-

enty-one subjects contacted began the questionnaire (238 men and 333 women); some of these were ineligible (e.g., not 18 years of age) or did not agree to participate. Between 496 and 524 of the remainder (varying as a function of the individual item) completed the mood and judgment scales described below; this rate was comparable to the completion of other survey items. Educational level, for example, was answered by 518 participants. The average age of the sample was 43 years, and income varied from below \$15,000 ( $n = 46$ ) to above \$45,000 ( $n = 192$ ). On a random basis determined by telephone number, half the subjects received the mood scale first, and half the judgment scale first.

#### Materials

The expense of a statewide survey necessitated extreme brevity in all measures. Two scales were developed specifically for the task; both can be considered factor based as they were developed on the basis of the factor analyses of the prior study.

*Telephone Mood-Congruent Judgment Scale.* This scale began with the following:

Now, I'd like to ask you some general questions about your expectations for the future, concerning social, economic, and political well-being in New Hampshire. Please answer each of the questions on a scale from 0% to 100%, where 0% means there is no chance, and 100% means it is absolutely certain, or would happen to everyone.

Participants were then asked eight questions that had been selected on the basis of the factor analysis of Study 2 and modified slightly for use here. The overall score was composed by reverse scoring the four negative items and summing the total probability estimates. The items were, in the fixed order used in the survey, as follows: (a) "In New Hampshire, what is the likelihood of a marriage resulting in long-term happiness for both members of the couple?" (b) "What is the likelihood that there will be an atomic war in the next five years?" (c) "In New Hampshire, what is the likelihood of a married couple getting a divorce within five years of their marriage?" (d) "What is the likelihood of at least one of the friendships of a New Hampshire high school student lasting for the rest of that person's life?" (e) "What is the likelihood of there being fewer good job opportunities in New Hampshire in the near future than there are now?" (f) "What is the likelihood that the average person in New Hampshire will be a victim of crime this year?" (g) "What is the likelihood that the New Hampshire economy will improve in the next few years?" and (h) "What is the likelihood that the average 30-year-old in New Hampshire will be involved in a happy, loving romance?" Because the response formats for all items were so similar, items in Study 3 were not standardized.

*Telephone Mood Scale.* This scale began with the following instructions:

Now, I'd like to ask you some questions about how positive or negative your mood is right now at this moment. I am going to ask you, for several different emotions, how much you are experiencing that emotion at the present time, on a scale from "0" to "10,"

<sup>7</sup> In an exploratory analysis, Meta-Mood Experience subscales (see footnote 1) were entered into a two-stage hierarchical regression to predict mood-congruent judgment. In the first stage, pleasant–unpleasant mood, optimism–pessimism, and neuroticism, were entered (Step 1: adjusted  $R[5, 299] = .42$ ,  $p < .001$ ); in the second stage, the Meta-Mood Experience subscales were entered (Step 2: adjusted  $R[11, 293] = .48$ ,  $p < .001$ ;  $\Delta F = 4.3$ ,  $p < .001$ ; variables accounting for change: clarity, influence, and dampening).

where "0" means you are definitely NOT feeling it, and "10" means you are definitely feeling the emotion.

Three positive and three negative mood terms from the BMIS were used, selected on the basis of earlier reported factor analyses (Mayer & Gaschke, 1988). These were, in the order administered—*lively, gloomy, peppy, fed up, nervous, and happy*. The Telephone Mood Scale was scored by subtracting the responses to the unpleasant adjectives from the responses to the pleasant adjectives.

### Procedure

After a participant was contacted, he or she was asked a number of questions concerning the issues of interest to organizations underwriting portions of the survey. These questions concerned state educational policies, environmental issues, media, and state politics. Then, the relevant portion of the study began, either with the mood or the judgment questions first, depending on random assignment.

### Results and Discussion

The coefficient alpha reliabilities were adequate to good for the Telephone Mood Scale,  $r(515) = .69$ ; and Telephone Mood-Congruent Judgment Scale,  $r(445) = .44$ . For the overall correlation between mood and mood-congruent judgment,  $r(443) = .28$ ,  $p < .0001$ . Whether the mood or judgment scale came first made no difference,  $r(215-228) = .28$  versus  $.28$ .<sup>8</sup> The means and standard deviations for the eight items, broken down according to pleasant and unpleasant mood groups (split at the sample mean), are presented in Table 3. The data show, for example, that the happier half of the sample believed pleasant romances were 5% more likely than did the unhappier half.

The survey also asked questions about media, local issues, and state political figures. Twelve of these had clear pleasant-unpleasant connotations. Of the 12, all showed some correlation in the direction consistent with mood-congruent judgment, 4 significantly so. Three of the 4 items showing the strongest effects were in greater proximity to the mood scale, and greater proximity has been shown to enhance the effect in the past (Mayer et al., 1988, Study 2).

### Conditions Under Which the Effect Occurred

The mood-congruent judgment effect showed roughly equivalent effects for men as for women ( $r(188) = .22$ ,  $p < .001$  versus  $r(255) = .31$ ,  $p < .001$ ;  $z = .90$ , *ns*); for individuals educated up to a high school level as for those with more education ( $r(192) = .29$ ,  $p < .001$  versus  $r(248) = .21$ ,  $p < .001$ ;  $z = .80$ , *ns*); for younger as for older people ( $r(259) = .29$ ,  $p < .001$  versus  $r(174) = .25$ ,  $p < .001$ ;  $z = .40$ , *ns*); for people with lower incomes as for those with higher incomes ( $r(254) = .30$ ,  $p < .001$  versus  $r(168) = .19$ ,  $p < .01$ ;  $z = 1.10$ , *ns*); but, in this sample only, for happier less than for sadder people ( $r(237) = .09$ ,  $p < .09$  versus  $r(206) = .30$ ,  $p < .001$ ;  $z = 2.19$ ,  $p < .05$ ). This asymmetry because of mood is inconsistent with other findings in this article. Despite the asymmetry, there was still evidence that mood strength influenced the effect in both happy and sad moods.

### Summary

In Study 3, the mood-congruent judgment effect successfully generalized to a new context and subject population. Mood-congruent judgment occurred regardless of sex, income, education, and age. The results further indicated that mood influences general survey responding. An asymmetry for mood was found in which the effect was larger for those in a sad mood—the only finding of asymmetry in this article—and in exactly the direction opposite that typically found (Forgas & Bower, 1987). This reverse asymmetry is discussed below.

### General Discussion and Conclusion

In this discussion, we first summarize the findings that mood-congruent judgment is a remarkably general effect; we then redefine mood-congruent judgment to indicate its generality and reconcile present findings with earlier contradictory research evidence indicating that mood-congruent judgment is specific and sporadic. Next, we consider mechanisms of the effect. In the conclusion, we address the relation of mood-congruent judgment to personality structure and individual differences.

#### *Generalization of the Effect to Natural Mood and Non-Self-Relevant Cognition*

The mood-congruent judgment effect was clearly shown to exist with natural mood across three studies, in non-self-relevant materials, and regardless of the subject's sex, income, education, or age. This rules out any explanations of the effect as being due to priming from experimental mood manipulations or to pathological cognitions specific to depressed groups. Mood-congruent judgment is the first effect of cognition-and-affect—including mood-congruent memory, mood-state dependent memory, and differential learning—that provides strong evidence for its generalization to natural mood. Natural-mood studies are uniquely well-suited to judging the effect size of mood-congruent judgment, because natural mood provides a meaningful metric: It is gauged against the everyday mood variations of people and those around them. Correcting the measures for attenuation due to unreliability in Studies 2 and 3 (where good reliability estimates were possible) led to inter-correlations between mood and judgment of  $r(502) = .54$  and  $r(443) = .51$ , respectively—evidence that a substantial effect is in operation.

<sup>8</sup> If demand were operating, survey subjects who received the mood scale first would have a better chance of alerting themselves to the mood-congruity hypothesis, and such participants should respond to each following judgment item with greater congruity. That correlation, therefore, should have been higher were demand operating, but it was not. Nor were there any striking differences in item performance depending on placement of the mood scale. When the mood scale was first, the middle four items showed their highest congruity. When the mood scale was second, the first and last items performed best.

Table 3  
*Means, Standard Deviations, and Correlations of Central Measures With Mood: Study 3*

Variable	Mood group				Correlation between variable and pleasant-unpleasant mood factor
	Pleasant		Unpleasant		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Mood: Pleasant-unpleasant	20.2	4.7	5.0	7.2	1.00
Judgment item:					
Pleasant event					
Happy marriage	59	20	55	21	.16**
Lifelong friend	53	31	45	30	.17**
Improved economy	57	25	53	23	.12**
Happy romance	62	19	57	20	.17**
Judgment item:					
Unpleasant event					
Atomic war	9	16	14	21	-.20**
Divorce in 5 years	48	19	50	22	-.05
Fewer good jobs	52	26	53	25	-.05
Victim of crime	36	23	40	23	-.09*

Note. *N* = 482-499.

\* *p* < .05. \*\* *p* < .005.

#### *Generality of the Effect Across Moods*

The mood-congruent judgment effect generalized across moods in these studies. Study 1 showed that the effect was present in a variety of specific emotion states. All three studies showed the effect operated in pleasant and unpleasant moods. Only Study 3 showed a mild asymmetry favoring unpleasant moods. Prior research has found similar asymmetries (e.g., Erber, 1991), no asymmetries (Mayer et al., 1988) and opposite asymmetries (Forgas & Bower, 1987; Forgas & Moylan, 1987); we discuss this further in the section reconciling findings of specificity with the general effects we found.

#### *Generality of the Effect Across Tasks*

The mood-congruent judgment effect generalized across a variety of tasks. Probability judgments, person perception, subjective saliency, and categorization judgments, all showed mood-congruent judgment with natural mood. A factor analysis indicated that the covariance relations among the tasks were consistent with the idea that they are all caused by the same mood-congruent judgment effect. That is, a Pleasant-Unpleasant Mood-Congruent Judgment factor emerged that included substantial numbers of items from each task. This factor analysis also ruled out response bias as a cause of the effect. The first factor of the mood-congruent tasks was a Response Bias factor that was entirely uncorrelated with mood; furthermore, because it preceded the second, Pleasant-Unpleasant Judgment factor, it partials out all response bias variance from that second Pleasant-Unpleasant Judgment factor. Other analyses indicated that mood-congruent judgment is largely independent of optimism-pessimism, the latter being more closely associated with mood itself.

#### *Redefining the Effect to Reflect Its Generality*

Mood-congruent judgment could benefit from a redefinition that emphasizes its generality. One suggestion is the following:

The mood-congruent judgment effect states that people's judgments are sensitive to the correspondence between the pleasant-unpleasant quality of their mood and the pleasant-unpleasant connotations of their ideas. An affective match between a person's moods and ideas increases the judged merit, broadly defined, of those ideas. For example, mood-congruent concepts will be judged richer in their associations, mood-congruent attributes will be judged as more applicable, mood-congruent examples of categories will be judged as more typical, and mood-congruent causes and outcomes will be judged more probable.

#### *Reconciling the General and Specific Findings Concerning the Effect*

The results of the present study unequivocally support the generality of the mood-congruent judgment effect. Yet, a number of studies have found evidence that the effect occurs only under limited conditions. It is possible, however, that the two conflicting perspectives can be reconciled.

One set of conflicting findings may have to do with experimental power. Many earlier studies in the cognition-and-affect literature used techniques that almost certainly limited their statistical power (Mayer & Bower, 1985). Such studies may have been powerful enough to detect only stronger effects. The statistical power of the present studies was high because both the pleasant-unpleasant judgment and mood scales we used have undergone several revisions according to item-analytic and factorial procedures (Mayer & Bremer, 1985; Mayer et al., 1988; Mayer & Volanth, 1985), and because of the large sample sizes we used. The present studies found that the effect was general, but not that it was necessarily equivalently strong in all instances. Consider self-relevant versus non-self-relevant mood-

congruent judgment. Self-relevant judgments are almost certainly more extreme in their valence relative to parallel non-self-relevant judgments, because people generally care more about what influences them personally. Therefore, self-relevant judgments may have been detected previously because they were more dramatically pleasant or unpleasant than non-self-relevant judgments. This analysis is particularly provocative because of its potential theoretical implications. For example, it could mean that the attributional version of learned helplessness (Abramson et al., 1978) is no more than a case of mood-congruent judgment, special only insofar as the attributions are strongly valenced. Such speculation is consistent with the recent findings that the more negative the learned-helplessness attribution, the more likely it is to occur among the depressed (i.e., the causality attribution is present but weaker; Benassi, Sweeney, & Dufour, 1988).

A second set of conflicting findings may be reconciled when the operation of mood-management processes in addition to mood-congruent judgment is allowed for. Consider the issue of mood asymmetry. Forgas and his colleagues (Forgas & Bower, 1987; Forgas & Moylan, 1987) have reported stronger effects in happy moods. In one such study, researchers used subjects who had seen happy or sad movies (Forgas & Moylan, 1987). Perhaps a mood-regulatory process had come into play for the sad-movie patrons that reduced the movies' sad effects (e.g., thinking "its only a movie" or "what a good movie"; cf. Forgas, 1991; Isen et al., 1978; Mayer & Gaschke, 1988). Consistent with this, all subjects reported themselves in more happy than sad moods. Such mood regulation would be less apt to occur in the present studies because of the absence of any specific, transient, mood-altering event. According to the present analysis, the mood-congruent judgment effect is symmetrical, but other asymmetrical processes such as mood regulation may at times overrule it (Forgas, 1991; Isen et al., 1978).

### *The Nature of the Effect and a Consideration of Mechanism*

The apparent generality of the mood-congruent judgment effect suggests it is caused by a basic-level cognitive process. All of the above tasks can be said to involve memory, which is known to be mood congruent (Blaney, 1986; Mayer et al., 1990), so there is evidence in favor of a memory explanation. Yet mood-congruent memory is asymmetrical, whereas judgment is not. It is possible that apparent differences between memory and judgment may be due to different conditions of observation (e.g., mood inductions vs. natural mood). The judgment tasks used here have begun to be used successfully in the laboratory (Ketelaar, 1989; Farragher, 1990), but although the tasks perform overall as expected in that context, there have been no investigations of the symmetry of the effect with induced mood, to date.

The following two nonmemory explanations of mood-congruent judgment are also possible:

1. *Category-shift explanation.* The first nonmemory explanation is that the judgment effect may be due to shifting category boundaries (Mayer, 1986). This view assumes that individuals in pleasant or unpleasant moods have equivalent memories, but they categorize them differently. Consider a

hypothetical situation in which two individuals, one happy and one sad, are asked the likelihood of "a baby being born in good health," and both think back to the same five births. Of the five births, babies at the extremes of the health continuum will be viewed similarly by the two individuals in differing moods. Both will view the completely healthy baby as being born in good health and the baby with intracranial bleeding as being born in bad health. In the intermediate range, however, differing perspectives are possible. A baby born with jaundice may appear in good health to the happy person because jaundice is controllable and quickly curable; in contrast, the baby born with jaundice may appear in bad health to the sad person because jaundice might lead to lingering long-term negative consequences. This difference in interpretation will lead to differences in counting past babies born in good health and therefore in predicting future healthy babies. The very differences in interpretations hypothesized to underlie the category-shift explanation may be due to the relational meaning the emotions convey (Plutchik, 1980; Schwarz & Clore, 1983). Pleasant moods establish cooperative relationships with the environment in which one's enjoyment of positive features will be enhanced; unpleasant moods indicate bad relations and in that context amplify the nuisance quality (or worse) of negative events.

2. *Felt-sense memory search explanation.* A second way to explain the effect is that pleasant-unpleasant judgment should involve memory searching but that people conduct incomplete searches. Although people may begin to search memory, their search never progresses very far. The individual is comparable to an unmotivated civil engineer who, when asked how deep is a well, looks down into it and says, "Gee, it's pretty dark down there—it might go all the way to China." When asked the likelihood of a downturn in the economy, people "feel" the negativity of bad economic influences rather than actually recalling and tabulating them. The extremity of the concept's feeling is then confused with the probability or plausibility judgment itself. The extremity of the feeling of the concept will also, however, be readily confused with mood itself. People judge merely on the basis of their feeling about the concept—and this feeling is augmented through confusion with their mood. Determining which of these several mechanisms account for the effect will require further experimentation.

### *Mood-Congruent Judgment as a General Influence on Personality*

If everyday natural mood has such a general effect on mental processing, how is it integrated into an individual's personality? The mood-congruent judgment effect probably serves important roles in integrating planning, motivation, and performance. Mood swings may promote a wider range of planning because the related mood-congruent judgments will bring about alterations in likelihood assessments as a person's mood changes from good to bad and back again. An individual experiencing such mood swings might consider a broader range of future life contingencies and plans (Mayer, 1986). Mood-congruent judgment may also help with transitions from one goal to the next. When an individual attains a goal, mood-congruent judgment would make further gains seem more likely

for the happy, successful individual, thereby making further effort appear more attractive according to the precepts of utility theory (Galanter, 1962). Similarly, an unsuccessful individual may find that his or her sadness is protective of further despair. For example, a person who desires but fails to attain a goal may think sadly of how much work the goal entails and how its rewards are not so great. This sour-grapes attitude permits the person to experience less pain when failing to attain the desired goal.

Of course, such judgment-mood links may interfere with clear reality perception, and people may attempt to control such processes within themselves. At the crudest level, individuals may repress or deny emotions altogether (Taylor, 1984; Weinberger, Schwartz, & Davidson, 1979). In such a case, there is the interesting possibility that assessing mood-congruent judgment could provide a means of assessing such repressed emotions (Mayer & Bremer, 1985; Mayer & Volanth, 1985). At a more sophisticated level of personality integration, some individuals may acknowledge a feeling but turn a cold shoulder to it, minimizing or suppressing it. Such cold processors (Mayer, Stevens, Bryan, & Nishikawa, 1992) may try to separate judgment from mood when, for example, processing technical materials such as economic forecasts. In contrast, hot processors (who attend to or even intensify their feelings) may gain from the specific information such emotions provide. And, at a still higher level of personality integration, some emotionally intelligent people (Salovey & Mayer, 1990; Mayer & Salovey, in press) may fully experience the effect, while simultaneously knowing it will influence them intellectually, and adjust their cognitions accordingly. Although mood-congruent judgment will be operative at a basic level in all these cases, the influences may be compensated for by forms of mood regulation. It may be very revealing of mood management to know who shows the effect, who adjusts for it, and why.

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