

Personality, Mood, and Cognitive Processing of Emotional Information: Three Conceptual Frameworks

Cheryl L. Rusting
State University of New York at Buffalo

This article reviews evidence for the roles that mood states and personality traits play in the processing of emotion-congruent information across different cognitive tasks. Evidence is reviewed for 3 emotion-congruency frameworks, each summarizing a different route to emotional processing: the traditional approach, a moderation approach, and a mediation approach. Most of the traditional literature includes studies that examine the effects of moods and traits on emotional processing separately; these studies have yielded some inconsistent findings. The moderation and mediation approaches offer potential solutions to the lack of consistency obtained in the traditional literature by allowing for the combined effects of personality traits and mood states on the processing of emotional information. The moderation approach suggests that mood states interact with individual differences in emotion-relevant personality traits to influence emotion-congruent processing. The mediation approach suggests that personality traits predispose individuals to certain mood states, which then influence emotional processing. These approaches provide a framework for understanding the literature and a starting point for future research on emotion-congruent processing.

A good deal of research and theory has focused on how people differentially process emotional stimuli. One popular notion is that individuals preferentially process emotional stimuli that are congruent in emotional tone with either current mood states or stable personality traits. Much of this research is based on the mood-congruency hypothesis, which predicts that individuals should better learn and remember material consistent with their current mood state than material inconsistent with their mood. When people are in good moods, they are thought to be “wearing rose-colored glasses,” tending to notice and interpret events in an overly positive light (Niedenthal, 1992; Niedenthal, Setterlund, & Jones, 1994). When in bad moods, however, everything seems hopeless and people tend to notice and interpret events negatively.

A similar hypothesis predicts trait-congruency. Individual differences in emotional processing may also be due to relatively stable personality traits that predispose certain individuals to process information that is congruent with those traits. Several studies have suggested that individuals selectively attend to, retrieve, and reconstruct events so that they are consistent with their underlying personality traits (Bargh, Lombardi, & Higgins, 1988; Bargh & Pratto, 1986; Higgins & King, 1981; Higgins, King, & Mavin, 1982; Kelly, 1955; King & Sorrentino, 1988; Sedikides & Skowronski, 1990; von Hippel, Hawkins, & Narayan, 1994). This selective processing may be especially apparent for traits that include an emotional component (e.g., trait anxiety, trait anger, or subclinical depression). People who score

high on positively toned emotional traits are thought to notice and remember pleasant material, whereas those who score high on negatively toned emotional traits are thought to notice and remember unpleasant material.

In this article I focus on the roles that temporary mood states and stable personality traits play in the selective processing of emotional information. Although conceptually related, the mood-congruency and trait-congruency literatures have remained somewhat separate. Previous reviews on emotional information processing have examined these literatures separately, tending to focus on either momentary mood states (e.g., Blaney, 1986) or on long-term clinical disorders and stable personality traits (e.g., Dalgleish & Watts, 1990; M. W. Eysenck, 1992; Foa & Kozak, 1986; Mathews & MacLeod, 1994). Furthermore, individual studies examining the effects of these variables on the selective processing of emotional information have rarely included measures of both temporary moods and stable traits. In the present review I attempt to merge these two literatures to explore how personality traits and mood states might together influence emotional information processing across many different cognitive tasks. Because mood states and personality traits are each thought to influence emotional processing, their combined effects may better delineate the underlying processes responsible for the differential processing of emotional stimuli.

The review is organized around three conceptual frameworks, each summarizing a different route to emotional processing through mood states and personality traits. The first approach, presented in Figure 1, suggests that temporary moods and stable traits each have independent effects on emotional processing. Most of the research examining emotion-congruency effects falls under this rubric. As is shown later, studies examining separate mood-congruency and trait-congruency effects have yielded some inconsistent findings, which have sparked an interest in explaining the conditions under which mood and trait effects occur. The other two approaches considered in this article

I would like to thank Randy Larsen, Susan Nolen-Hoeksema, Christopher Peterson, and David Winter for their extremely helpful and insightful comments on earlier versions of this article.

Correspondence concerning this article should be addressed to Cheryl L. Rusting, Department of Psychology, Park Hall, State University of New York at Buffalo, Buffalo, New York 14260-4110. Electronic mail may be sent to crusting@acsu.buffalo.edu.

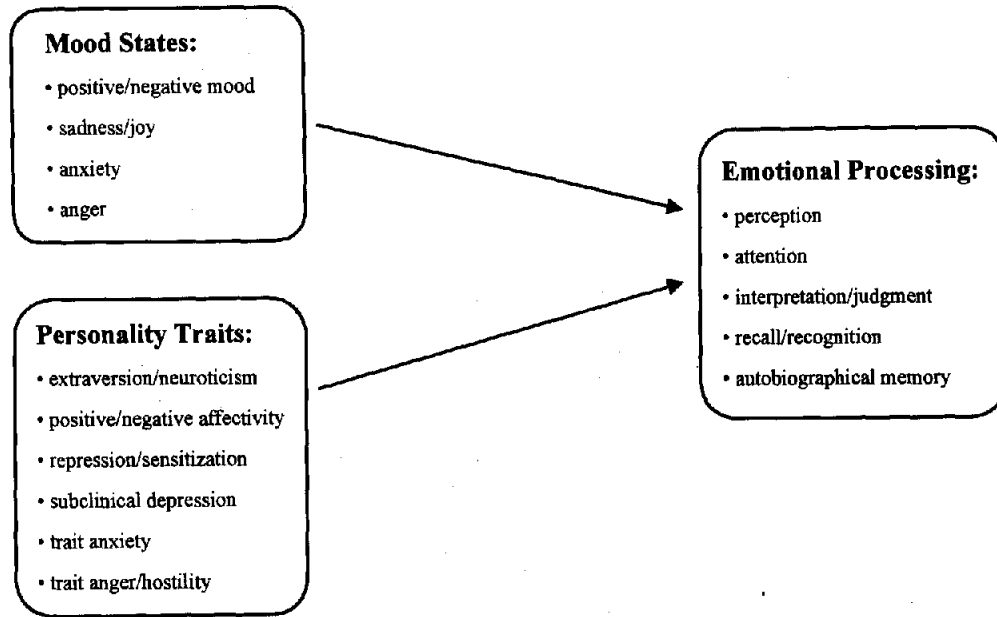


Figure 1. The traditional approach, in which personality traits and mood states have separate influences on emotional processing.

represent more complex mechanisms that combine the effects of moods and traits on emotional processing. The second approach, presented in Figure 2, suggests that personality traits may moderate the relationship between mood states and emotional processing; some individuals may exhibit mood-congruent processing, but others may exhibit mood-incongruent processing of emotional cues, depending on their personality traits. The third approach, presented in Figure 3, suggests that the effects of personality on processing of emotional cues may be mediated through current mood state; the effects of personality on emotional processing may be indirect, such that personality makes one susceptible to certain mood states, which, in turn, lead to mood-congruent processing of information.

The main aim of this article is to review and evaluate the evidence favoring each of the three routes to emotional processing presented in Figures 1, 2, and 3. The moderation and mediation approaches may offer potential solutions to the lack of consistency obtained in the traditional literature where the effects of moods and traits on cognition have been considered separately. A secondary aim is to integrate the findings from the somewhat separate mood and trait literatures, and to note areas where further research is needed. Although there is some overlap, the mood and trait literatures have tended in some cases to use different methodologies and focus on different emotional domains. With the two literatures considered together, methodological and theoretical gaps can be identified.

Following a brief description of the mood state and personality trait variables most frequently cited in the literature, I describe several theories that have been proposed to explain individual and situational effects on processing of emotional information. I then review evidence for each of the three routes to emotional processing described above (the traditional approach, the moderation approach, and the mediation approach). Because emotional processing theories predict effects at various levels

of the cognitive system, I discuss the effects of moods and traits on attention, perception, judgment/interpretation, recall and recognition, and autobiographical memory for each framework. Finally, on the basis of the material reviewed, I draw conclusions regarding the evidence for the influence of mood states and personality traits on emotional information processing.

Mood States and Emotional Personality Traits

Figures 1, 2, and 3 summarize the effects of a variety of different mood states and personality traits on emotional processing. Many studies investigating emotional processing have focused on personality variables corresponding to the propensities to experience these emotions. These personality variables include the broad traits of positive/negative affectivity and extraversion/neuroticism, and affect-specific traits such as trait anxiety, trait anger/hostility, and subclinical depression. They also include traits related to the tendency to regulate or change one's negative emotional thoughts and experiences.

Broad Moods and Traits

Much of the personality and emotion literature focuses on general positive or negative mood, and the broad traits of positive/negative affectivity and extraversion/neuroticism. The traits of positive and negative affectivity are often defined as stable individual differences in the tendencies to experience positive and negative mood states (e.g., Watson & Clark, 1984; Watson, Clark, & Tellegen, 1988).¹ In several studies researchers

¹ Researchers vary in their measurement of positive and negative affect. For example, in their measure of negative affectivity, Watson, Clark, and Tellegen (1988) included only "high activation" negative moods, such as *hostile* and *nervous*. Others, however, have measured negative affect with terms descriptive of unpleasant affect, such as *sad*, *unhappy*, and *gloomy* (see Larsen & Diener, 1992, for a discussion).

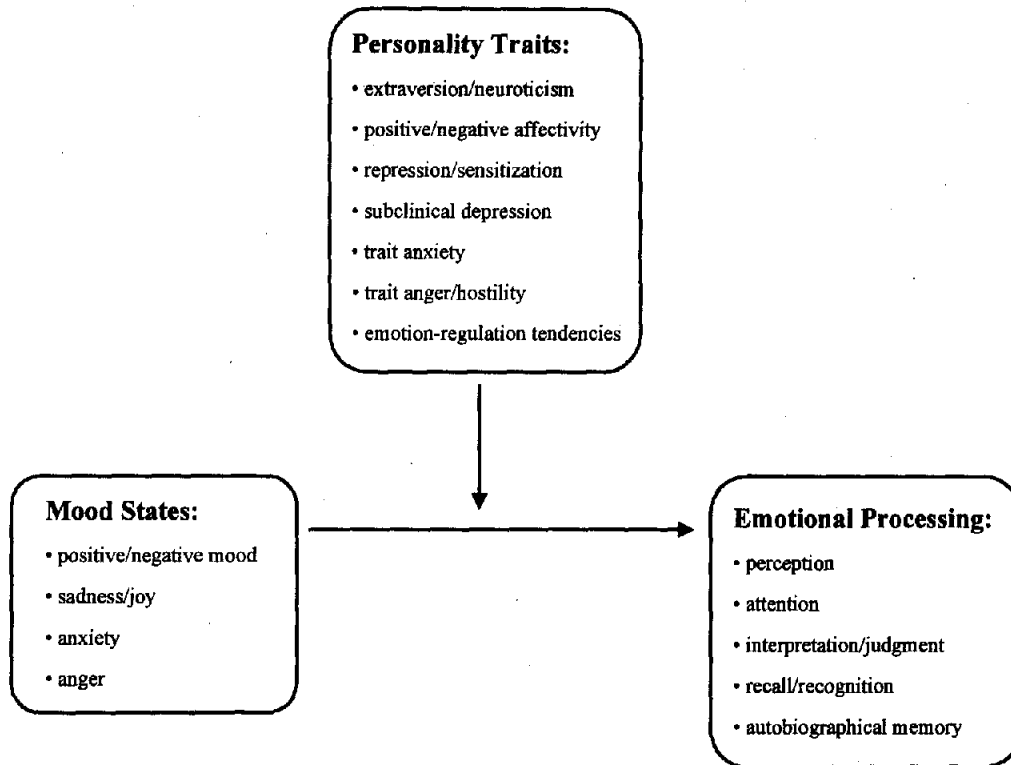


Figure 2. The moderation approach, in which mood-congruency effects depend on individual differences in emotional personality traits.

have demonstrated that individuals' positive and negative mood experiences are fairly consistent over time and across situations. Scores on measures of positive and negative affect are stable over time in experience-sampling and daily diary studies (Diener & Larsen, 1984; Epstein, 1983) and in longitudinal studies (Ormel & Schaufeli, 1991; Watson & Slack, 1993; Watson & Walker, 1996). These differences persist not only across short time spans from day to day, but also for longer spans of up to

7 years (Ormel & Schaufeli, 1991; Watson & Walker, 1996). Individual differences in positive and negative affect are also consistent across situations (e.g., Diener & Larsen, 1984; Watson & Clark, 1984). The traits of positive and negative affectivity therefore appear to be indicators of stable propensities to experience positive and negative mood states, respectively.

Several researchers have noted similarities between positive and negative affectivity and the personality traits of extraversion

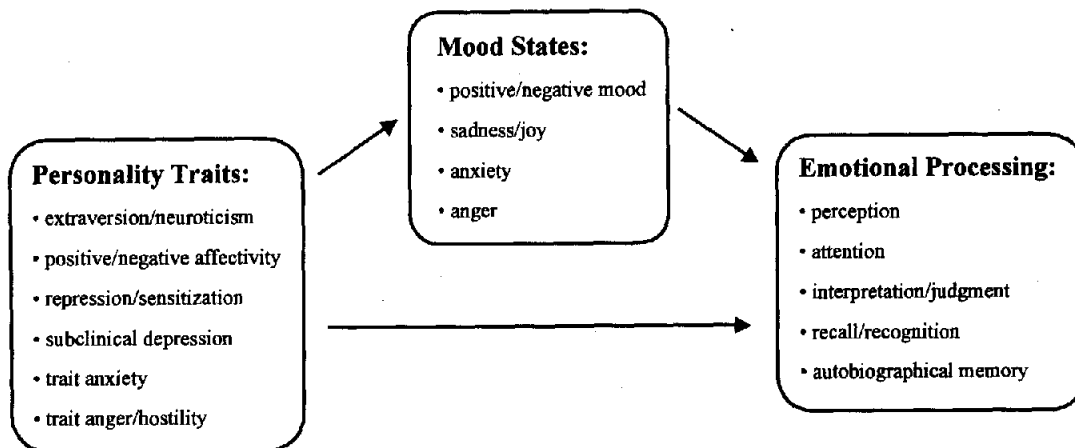


Figure 3. The mediation approach, in which personality traits predispose individuals to experience certain moods states, which then influence emotional processing.

and neuroticism. Extraversion concerns individual differences in the preference for social interaction and lively activity; neuroticism represents individual differences in proneness to unpleasant emotional experience (H. J. Eysenck & Eysenck, 1985). In their classic book, Wessman and Ricks (1966) were among the first to systematically describe the differential relationships between personality and the experiences of happy and unhappy individuals. They described their happy participants as "more warm, friendly, and comfortable in close relationships" (p. 111; traits very similar to extraversion), and they described their unhappy participants as "more isolated and more given to self-preoccupation and self-doubt" (p. 111; traits very similar to neuroticism). Several more recent correlational studies have confirmed these relationships between extraversion and positive affect and neuroticism and negative affect (e.g., Costa & McCrae, 1980; Gilboa & Revelle, 1994; Hepburn & Eysenck, 1989; Meyer & Shack, 1989; Rusting & Larsen, 1995; Tellegen, 1985; Watson & Clark, 1992b). Some researchers have even used the terms *extraversion/positive affectivity* and *neuroticism/negative affectivity* interchangeably. For example, Tellegen's (1985) Positive Emotionality factor of personality is comprised of high scores on well-being and social potency, and resembles the extraversion factor identified in other personality research. Similarly, Watson and Clark (1992b) concluded that "individual differences in personality and emotionality ultimately reflect the same common, underlying constructs" (p. 468). The broad dimensions of positive affectivity and extraversion, and negative affectivity and neuroticism, may represent similar underlying tendencies with respect to positive and negative mood experience, and they may therefore involve similar sensitivities to positive and negative emotional cues in the cognitive domain.

Specific Moods and Traits

Many studies of emotion congruency have focused on more specific affective states and traits. These include mood states such as sadness, anger/hostility, and anxiety, as well as their trait counterparts of subclinical depression, trait anger/hostility, and trait anxiety. A distinction between the broad positive and negative emotional traits discussed above and more specific emotional states and traits is important in discussing the emotion-congruency literature because different findings are sometimes obtained, depending on the specificity of the emotions investigated (e.g., Niedenthal et al., 1994).

In addition to long-term stable tendencies to experience the broad emotions of positive and negative affect discussed above, emotional traits may refer to individual differences in the propensities to experience more specific emotions. Not only are individuals quite stable in their reports of broad positive and negative affect, but reports of specific emotions, such as anxiety, sadness, and anger, are consistent over time as well (e.g., Berenbaum, Fujita, & Pfennig, 1995). Those who differ in proneness to anxiety or nervousness should score high on measures of trait anxiety. Individuals who are particularly susceptible to anger should score high on measures of trait anger/hostility. In a similar vein, individuals who are prone to experiencing sadness should score high on measures of depression. Because such individuals are not thought to be clinically depressed, throughout this article they are referred to as subclinically depressed.²

It is important to note that although specific emotional traits

are different in many ways (e.g., different appraisal patterns, action tendencies, etc. are associated with their accompanying emotional tendencies), they share several common features. First, some models of emotion subsume specific negative emotions under one broad negative affect dimension (e.g., Russell, 1980; Watson & Tellegen, 1985). Second, specific negative affect measures tend to correlate strongly, which suggests a broader underlying negative affect factor (e.g., Gotlib & Meyer, 1986; Kendall & Watson, 1989). Watson and Clark (1992a) provided some evidence for a hierarchical model, in which specific negative affects may be thought of as correlated, yet distinguishable, emotions. The emotion-congruency literature reviewed in this article includes both levels of this emotional structure.

Traits Related to Emotion Regulation

Another category of traits that plays a role in the emotional processing literature involves dispositions related to the regulation of emotion. These traits refer to individual differences in attempts to eliminate, change, or maintain one's emotional state by attending to or avoiding emotional stimuli.

The idea that people may consistently avoid unpleasant or disturbing cues is apparent in the concept of *perceptual defense*, which was part of the "New Look" in perception that took place in the 1950s (Bruner & Klein, 1960; see Erdelyi, 1974, for a review). In a classic series of experiments, Bruner and Postman (1947a, 1947b, 1949, see also McGinnes, 1949) found higher recognition thresholds for disturbing words than for neutral words. This research was heavily criticized at the time (e.g., Howes & Solomon, 1950), but Erdelyi (1974) demonstrated several flaws in these criticisms.

Individual differences in the extent to which people habitually focus on or away from such disturbing or threatening stimuli are captured by theories of repression/sensitization (Byrne, 1964; Eriksen, 1966; see Krohne, 1993, for a review). *Repressors* are individuals who attempt to avoid or draw attention away from threatening stimuli. *Sensitizers*, on the other hand, continuously monitor the environment for the presence of such stimuli. Because repression/sensitization may have a great impact on information processing, some research in the emotional processing literature has centered on the relationship between repression/sensitization and the processing of threatening information.

It should be noted that sensitization often correlates positively with other measures of negative affect, and it therefore may not represent a construct distinct from such measures. Watson and Clark (1984) suggested that repression (and other measures of individual differences in defensive style) may be characterized by a broad negative affect component. Others have demonstrated that Byrne's (1961, 1964) repression/sensitization scale correlates very strongly (above .90) with trait anxiety measures, which suggests that repression/sensitization (as measured by

² Studies of depression and emotion-congruency have often used non-clinical undergraduate samples. Coyne (1994) has recently argued that the use of depression inventories on such samples may measure a dispositional tendency toward distress or chronic dysthymia, rather than clinical depression per se. I therefore use the term *subclinical depression* to refer to depression measures from nonclinical undergraduate samples throughout the article.

Byrne's scale) is actually trait anxiety (Holmes, 1974; Milimet & Cohen, 1973; Tudor & Holmes, 1973). In more recent investigations of repression/sensitization, researchers have combined a measure of trait anxiety with the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964) to measure repression (Weinberger, Schwartz, & Davidson, 1979). Because repression/sensitization is strongly related to trait anxiety/negative affectivity, any trait-congruency effects obtained for repression/sensitization in the emotional processing literature may be interpreted as evidence for the influence of broad negative affectivity on emotional processing.

Another literature relevant to the regulation of emotion has more recently emerged. This literature includes investigations of individual differences in the ability and the habitual use of strategies to directly change, maintain, or eliminate emotional states. Mayer and colleagues have suggested that such abilities depend on individual differences in *meta-mood experience* (Mayer & Gaschke, 1988; Mayer, Salovey, Gombert-Kaufman, & Blainey, 1991; Mayer & Stevens, 1994; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). Meta-mood experience refers to the continual process whereby individuals reflect upon their feelings and monitor, evaluate, and regulate them. Salovey et al. (1995) developed a meta-mood scale that assesses individual differences in people's tendencies to attend to their emotional states, discriminate clearly among them, and regulate them. Along the same lines, Catanzaro and Mearns (1990) devised a questionnaire to measure individuals' *negative mood regulation expectancies*, which refers to individual differences in the belief that one can successfully regulate negative mood states. Recent studies have demonstrated that these expectancies are significantly related to successful coping and subsequent negative emotions (Kirsch, Mearns, & Catanzaro, 1990; Mearns, 1991). Because meta-mood experience and negative mood regulation expectancies play a major role in emotional experience, an individual's standing on these mood regulation dimensions should have an impact on the processing of emotion-congruent information. Motivations to change or maintain pleasant or unpleasant mood states have played a significant role in recent theories of emotion congruency.

Summary of Emotion-Relevant Traits

In summary, there is reliable evidence for stable individual differences in the propensities to experience certain emotional states. Many stable personality traits are related to the frequency and/or intensity of short-term mood states. Such relationships have been obtained for broad traits, such as extraversion and neuroticism, and for affect-specific traits, such as trait hostility, anxiety, and subclinical depression. The effects of traits and moods on emotional processing may therefore be more similar than is suggested by the separate literatures on mood-congruent and trait-congruent processing.

In addition, some dispositions, such as repression/sensitization and negative mood regulation tendencies may influence the availability of negative associations in memory and/or limit negative mood experience. These traits should therefore also play a significant role in the processing of emotional information. In the next section, this possibility is further discussed, along with a brief description of different emotion-congruency theories.

Emotion-Congruency Theories

Several theories have been proposed to explain the underlying mechanisms for mood-congruency and trait-congruency effects. These range from associative network theories, which focus on the effects of temporary mood states, to self-schema theories, which focus on more enduring memory structures.

Network Theory of Affect

Many of the studies within the mood state and personality trait literatures on emotion-congruent processing have been guided by associative network theories. According to the general framework of these theories, memory is composed of networks of associated concepts that have previously been encoded and organized in memory. Clusters of associated concepts are sometimes referred to as memory *nodes* (Anderson, 1976; Bower, 1981; Collins & Loftus, 1975). Bower (1981) and Bower and Cohen (1982) proposed a network model that incorporates emotional states, called the network theory of affect. According to this theory, emotions impose a fundamental organizational structure on information in memory. Each specific emotion, such as sadness, anger, joy, or fear, is represented by a particular emotion node within a cognitive network consisting of emotion-related memories and cognitions. When a particular node is activated, this activation is channeled through its network of connections to evoke emotion-related memories and cognitions.

Mood-congruency is one of the major hypotheses deriving from the network theory of affect. When an individual is in a good mood, that individual should more easily notice and retrieve pleasant material from memory, because pleasant associations have been activated within the emotional network. When in a bad mood, negative thoughts and associations should more easily come to mind. Such preferential processing of mood-congruent material should affect many different kinds of cognitions (e.g., attention, interpretation, and memory retrieval), and should therefore occur across many different kinds of cognitive paradigms.

Although Bower's (1981) model was originally formulated to account for the effects of mood states on cognitive processing, several theorists have hinted that the model could be easily extended to account for the effects of stable personality traits (e.g., Clark & Teasdale, 1985; Mayer & Volanth, 1985; Teasdale & Russell, 1983). For example, Clark and Teasdale (1985) wrote,

Individuals are likely to differ in the way particular words, sentences, and images have been associated with particular mood states during their past life. Thus, the associative network model of mood and memory implies that the differential effects of mood on the accessibility of many positive or negative cognitions will vary considerably, both between individuals and between cognitions. (p. 1596).

Individuals could differentially develop well-elaborated associative networks surrounding particular emotion nodes due to their heightened susceptibility to those emotions. For example, the associative network for an individual high in negative emotionality might have many interconnections among negative emotional concepts, events, and images. Hedonic information consistent with these traits should attract attention and be easily brought

to mind because of the multiple pathways and strong interconnections among trait-congruent constructs. Such personality effects, however, may depend on temporary emotional states to activate these memory associations.

Emotional Self-Schemas

Emotion-congruent processing could also be the result of stable schemas relevant to certain emotions. Schemas are organized knowledge structures that represent past experience and that function to interpret new information (Bartlett, 1932/1995; Markus, 1977; Taylor & Crocker, 1981). According to this approach, significant experiences from the past contribute to a cognitive structure composed of memories, attitudes, and images, which influences perceptions and reactions to life's ongoing events.

Beck and colleagues have applied the schema notion to an understanding of clinical depression and anxiety (Beck, 1976; Beck, Rush, Shaw, & Emery, 1979; Kovacs & Beck, 1978). According to Beck's cognitive model, those who are at risk for depression as adults have acquired dysfunctional self-schemas (including negative views of the self, the world, and the future) through negative experiences in childhood. When exposed, as adults, to negative events that in some way "match" the earlier experiences on which the schemas were based, these cognitive structures become reactivated. As a result, attention tends to be directed to features consistent with the schema, and perception, thought, and memory tend to be dominated by negative themes related to the schema. The focus on negative schemas is also evident in other models emphasizing cognitive variables involved in depression (Abramson, Metalsky, & Alloy, 1989; Ingram, 1984; Kuiper, Olinger, & MacDonald, 1988; Rehm, 1977; Teasdale, 1983, 1988).

Beck and colleagues have proposed a similar theory for clinical anxiety (Beck & Clark, 1988; Beck & Emery, 1985). In essence, the theory suggests that individuals who become clinically anxious are characterized by schemas relating to personal vulnerability and danger. When these schemas are activated by a stressful life event, they are thought to influence the processing of threat-related information, such that threatening material captures attention, and is more easily comprehended and retrieved. Thus, similar to Bower's network theory of affect, Beck's model predicts emotion-congruent processing effects on a wide variety of attention, judgment, and retrieval tasks.

Construct Accessibility and the "Cognitive Loop"

Isen and colleagues (Isen, Shalke, Clark, & Karp, 1978) have proposed a "cognitive loop" hypothesis that involves automatic accessibility of positively valenced cognitive structures. They suggested that thoughts associated with a positive mood (or the event leading to the positive mood) might cue other positive material in memory, making that positive material more accessible. This accessed positive material may then prolong positive thoughts and associations by keeping them in mind, which then should prolong the positive mood state. The accessibility of positive thoughts might also contribute to behavior that elicits a positive response, thus contributing to the maintenance of the positive mood. A similar cognitive loop could occur for negative mood states, in which negative moods and associations are

brought to mind and one gets "stuck" in a cycle of negative thoughts and associations.

In essence, Isen's (1985, 1987) approach is an extension of associative network models to allow for motivational effects on emotional processing. That is, this approach integrates mood-maintenance and mood-regulatory variables with the formation and activation of stable cognitive structures. Isen (1985, 1987) suggested that for most people positive material is better integrated and more extensive in memory than negative material, which would allow positive affect to cue a wider range of associations than negative affect. One possible contributing factor to these structural differences is the motivation to change unpleasant emotional states. That is, people try to maintain positive mood states by thinking about positive events and associations, but they try to eliminate negative mood states by focusing attention away from negative events and associations.³ The continued use of such strategies in response to positive and negative mood states is thought to contribute to the creation of elaborate positive cognitive structures and limited negative cognitive structures in memory (Isen, 1985). Thus, for most individuals, positive thoughts and associations should be more easily primed and more accessible than negative thoughts and associations. These structural differences are thought to lead to asymmetrical effects of positive and negative mood on cognition.

Affect Infusion Model

A unique contribution of the affect infusion model, developed by Forgas (1994, 1995), is that it specifies the circumstances under which mood-congruency effects occur. According to this model, there are four different kinds of strategies involved in making judgments: (a) direct access of a preexisting evaluation, or directly retrieving previously formed attitudes from memory; (b) motivated processing toward a preexisting goal, which involves accessing information that will move a person toward some goal (e.g., motivations to regulate mood states); (c) heuristic processing, which involves using "shortcuts" to construct a judgment; and (d) substantive processing, which involves constructive processing of information and reliance on associative processes. The model suggests that mood-congruent processing occurs only during heuristic and substantive processing. During direct access and motivated processing, however, mood-incongruent processing may occur. This is because these strategies involve accessing previously formed attitude and goal structures in memory that may be less susceptible to the effects of current mood state; they may function to initiate a mood-regulatory process that brings current judgments more in line with preexisting goals and attitudes.

These preexisting goal structures may represent individual differences in the use of emotion-regulation strategies, expectations regarding emotional experience, or both. For example, some people might be very motivated to reduce unpleasant emotional states, and they might try to think about pleasant things to reduce the negative mood. Such mood regulation could help explain the asymmetry between positive and negative mood ef-

³ A similar prediction arises from the hedonic contingency model (Wegner & Petty, 1994), which also proposes that positive moods foster a strong motive to maintain the mood state.

fects on cognition that is often obtained in studies of mood congruency (Forgas, 1995).

The affect infusion model also specifies various task and target characteristics that determine which of the four judgmental strategies will be used. For example, when faced with a complex or ambiguous judgment target, a person should engage in more substantive processing, and mood-congruency effects should be more pronounced. When faced with a familiar target, on the other hand, a person should rely on direct access. The combination of individual, target, and situational factors thus plays a central role in the determination of processing strategies, which, in turn, determine whether mood-congruency effects will occur.

Integration of Theories

The dominant perspective within the emotion-congruency literature has been to investigate the effects of moods and traits on cognition separately, perhaps due to the different theories that predict such effects. For example, Bower's (1981) network theory has been the dominant perspective in the mood-congruency literature because of its focus on the activation of emotion nodes by temporary mood states. On the other hand, schema theories have been fairly popular in the depression and anxiety literatures, and these theories tend to focus on more enduring memory structures. Although the separateness of these theories and their specification of mood versus trait emotional processing mechanisms may have been unintentional, the result is that the mood-congruency and trait-congruency literatures have remained largely unintegrated.

Although each theory suggests a slightly different underlying structure responsible for emotion congruency, they all share some common characteristics. First, all of the theories suggest that mood-congruency and/or trait-congruency effects should occur across many levels of the cognitive system (e.g., attention, judgment, and memory), at least under some circumstances (e.g., during substantive processing). Second, most of the theories suggest that parts of a stable organization of emotion-relevant thoughts and associations are brought to mind only in the presence of an emotion-eliciting circumstance. That these associations are activated by temporary events and situations suggest that it is necessary to measure both stable underlying dispositions and temporary states when investigating emotion congruency. Third, several of the theories posit a motivational component that may be involved in obtaining emotion-congruency effects, which leads to asymmetrical effects of positive and negative moods. When experiencing an unpleasant emotional state, some individuals may regulate their emotional state by retrieving pleasant memories, which would yield a weak or opposite congruency effect for negative emotional states.

An integration of the important concepts from emotion-congruency theories suggests that some combination of temporary mood states and stable individual differences should best predict emotion-congruency effects. In the next section of the article, evidence is reviewed for the three frameworks proposed previously. Whereas the first approach examines the evidence for the independent effects of traits and moods on cognition, the second and third approaches examine evidence for the combined effects of moods and traits.

Framework 1: The Traditional Approach

Most of the emotion-congruency literature has focused on examining either mood or trait effects on emotional processing. Therefore, research within the traditional approach may be divided into two categories: studies examining the effects of mood states, and studies examining the effects of personality traits, on emotional processing. Although several studies have obtained evidence for mood-congruency and trait-congruency effects, the evidence is less consistent than predicted by emotion-congruency theories.

Effects of Temporary Mood States on Emotional Processing

Most of the studies investigating the impact of mood states on emotional processing have been guided by predictions stemming from associative network theories of affect and memory (Bower, 1981; Bower & Cohen, 1982; Singer & Salovey, 1988). It will be recalled that such theories regard emotions as fundamental organizing categories in memory. When activated by an emotional state, these emotion nodes activate emotion-relevant cognitions, producing enhanced mood-congruent perception, judgment, and memory. Many of the studies testing this model provide results supportive of the mood-congruency hypothesis, but the literature is not as consistent as predicted by emotion-congruency theories.

Perception. Many researchers interested in mood-congruent perception have implemented word recognition tasks, in which emotion and nonemotion words are presented below recognition threshold and are gradually presented for longer periods of time until they can be recognized. Historically, this paradigm is couched in the "New Look" literature, in which recognition threshold was measured for the identification of "taboo" versus affectively neutral words (e.g., Bruner & Postman, 1947a, 1947b, 1949; McGinnies, 1949; Postman & Brown, 1952). In one of these experiments, Postman and Brown (1952) showed that participants given false feedback about their performance on a test were later more likely to recognize words congruent with that experience. Although this experiment was originally undertaken as an investigation of the relation between motives and perception, some authors have reinterpreted it as an investigation of congruency between mood and perception of valenced stimuli (e.g., Niedenthal et al., 1994).

More recent studies using this paradigm to investigate mood congruency effects have yielded less consistent findings. Some investigators have found mood-congruency effects only for positive mood (Challis & Krane, 1988), some have found such effects only for negative mood, and others have found no mood-congruency effects (Clark, Teasdale, Broadbent, & Martin, 1983; Gerrig & Bower, 1982). Small and Robins (1988) actually found evidence for mood-incongruency. Individuals in whom a negative mood was induced were faster at identifying both elated and dysphoric content words.

In another perceptual task, individuals are asked to make lexical decisions. Both words and nonwords are presented individually, and the time it takes to identify each stimulus as a word or nonword is measured. The results of studies using this task have also been inconsistent. Although some studies have found evidence for mood-congruency for both elated and de-

pressed moods (Niedenthal & Setterlund, 1994; Ruiz-Caballero & Bermudez-Moreno, 1992), others have found the effect only for elated mood (Challis & Krane, 1988), and still others have found no evidence for mood-congruent perception (Clark et al., 1983). The lack of consistent evidence for mood-congruent perception is therefore evident across different perceptual tasks.

Attention. Only a few studies have investigated the impact of mood states on attentional processes. Most of these studies have used an attentional task termed the *emotional Stroop task*. This task is a variant of the original Stroop task (Stroop, 1935), which involves facilitation or impairment in naming of ink color as a function of the congruence or incongruence of the meaning of a printed word with the color of the ink in which it is printed. In the original Stroop task, the color word was experimentally manipulated, and the participant was asked to name the ink color aloud. Incongruent words interfered with color naming, and congruent words facilitated color naming. This technique has been modified to investigate emotion-congruent processing by replacing the traditional color names written on the cards with emotionally valenced words. Slower naming of the colors of emotional words would indicate a difficulty in disengaging from emotional word content, or an increased attention to emotional words.

A few studies have used the emotional Stroop task to explore attention to mood-congruent material. In one of these studies, MacLeod and Rutherford (1992) used the Stroop paradigm to investigate the influence of anxious mood on attention to threatening information. They found evidence for mood-congruency; when state anxiety was high, participants were slower to name the colors of threat words than when state anxiety was low. Another study using this paradigm to investigate attentional processes during depressed and elated mood, however, did not find evidence supporting a mood-congruency effect (Gotlib & McCann, 1984, Study 2). Elated, depressed, and neutral moods were induced in three different groups of participants, and these participants then performed an emotional Stroop task containing positive, negative, and neutral words. People in the three mood induction groups all showed the same color-naming latencies; there was no evidence for mood congruency in attentional processing during depressed or elated moods. Because of the paucity of research investigating attentional processes in mood congruency, further studies are needed to determine whether the effect exists.

Interpretation/judgment. Many of the situations and events that are encountered in life are ambiguous. Therefore, a valid measure of differential emotional processing would involve observing how individuals interpret an ambiguous stimulus when more than one interpretation is possible, or the judgments individuals make about subjective events and experiences.

For example, some studies have used homophones as stimulus materials. Homophones provide ideal controllable stimuli because words can be selected that have only two possible interpretations, one emotional and the other neutral. The usual procedure in this task is to present a list of homophones auditorially, one by one, with a few seconds in between each presentation. Individuals are asked to simply write down the spelling of each word as it is heard.

Despite the appealing nature of this task, very few studies have examined the impact of mood states on the performance

of this task. Richards and French (1992) induced a state of anxiety and then had participants perform this task. The homophones had either a threatening meaning or a neutral meaning (e.g., *die* vs. *dye*). They found that participants who had undergone the anxiety induction were more likely to access the threatening meanings than the neutral meanings of the homophones. Halberstadt, Niedenthal, and Kushner (1995) used this paradigm to examine the effects of happy and sad moods on interpretation of happy/neutral or sad/neutral homophones, and the mood-congruent effect was found only for the sad mood condition. The authors speculated that happy participants may have placed pleasant interpretations onto many of the neutral homophones, which would obscure the expected mood-congruency effect.

Other ambiguity tasks have used a more open-ended approach, allowing individuals to impose their own interpretations onto an ambiguous stimulus. In an early study, Isen and Shalcker (1982) presented pleasant, unpleasant, and ambiguous slides to participants in positive, negative, or neutral moods. People in a positive mood rated all slides as more pleasant; people in a negative mood rated all slides as more unpleasant. These effects were most pronounced in ratings of ambiguous slides, suggesting that individuals in positive and negative moods overestimated the pleasant or unpleasant content of such ambiguous slides in a mood-congruent direction.

Another open-ended task involves inducing a mood state and then having participants write open-ended stories in response to an emotionally ambiguous cue. These studies have produced mood-congruency effects for depressed and angry mood states. When participants were feeling depressed, they wrote stories that were negative in tone (Weintraub, Segal, & Beck, 1974). When induced to feel angry, individuals wrote stories with more aggressive content in them than participants in a control condition (Rule, Taylor, & Dobbs, 1987; Rusting & Nolen-Hoeksema, 1998). Although the influence of positive mood states on the tone of open-ended stories is less studied, there is some evidence that positive mood influences the interpretation of other ambiguous cues (e.g., live social interactions or conflict in personal relationships) in a positive direction (Forgas, 1990, 1994; Forgas, Bower, & Krantz, 1984).

The same is also true for probability ratings and free-association tasks. Following the induction of a positive or negative mood state, unhappy individuals overestimate the probability of negative events (and underestimate positive events), whereas happy individuals overestimate the probability of positive events (and underestimate negative events; Johnson & Tversky, 1983; Wright & Bower, 1992). When people are presented with a word (or the first letter of a word) and asked to write the first word that comes to mind, individuals in a positive mood tend to write positively valenced words; those in a negative mood tend to write negatively valenced words (Madigan & Bollenbach, 1982, Study 2; Mayer & Hanson, 1995; Mayer, McCormick, & Strong, 1995; Mayer & Volanth, 1985).

There thus appears to be fairly consistent evidence for mood-congruency effects on judgment. It is interesting to note that most of the tasks finding evidence for positive mood congruency are fairly open-ended, allowing individuals to impose interpretations, probability ratings, and free associations onto subjective cues such as ambiguous situational descriptions, life events, or free association cues. The stronger effects obtained in these

ambiguous judgments are consistent with Forgas's (1995) affect infusion model, which suggests that mood-congruity effects should be most pronounced during substantive processing. When faced with a complex or ambiguous judgment target, such as those used in open-ended tasks, individuals should engage in more substantive processing, leading to stronger mood-congruity effects.

Because real-life situations are ambiguous with respect to their emotional content, the effects should be even more pronounced in studies using natural mood measures or real-life contexts as emotion inductions. Forgas and Moylan (1987) conducted a field study in which they interviewed people after leaving films that they had classified as "happy," "sad," or "aggressive" in their emotional content. They found that a wide variety of judgments were more positive and optimistic after viewing the "happy" film than after the "sad" or "aggressive" film. In another field study, Butler and Mathews (1987) found evidence for anxiety-congruent judgments for students who were about to complete an examination versus those who were not. Individuals in the examination group made higher probability ratings for negative events than individuals who were in the no-examination group.

In natural mood studies mood state is not manipulated, but is instead simply measured prior to completing the cognitive tasks. Natural mood studies tend to yield a consistent symmetrical effect of mood state on processing of emotional cues across a variety of diverse judgment tasks, including probability ratings, free association, and positive and negative ratings of people (Mayer, Gaschke, Braverman, & Evans, 1992; Mayer & Volanth, 1985; Mayer, Mamborg, & Volanth, 1988). One benefit of such studies, is their ecological validity—they may offer a better understanding of the operation of mood-congruity effects in real-life contexts than artificial laboratory situations. Such studies, however, cannot rule out the possibility that the mood effects obtained in them are actually due to the influence of more stable personality traits that predisposed participants to the mood states they reported.

In summary, there appears to be some evidence for mood-congruity in judgment and interpretation of ambiguity. Mood congruity effects have been obtained for various negative mood states, such as sadness/depressed mood, anxiety, and anger. The effects for positive mood states have been less studied, but evidence for positive mood-congruity has been obtained primarily on open-ended and naturalistic tasks, which may be more sensitive to the effects of stable personality traits.

Recall/recognition. Memory tasks have been the most common paradigm for investigating mood-congruent processing (see Blaney, 1986, for an earlier review). This is perhaps the case because many of the theories predicting emotion congruity suggest an underlying organization of material in memory, and memory tasks are thought to provide the most direct tests of these theories. Similar to studies of mood and perception, attention, and judgment, the mood and memory findings appear to depend on a variety of participant and task characteristics. Because others have reviewed portions of the mood and memory literature (e.g., Blaney, 1986; Bower, 1981, 1991; Singer & Salovey, 1988) and have noted some of the inconsistencies in this literature, this section is relatively brief.

A number of investigators have used a free recall paradigm in which individuals are presented with a list of stimuli varying

in emotional content, and then they are asked to try to recall as many of the stimuli as they can. Isen et al. (1978) were among the first to demonstrate the mood-congruent retrieval effect using this type of task. Participants who were in a positive mood state after winning a computer game were found to have better access to positive material in memory than those who had lost the game (they recalled more "likable" words). The authors concluded that positive affect may serve as a robust category within which information is organized in memory, and that the positive emotional state induced by winning the game acted as a retrieval cue for this type of information.

Since then, several researchers have attempted to demonstrate mood-congruent recall using a variety of emotionally valenced stimuli. The majority of free recall studies use emotionally valenced words or stories with different emotional events as stimuli. Several of these studies have successfully obtained the mood-congruity effect for both positive and negative mood states (Bower & Mayer, 1989, Studies 1 and 3; Bower, Gilligan, & Monteiro, 1981; Clark & Teasdale, 1985; Gilligan & Bower, 1983; Laird, Wagener, Halal, & Szegda, 1982; Nasby, 1994; Rinck, Glowalla, & Schneider, 1992; Teasdale & Russell, 1983). That is, in studies where happy and sad moods were induced, happy individuals recalled more pleasant than unpleasant words, and sad individuals recalled more unpleasant than pleasant words (Bower et al., 1981; Bower & Mayer, 1989, Studies 1 and 3; Clark & Teasdale, 1985; Gilligan & Bower, 1983; Nasby, 1994). This effect has also been obtained for happy and angry moods, with happy people recalling more pleasant material, and angry people recalling more anger-related material (Laird et al., 1982).

Although these findings appear promising, many researchers have not obtained mood-congruity effects for both positive and negative moods. There is some evidence indicating that the effects of positive and negative moods on memory may be asymmetrical; the influence of positive affect on mood-congruent retrieval may be stronger than the influence of negative affect. Some studies have obtained evidence for this asymmetry, where induced positive mood facilitated recall of positively valenced words, but induced negative mood had no effect on recall of negatively valenced words (Isen et al., 1978; Nasby & Yando, 1982, Study 1). In line with these findings, Isen (1990) has suggested that negative mood inductions fail to facilitate the recall of negative material and act as less effective retrieval cues than positive mood inductions.

Other studies have yielded no evidence for mood-congruity, for both positive and negative mood states (Claeys, 1989; Gayle, 1997; Hasher, Rose, Zacks, Sanft, & Doren, 1985; Kwiatkowski & Parkinson, 1994; Mecklenbrauker & Hager, 1984). Still others have obtained mood-incongruity effects, such that positive mood led to better recall of negative words and negative mood led to better recall of positive words (Forgas, Burnham, & Trimboli, 1988; Rinck, Glowalla, & Schneider, 1992). Rinck et al. obtained a mixture of findings; they found evidence for mood congruity only for "strongly" positive or negative words (e.g., *torment, pain, kill*). For "weakly-toned" words (e.g., *dirty, hinder, stubborn*), they found evidence for mood incongruity.

The evidence from studies using recall tasks to investigate retrieval of valenced words has been mixed. Although there seems to be a good deal of evidence for mood congruity in

recall of emotional cues, this evidence should be tempered by the existence of studies finding no evidence for such mood congruency or evidence for mood incongruency. It is important to note that much of this literature has focused on the effects of general positive and negative mood states on recall (although these are sometimes labeled "happy/elated" and "sad/depressed" mood). Beyond the study by Laird et al. (1982), the effects of other specific mood states (such as anger) on free recall are relatively unknown and need to be further investigated.

One of the disadvantages of using a free recall task to investigate mood-congruent memory is that the stimuli often used in such tasks (e.g., word lists) are not personally meaningful. The results of these studies may therefore not accurately reflect individuals' real-life memories. Several studies have used self-referent encoding procedures to make the stimuli more personally meaningful, and these studies generally find stronger mood-congruency effects than those that do not use such procedures (Bradley & Mathews, 1983; Hammen, Milkowitz, & Dyck, 1986; Ingram, Smith, & Brehm, 1983; Kuiper & Derry, 1982; see Blaney, 1986, for a review).

Autobiographical memory. Even more personally meaningful are autobiographical memories, or individuals' memories for their own real-life experiences (rather than just emotional information in general). In contrast to the recall and recognition studies reviewed in the previous section, participants in autobiographical memory studies generate their own stimuli.

Studies investigating the effects of mood on autobiographical retrieval have typically used a memory prompt procedure, which involves asking individuals to report memories for specific events that have taken place at some point in their lifetime. Typically, participants are presented with a list of word prompts and are asked to think of a memory associated with each prompt. Then, the probability and/or latency for retrieving positive and negative memories are recorded. In studies where the latency of response was measured, the results have been mixed. Some studies have found mood-congruent effects for both positive and negative mood; participants induced to feel sad showed faster latencies to retrieve unpleasant than pleasant memories, and participants induced to feel happy showed faster latencies to retrieve pleasant than unpleasant memories (Riskind, 1983). Others have found a mood-congruency effect for the speed to retrieve pleasant but not unpleasant memories (Riskind, Rholes, & Eggers, 1982; Teasdale & Fogarty, 1979). Rholes, Riskind, and Lane (1987) added a possible explanation for these inconsistencies by showing that the mood-congruency effect in latency studies depends on the type of mood induction procedure that is used. When participants were asked to read self-evaluative statements (e.g., *I am worthless*) versus somatic statements (e.g., *I feel tired and listless*) to induce mood, those who had read the self-evaluative statements showed mood-congruency in speed to retrieve both pleasant and unpleasant memories. Those who had read the somatic statements showed no mood-congruency effect.

A number of studies have also investigated the effects of mood on the content of retrieved memories. The results for these studies have tended to be more supportive of the mood congruency hypothesis than latency studies, but there are still some inconsistent findings. Several studies have found that individuals induced to feel positive were more likely to retrieve pleasant than unpleasant memories, whereas individuals induced

to feel negative were more likely to retrieve unpleasant than pleasant memories (Alexander & Guenther, 1986; Bullington, 1990; Erber & Erber, 1994, Study 2; Erlichman & Halpern, 1988; Madigan & Bollenbach, 1982, Study 1; Snyder & White, 1982; Teasdale & Taylor, 1981; Teasdale, Taylor, & Fogarty, 1980). The effect appears stronger for positive than negative mood, as some studies have found evidence only for positive mood congruency (with no negative mood congruency effect; Laird et al., 1989; Natale & Hantas, 1982).

The opposite effect has also been found in autobiographical retrieval studies. That is, some studies have indicated that moods can enhance the retrieval of mood-incongruent material (Erber & Erber, 1994; Parrott & Sabini, 1990). In a series of five studies, Parrott and Sabini found that participants in happy moods recalled autobiographical memories that were more negative than were memories recalled by individuals in unhappy moods. Various explanations have been supplied for these inconsistent findings. Parrott and Sabini argued that the inconsistencies occurred because participants were unaware that their moods were relevant to the experiment, and that previous studies finding the effect have suffered from experimental demand effects common in mood induction studies. However, studies using nonverbal mood induction procedures provide evidence against this notion because such mood inductions prevent people from being aware that their moods are relevant to the experiment. For example, Erlichman and Halpern (1988) exposed participants to pleasant and unpleasant odors to manipulate mood. Those who had been exposed to pleasant odors retrieved more pleasant memories than participants who had been exposed to unpleasant odors. Riskind (1983) used a nonverbal facial manipulation to induce positive and negative mood, and also found evidence for mood congruency for both pleasant and unpleasant memories. Thus, the demand effects explanation may not satisfactorily address the inconsistencies in the results of autobiographical memory studies.

Although autobiographical memory studies hold the advantage of personal meaningfulness, they suffer from some major disadvantages. For example, the use of autobiographical memories to study mood congruency has been criticized because the memory stimuli cannot be controlled as effectively as standardized word lists (e.g., Matt, Vasquez, & Campbell, 1992). Each person has had a different set of life experiences and events from which to retrieve autobiographical memories. A person who has had several negative life events during his or her life would have an easier time retrieving such events when in a negative mood, not because of the mood, but because of the greater number of negative events in memory. This criticism should not be a problem, however, in mood induction studies where participants have been randomly assigned to mood induction conditions. It becomes more of a problem in studies of stable personality traits, where participants cannot be randomly assigned to conditions.

Summary of mood effects. Although there is some evidence for mood congruency, the effect is not consistently obtained across different cognitive tasks. Positive and negative mood-congruency effects are not readily obtained in perceptual and attentional tasks. However, these studies are relatively few in number, and more are needed before conclusions can be drawn. Mood congruency is more consistently obtained on judgment tasks for various negative mood states. The evidence from word

list recall and autobiographical memory studies is mixed. Many of these studies find strong evidence for positive and negative mood congruency, but there are also some studies finding evidence for mood congruency.

The general picture that emerges from the mood-congruency literature is that the effect is often obtained using a variety of procedures, but the findings across different tasks are not as consistent with the predictions stemming from emotion-congruency theories as one would expect. In response to this lack of support for the mood-congruency hypothesis, several researchers have attempted to specify the conditions under which mood-congruency occurs (e.g., Forgas, 1994, 1995; Mayer, Gayle, Meehan, & Haarman, 1990; Niedenthal et al., 1994). One possibility is that both temporary mood states and stable personality traits must be taken into account to achieve the effect. The processing of emotional cues may depend not only on one's current mood state, but also on one's stable personality traits and their relationship to emotional concepts in memory. Following a brief review of the trait-congruency literature, I discuss this possibility, along with other proposed explanations for the lack of consistent evidence for the traditional approach.

Effects of Stable Personality Traits on Emotional Processing

Studies investigating the impact of stable personality traits on emotional processing have been guided by schema theories, as well as by extensions of associative network theory to account for individual differences in the strength and number of associations around certain emotion nodes. Beck's schema theory of depression and anxiety (Beck, 1976; Beck & Clark, 1988; Beck & Emery, 1985; Beck et al., 1979; Kovacs & Beck, 1978) has been very influential in this literature, and therefore many of the studies investigating long-term effects of emotional traits on emotional processing have focused on trait anxiety and sub-clinical depression. It will be recalled that according to this approach, important experiences from the past are thought to result in a collection of memories, attitudes, and images, which then influence the perception of and reaction to ongoing life events. These memories are likely to reflect an individual's emotional traits, or dispositional tendencies to experience certain emotions. According to Figure 1, these stable traits (or schemas) should influence the processing of emotional cues in a trait-congruent direction. Although several trait-congruency studies have obtained results supportive of this framework, several studies have not. Similar to the mood-congruency literature, the evidence for the effects of personality traits on processing of emotional stimuli does not consistently support the trait-congruency hypothesis.

Perception. The literature on trait-congruency effects in perception has focused primarily on depression, but there are also a few investigations of extraversion, neuroticism, and trait anxiety. Much of the work on clinical depression and anxiety has been reviewed by others (M. W. Eysenck, 1992; Segal & Ingram, 1994), and these reviews generally suggest that trait-congruent processing is most often obtained when emotion-relevant information is activated prior to the cognitive task. Because this research is discussed in other recent reviews of the literature, this section is relatively brief.

One way that depression researchers have explored how de-

pressives perceive emotional information has been to use a self-rating task. Positive and negative trait descriptors are individually presented, and the decision latency to identify a word as self-descriptive is recorded. Most of the research using such tasks yields evidence for emotion-congruent processing, although there are a few exceptions (Bradley & Mathews, 1983; MacLeod, Tata, & Mathews, 1987). Generally such studies find that depressed individuals are faster to identify negative adjectives as self-descriptive, compared to nondepressed individuals (e.g., Derry & Kuiper, 1981; Greenberg & Alloy, 1989).

Several studies within the trait-congruent perception literature have used response times as measures of the speed of discriminating positive and negative stimuli. Words are presented one-by-one, and participants are asked to decide on the valence of each stimulus word as quickly as possible. Those words that are congruent in emotional tone with one's traits should be more quickly discriminated. There is some evidence that this is the case for the traits of extraversion and neuroticism. In studies examining how these traits relate to the processing of positive and negative incentive cues, those high in neuroticism and low in extraversion are faster to respond to negative cue words, whereas individuals low in neuroticism and high in extraversion are faster to respond to positive cue words (Derryberry & Reed, 1994; Reed & Derryberry, 1995).

Other studies investigating response time for valence decisions have yielded less consistent results. For example, Rusting and Larsen (1998) found evidence for extraverts' faster discrimination of positive stimuli, but no effect was obtained for neuroticism and discrimination of negative stimuli. Investigations of trait anxiety and discrimination of threatening words have also produced results inconsistent with the trait-congruency hypothesis; in one study no speed of processing effect was found (Mathews & Milroy, 1994), and in another study effects were obtained only for stimuli related to physical threat (M. W. Eysenck & Byrne, 1994). Studies of clinically anxious individuals (e.g., panic disorder or generalized anxiety disorder) have yielded somewhat stronger findings. For example, Cloitre and Liebowitz (1991) found that panic disorder patients showed better perception of threat words than normal control participants.

Perceptual studies of trait congruency have therefore yielded a mixed bag of findings. Previous reviews suggest that the constructs to be tested must be activated or primed for trait-congruent effects to emerge (e.g., Segal & Ingram, 1994). Self-rating tasks yield fairly consistent evidence for trait-congruent perception, but other response time tasks do not. Extraversion appears to be reliably related to perception of positive emotional cues, but similar effects for neuroticism are less reliably obtained. In addition, studies of clinical anxiety appear to support better trait congruency in perception than do studies of trait anxiety.

Attention. Several researchers have implemented the emotional Stroop task described earlier to investigate the effects of trait anxiety on attention to threat cues (MacLeod & Hagan, 1992; MacLeod & Rutherford, 1992; Richards, French, Johnson, Naparstek, & Williams, 1992; Richards & Millwood, 1989). In these studies, individuals high and low in trait anxiety were asked to identify the colors of threatening and neutral words. A consistent pattern emerged in the findings of these studies: Participants high in trait anxiety were slower only in identifying the colors of anxiety-related words. It will be recalled that

slower color naming indicates a difficulty in ignoring the word content, presumably because that content has grabbed one's attention. The slower naming of threat words for individuals high in trait anxiety therefore indicates that trait anxiety is characterized by increased attention to anxiety-relevant (threatening) information.

The effect on the modified Stroop task appears to be even stronger for clinically anxious patients than for nonclinical individuals. M. Martin, Williams, and Clark (1991) found that patients with generalized anxiety disorder were slower to name threat words, but no effect was obtained for nonclinical trait anxiety participants. Others have obtained similar effects for patients with various anxiety disorders (Ehlers, Margraf, Davies, & Roth, 1988; McNally, Riemann, & Kim, 1990; Mogg, Bradley, Williams, & Mathews, 1993).

Although a number of studies have demonstrated slower naming of threatening words for individuals high in trait anxiety, some studies have also found slower naming of positive words for trait anxious individuals (M. Martin et al., 1991; Mogg & Marden, 1990). Such findings were unexpected, but they are interesting because they might have implications for understanding the organization of emotional concepts in memory. Memory might not only include strong associations among emotional concepts that agree in tone with emotional traits, but it might also include other emotional material representing the states individuals wish to experience, or the emotional states toward which they consistently attempt to regulate their negative emotions. Very few studies have investigated this possibility, however, and it is in need of further investigation.

Only a few studies have used the emotional Stroop task to investigate attentional processes for emotional traits other than trait anxiety. The findings for depression are mixed, with some studies finding evidence for slower naming of depressed-content words for depressed individuals (Gotlib & McCann, 1984, Study 1; Williams & Nulty, 1986), and other studies finding no evidence for this effect (Hill & Knowles, 1991; MacLeod & Hagan, 1992). There is some evidence indicating that the effect may depend on the stability of depressed affect. For example, Williams and Nulty (1986) measured depression across two separate occasions, and found that those individuals who were depressed on both occasions showed the most interference on negatively toned words. The stability of such depressed affect may reflect a stable underlying disposition to experience negative affect that may not have been present in those individuals for whom depression was measured at a single occasion.

Another task that has been fairly popular in the trait-congruent attention literature is the attentional probe technique. In this task, pairs of words of different valences are presented on a computer screen simultaneously so that one appears above the fixation point and the other appears below the fixation point. On each trial, a dot appears over one of the words, and participants are instructed to respond as quickly as possible when they see the dot appear. They should respond more quickly to the dot when it appears over the word to which they have been focusing their attention.

As with the emotional Stroop task, most of the research using the attentional probe paradigm has focused on trait anxiety and clinical anxiety, although a few studies of depression also exist. A number of studies have found that trait anxiety related to faster responses when the dot appeared in the place of a "threat-

ening" word (e.g., Broadbent & Broadbent, 1988; MacLeod & Mathews, 1988; MacLeod, Mathews, & Tata, 1986; Mogg, Mathews, & Eysenck, 1992). This is also the case for generalized anxiety disorder and panic disorder patients (Asmundson, Sandler, Wilson, & Walker, 1992; Mogg et al., 1992). The relationship between depression and attentional processing on the attentional probe task has been less consistent. One study found that nondepressed individuals attended more to positive words, but depressed individuals attended equally often to positive and negative words (Gotlib, McLachlin, & Katz, 1988). Another study found no significant effects for depressed individuals (Hill & Dutton, 1989).

The emotional Stroop and attentional probe tasks described above involve presentation of fairly uninteresting stimulus words. However, natural environments are more complex (various aspects of the natural environment compete for attention). Tasks that use more complex stimuli may more closely approximate selective processing effects in the natural environment. In one such demonstration, Matthews and Antes (1992) presented participants with a series of slides that depicted scenes with "happy" and "sad" regions, and then measured eye movements. They found that subclinically depressed individuals fixated more than nondepressed individuals on the sad regions of the slide. Nondepressed individuals fixated more and sooner on the happy regions of the slide. In a similar study, Gillis and Bernieri (1993) showed subclinically depressed and nondepressed participants a video of an unhappy and happy person interacting, and they found that the depressed participants tended to focus on the unhappy person. Similar effects have also been obtained for children; Leitenberg, Yost, and Carroll-Wilson (1986) found that depressed 4th and 8th grade children showed more selective attention to negative features of events than nondepressed children. When tasks that more closely approximate the natural environment are used, stronger effects may be obtained for subclinical depression than are typically obtained on the emotional Stroop and attentional probe tasks.⁴

Trait anxiety and subclinical depression have received a good deal of attention in the literature on trait-congruent attention. Studies of subclinical depression and attention have yielded mixed results; those using word cues have found very little evidence for a relationship between depression and selective attention, whereas those using more complex stimuli have appeared to offer stronger support for such a relationship. There are, however, very few studies of how other emotional traits relate to attentional processing of emotional cues. For example, trait anger/hostility may influence attention to hostile cues, yet no studies have investigated this possibility using an attentional task. Traits related to mood regulation may also influence attentional processing, but such investigations have been limited to studies of repression/sensitization and attention toward or away from threatening cues (Mischel & Ebbeson, 1973). It is not known to what extent other traits related to mood-regulation tendencies relate to attentional processing of emotional cues.

Interpretation/judgment. Studies of interpretation and judgment

⁴ It should be noted that this type of fixation task measures a more voluntary form of attentional processing than the Stroop and attentional probe tasks (which are thought to measure more automatic attentional orienting). Any differences in the results of these two tasks could be due to these different types of attentional processing.

ment in relation to stable personality traits have been guided by the assumption that certain personality traits should be related to the interpretation of emotionally ambiguous material in a trait-congruent direction. Studies using interpretative and judgment tasks to measure emotional processing have focused primarily on negative stimuli. Early researchers studying repression/sensitization used cues with "sexual" meanings, as a means of assessing attentional allocation to threat cues. For example, Byrne (1961) scored Thematic Apperception Test stories written by repressors and sensitizers for sexual and aggressive content, and found that sensitizers were more likely to write stories with sexual and aggressive content. Galbraith and Lieberman (1972) assessed repressors' and sensitizers' interpretations of double entendres with sexual and nonsexual meanings, and found that sensitizers reported more sexual associations than repressors.

Although these studies seem to support the notion that sensitizers may be characterized by a tendency to access negative meanings of emotionally ambiguous cues, the use of sexual cues is a major weakness in these studies. Such sexual cues may not actually be interpreted as negative or threatening, and may even be interpreted by some individuals as positive in emotional tone. Thus, more recent investigations of interpretation and judgment have used emotion words as cues or have scored open-ended data directly for emotional content.

Recent studies examining the relationship between stable traits and interpretation/judgment have included a variety of different tasks, and there appears to be a good deal of evidence for trait congruency in interpretation/judgment on these tasks. A number of these studies have used homophones with either threatening or neutral interpretations, and have shown that trait anxious and clinically anxious individuals more often access the threatening interpretations of the words (e.g., MacLeod & Cohen, 1993; Richards & French, 1992; Richards, Reynolds, & French, 1993). This also appears to be the case for ambiguous sentences; M. W. Eysenck, Mogg, May, Richards, and Mathews (1991) assessed clinically anxious patients' interpretations of sentences with threatening or neutral meanings (e.g., *The doctor examined little Emily's growth*), and found that anxious individuals were more likely to access the threatening meanings of such sentences than nonclinical control participants. The same effect has been obtained for repression/sensitization, with sensitizers accessing threatening meanings of ambiguous sentences, and repressors accessing nonthreatening meanings (Haney, 1973; Hock, Krohne, & Kaiser, 1996).

There is also a good deal of evidence for negatively toned judgments by depressed individuals. Most of the research on depressed individuals' judgments, however, has used a different set of judgment tasks, namely probability judgments and interpretations of ambiguous feedback. These studies generally have found that depressed individuals make higher probability estimates of future negative events (e.g., Alloy & Ahrens, 1987; MacLeod & Croypley, 1995; Pyszczynski, Holt, & Greenberg, 1987). For example, Alloy and Ahrens (1987) assessed depressed and nondepressed individuals' predictions about the likelihood of future positive and negative outcomes for themselves and for others. They found that, compared with the nondepressed participants, depressed participants were more pessimistic in their predictions for both self and others. Pyszczynski et al. (1987) gave undergraduates a list of possible future events

and found that depressed people rated negative events as more likely to happen than did nondepressed people. Nondepressed people, on the other hand, rated positive events as more likely to happen. Studies of feedback interpretation have found a similar pattern of results for depressed individuals. When given feedback about their own personalities, depressed individuals tend to interpret the same feedback as more negative than nondepressed individuals (e.g., Vestre & Caufield, 1986).

Another set of studies has used more naturalistic means for assessing the relationship between aggressiveness or trait hostility and interpretation/judgment.⁵ Many of these studies have investigated how aggressive children (especially boys) interpret ambiguous social cues (Dodge, 1993; Dodge & Crick, 1990; Dodge, Price, Bachorowski, & Newman, 1990; Dodge & Tomlin, 1987; Quiggle, Garber, Panak, & Dodge, 1992; Steinberg & Dodge, 1983). Dodge and colleagues have demonstrated in several studies that aggressive boys show a hostile interpretational bias; they tend to interpret social interactions as containing hostile intentions (e.g., Dodge et al., 1990; Dodge & Tomlin, 1987; Steinberg & Dodge, 1983). For example, Dodge and Tomlin presented aggressive and nonaggressive 6th, 7th, and 8th graders with hypothetical stories describing an ambiguous provocation by a peer, and asked them to interpret the peer's intention. Aggressive individuals were more likely to attribute a hostile intent to the peer in the story than nonaggressive individuals. Relatively few studies have investigated these processes in adults, but it appears that the same pattern of relationships may be evident. In a recent study, Epps and Kendall (1995) gave individuals scenarios describing nonaggressive, aggressive, and ambiguous social interactions, and found that those who scored high on trait hostility measures attributed more hostility to the actions of people in the ambiguous scenarios.

A trait-congruency effect in interpretation/judgment is consistently obtained for specific negative emotional traits (anxiety, depression, and aggressiveness/hostility). However, it should be noted that for each of the specific emotional traits assessed in this research, studies of interpretation/judgment have tended to use different tasks. The trait anxiety and repression/sensitization literatures are composed mainly of tasks using controllable ambiguous stimuli such as homophones or phrases with threatening or neutral meanings. The depression literature focuses on interpretation of ambiguous feedback and probability judgments. The trait anger/hostility literature is centralized around aggressive children's interpretations of ambiguous social cues. It would be beneficial to bridge these literatures in future studies by using similar tasks across different negative traits. In addition, there are relatively few studies investigating positive emotional traits in relation to interpretation/judgment. Some evidence indicates that positive traits such as self-esteem and extraversion are related to positive judgments of life events (Campbell, Chew, & Scratchley, 1991; Darvill & Johnson, 1991), but interpretation/judgment of positive events has seldom been assessed in relation to such traits. Although such research is necessary, studies examining personality traits and interpretation/judgment provide some of the most consistent evidence for emotion-congruent processing.

⁵ Although aggressiveness and trait hostility do not necessarily involve feelings of anger, the results of these studies may offer some insights for the possible relationships between trait anger and judgment.

Recall/recognition. Similar to the mood literature, the majority of studies investigating personality and cognitive processing of emotional stimuli have used memory tasks. Of these, several have used free recall tasks to investigate the relationship between depression and processing of negatively toned words. Many of these studies have produced evidence for trait congruency, but the pattern of results is less consistent than expected.

There is some evidence for negative trait-congruent recall for both depression and neuroticism. In several studies, depressed and nondepressed participants were presented with a series of words varying in emotional tone, and then they were asked to try to recall as many as possible. In these studies, depressed individuals were particularly likely to recall negatively toned adjectives (Bradley & Mogg, 1994; Denny & Hunt, 1992; Ingram, Smith, & Brehm, 1983; Kuiper, Olinger, MacDonald, & Shaw, 1985; Mathews & Bradley, 1983; Ruiz-Caballero & Bermudez-Moreno, 1993; Ruiz-Caballero & Gonzalez, 1994). Holtgraves and Athanassopoulou (1991) found the same effect for presentation of a story with positive and negative themes; depressed individuals were especially likely to recall negative themes from the story. This is also the case for the personality trait of neuroticism. When presented with positive and negative words, individuals high in neuroticism recall more negative words than low neuroticism individuals (Bradley & Mogg, 1994; Desrosiers & Robinson, 1992; M. Martin, Ward, & Clark, 1983; Young & Martin, 1981).

However, there are a number of studies that did not find evidence for this effect, in both clinical and subclinical samples (Clifford & Hemsley, 1987; Craighead, Hickey, & DeMonbreun, 1979; Hughes, Worchel, Stanton, Stanton, & Hall, 1990; Kuiper & Derry, 1982; Roth & Rehm, 1980). Some have found a congruency effect for depressed individuals in the absence of a positive congruency effect for nondepressed individuals (Bradley & Mogg, 1994; Holtgraves & Athanassopoulou, 1991; Zuroff, Colussy, & Wielgus, 1983). Others have found no differences between depressed patients and nondepressed controls in recall and recognition of positive and negative words (Clifford & Hemsley, 1987; Roth & Rehm, 1980). Craighead et al. (1979) found no differences between depressed and nondepressed groups in recall of positive and negative performance feedback. Hughes et al. (1990) found no differences between depressed and nondepressed children in recall of positive and negative events from a story. Thus, although there appears to be a good deal of evidence for the relationship between depression and recall/recognition of negative cues, the evidence is not as consistent as would be predicted by emotion-congruency theories.

These inconsistencies may be due, in part, to the ambiguous definition of *nondepressed* which refers to the absence of depression rather than the presence of positive affect. It is unclear whether the *nondepressed* designation would predict increased recall of positive words, neutral words, or decreased recall of negative words. The inconsistencies may also be due to the type of sample that is used in each study. In a recent meta-analytic review, Matt et al. (1992) found a stronger congruency effect for clinically depressed individuals than for subclinically depressed individuals. The results across studies using subclinically depressed samples thus tend to be less consistent than the results of studies using clinically depressed samples.

Some authors have suggested that the effect may depend on

whether the stimuli are encoded as self-referent (e.g., Blaney, 1986). In many of the studies citing evidence for trait congruency, individuals are asked to rate whether each of a series of adjectives describes them, followed by a free recall test. These studies generally have been more successful than those using non-self-referent encoding procedures in producing trait-congruent retrieval for depressed individuals (Denny & Hunt, 1992; Kuiper & Derry, 1982; Kuiper et al., 1985; Mathews & Bradley, 1983; Watkins, Mathews, Williamson, & Fuller, 1992; Zuroff et al., 1983). Similar effects have not been obtained in studies where the stimuli are not related to the self, such as positive and negative social events (Pietromonaco & Markus, 1985), trait ratings of other people (Kuiper & Derry, 1982), and stories with positive and negative content (Hasher et al., 1985). In addition, those studies that have manipulated self-reference have found a trait-congruent recall effect only for individuals who had encoded the stimuli as self-referent (Bradley & Mathews, 1983; Derry & Kuiper, 1981). Taking into account the degree of self-referent encoding in each study may therefore help resolve the inconsistencies found in the depression and recall/recognition literature.

Most of the literature on emotion-congruent recall and recognition has focused on depression; relatively few studies examining how other traits relate to such emotional processing have been conducted. There are a few studies of anxiety indicating that trait anxious individuals and panic disorder patients are more likely to recall threat words than neutral words (Breck & Smith, 1983; Claeys, 1989; Cloitre & Liebowitz, 1991; M. W. Eysenck & Byrne, 1994; O'Banion & Arkowitz, 1977). However, because measures of depression and anxiety are highly correlated (Kendall & Watson, 1989), these findings may be due to depression rather than to anxiety per se. Indeed, many researchers have noted the failure of this literature to find an anxiety-linked recall bias as often as that found for clinical depression (e.g., Foa, McNally, & Murdock, 1989; Mogg, Mathews, & Weinman, 1989; Richards & French, 1991, Study 2; see Dalgleish & Watts, 1990, for a review).

Some evidence suggests that a broad negative affect trait, such as neuroticism, may subsume findings of studies investigating more specific negative traits, such as anxiety and depression. Martin (1985) hypothesized that neuroticism serves as a predisposition to the processing of depression-congruent stimuli. Interestingly, broad negative affectivity has also been hypothesized to predispose individuals to the experience of anger by increasing the availability of angry thoughts and associations (Berkowitz, 1990; Berkowitz & Troccoli, 1990). This suggests that neuroticism may provide a broad nonspecific sensitivity to negative emotional information. The broad traits of neuroticism or negative affectivity may facilitate retrieval of negative material in general, including material associated with various specific negative traits. Some evidence of this broad sensitivity factor was obtained in a study by Bradley and Mogg (1994). They found that depressed, anxious, and high neuroticism individuals recalled an increased proportion of negative adjectives as compared with positive adjectives. Then, in a principal components analysis, they found evidence for a higher order negative affect construct subsuming each specific negative trait measure that could account for the congruent recall effect. In light of the strong relations often found among negative emotions (Kendall, Hollon, Beck, Hammen, & Ingram, 1987; Kendall & Watson,

1989; Watson & Clark, 1984), individuals who score high on measures of negative affectivity may exhibit an overall sensitivity to negative self-referent information.

The same may be true for broad positive emotional traits, but positive traits have not been investigated to the same extent as negative traits. Desrosiers and Robinson (1992) found that extraverts recalled more positive than negative emotion words, and in an early study Lishman (1972) found that individuals both low in neuroticism and high in extraversion show an increased tendency to recall pleasant than unpleasant material. In another early study, Matlin and Gowron (1979) showed that optimistic participants were more accurate in recalling pleasant than unpleasant words. Other than the findings of these studies, the extent to which positive traits influence selective processing of emotional information is relatively unknown.

In summary, studies using recall and recognition tasks to investigate trait-congruent emotional processing have primarily examined negatively valenced personality traits such as depression, neuroticism, and trait anxiety. The results of studies using subclinically depressed samples tend to be less consistent than the results of studies using clinically depressed samples, but both types of samples yield less consistent findings across studies than are predicted by emotion-congruency theories. The degree to which the stimuli in these studies have been encoded as self-referent may partially explain these inconsistencies. There is also some evidence that a broad negative affectivity or neuroticism factor may account for the findings of some of these studies. The same may be true for broad positive affectivity and recall of positively valenced words, but very few studies have investigated the impact of positive emotional traits on trait-congruent recall.

Autobiographical memory. Similar to studies using free recall and recognition tasks, many of the studies exploring retrieval of autobiographical memories have focused on clinical and subclinical depression and other negative emotional traits. Several of these studies have used the same memory prompt procedure as used in mood-congruency studies of autobiographical retrieval, and the results of these trait studies complement the findings from mood-congruency studies. As with mood studies of autobiographical retrieval, trait studies measuring the latency of response have yielded mixed results. Some studies have found evidence for faster retrieval of negative autobiographical memories for clinically depressed people (Fitzgerald, Slade, & Lawrence, 1988; Lloyd & Lishman, 1975), patients with generalized anxiety disorder or high in trait anxiety (Burke & Mathews, 1992; Richards & Whittaker, 1990), and normal individuals who were high in neuroticism (Lishman, 1974; Mayo, 1989; Okun, Stock, Snead, & Wiermaa, 1987). Others, however, have found no speed of processing effect for depressed, anxious, and high neuroticism individuals (Mayo, 1983; Yang & Rehm, 1993). Mayo (1989) found that those high in neuroticism were faster to retrieve both happy and unhappy memories, which suggests that the effect, if obtained, is not specific to trait-congruent material.

Studies examining the content of autobiographical memories have produced more support for trait-congruent retrieval. Using the memory prompt procedure, Yang and Rehm (1993) and Mathews and Bradley (1983) found that depressed participants retrieved more negative memories than nondepressed participants. Mayo (1983) found the same pattern of results for neuro-

ticism: Neuroticism was related to retrieval of unpleasant autobiographical memories in a memory-prompt task. Others have found that patients with anxiety disorders or normal individuals high in trait anxiety also recalled more anxiety-evoking memories than control participants (Burke & Mathews, 1992; Mayo, 1989). There is also some evidence that depressed individuals report more different kinds of negative autobiographical memories for negative cues and fewer kinds of positive memories for positive cues than do nondepressed individuals (McAdams, Lensky, Daple, & Allen, 1988). Taken together, these findings are consistent with the notion that negative emotional traits are associated with more elaboration of negative emotional concepts in memory.

Because these trait-congruent findings have been obtained across different specific emotional traits and disorders, some investigators have suggested that the broad traits of negative affectivity or neuroticism may represent more general susceptibilities to retrieving negative personal memories. There is some evidence indicating that this may be the case: Mayo (1983) entered several specific emotional traits into a regression analysis predicting retrieval of negative autobiographical memories and found that neuroticism accounted for the most variance in retrieval of such memories. Broad negative affectivity may therefore play a significant role in the retrieval of unpleasant personal memories.

Even though the results of the above studies seem supportive of trait-congruency, there have been some studies that have not obtained this effect in autobiographical memory. Some studies found that neuroticism and depression did not relate to the retrieval of negative personal memories (Mayo, 1989; Ruiz-Caballero & Bermudez-Moreno, 1993, Study 1). Rather, in these studies neuroticism and depression were related to the retrieval of fewer positive autobiographical memories. This finding does not fully support the notion of trait congruency, which would predict a one-to-one correspondence between trait valence and valence of retrieved memories.

Only a few studies have explored the role of positive emotional traits in autobiographical retrieval. Most of these studies measured extraversion and found that extraverted individuals were faster to recall pleasant experiences (Lishman, 1974), and they also recalled more pleasant memories than introverts (Mayo, 1983, 1989). These effects also hold for the broader trait of positive emotionality, with individuals high in positive emotionality retrieving positive memories faster than individuals low in positive emotionality (MacLeod, Andersen, & Davies, 1994). Similar findings were obtained by Seidlitz and Diener (1993), who gave participants 3 min to list as many positive and negative events from their lives as they could. They found that subjective well-being (operationalized as high life satisfaction and long-term positive emotionality combined) related to retrieval of more positive life events. It therefore appears that positive emotional traits show an emotion-congruent autobiographical retrieval effect. However, the small number of studies investigating positive emotional traits (as compared with studies of negative emotional traits) needs to be supplemented by further research.

Overall, the results from studies of trait-congruency in autobiographical retrieval are more consistent than the results from studies of word list recall and recognition. However, the autobiographical studies suffer from a major drawback that limits the

interpretability of such findings. The results of these studies may have nothing to do with retrieval effects, but rather may be due to differing numbers of positive and negative life events experienced by individuals scoring high and low in emotional traits. For example, a person may score high in depression simply because he or she has endured many negative life events. This individual would then have many more negative events and experiences stored in memory when asked to retrieve personal memories. Because exposure to life events can not be controlled, the results from autobiographical memory studies that ask people to retrieve such events should be interpreted with caution. Word lists and other experimental stimuli are directly controllable, and the results from studies using such stimuli may therefore give a more accurate representation of trait congruent emotional processing than autobiographical retrieval tasks.

Summary of trait effects. Similar to the mood-congruency literature, there is some evidence for trait-congruent processing of emotional cues, but the effect has not been obtained consistently across different cognitive tasks. Perceptual studies of depression and anxiety have yielded mixed findings, although the results appear to be stronger for clinical disorders than for sub-clinical depression and trait anxiety. Studies of trait-congruent attention also have yielded mixed results for subclinical depression and trait anxiety, with stronger effects for clinical disorders. The most consistent evidence for trait-congruent processing of emotional cues falls within the judgment/interpretation of ambiguity literature, where there is strong evidence for trait-congruent judgments for trait anxiety, depression, anger/hostility, and repression/sensitization. The results of recall and recognition studies appear to be dependent on whether the stimuli used in the task are encoded as self-referent. When the stimuli are not encoded as self-referent, the findings from recall studies are less consistent. The autobiographical memory literature seems fairly consistent; trait-congruent effects have been found for neuroticism, depression, and anxiety for the content of autobiographical memories. However, autobiographical memory studies suffer from the problem of differing life experiences and events for depressed and neurotic individuals.

There are also several gaps in the literature on trait-congruent processing. Most of this literature has focused on anxiety and depression, with very few studies of other specific emotional traits. For example, very few studies have been conducted examining how trait anger/hostility relates to processing of emotional information. Even more problematic is the lack of research investigating positive emotional traits. The few studies that have examined positive traits (e.g., extraversion, subjective well-being, self-esteem) have produced fairly encouraging results, and further research needs to be conducted examining the role that such positive traits play in emotional processing.

Summary of Evidence for the Traditional Approach

There is some evidence for the effects of mood and personality on the processing of emotional information; mood-congruency and trait-congruency effects have been obtained using a variety of procedures. However, the evidence is not as consistent as expected on the basis of predictions deriving from emotion-congruency theories. There are several studies that have yielded no evidence for emotion congruency, asymmetrical effects of positive and negative moods and traits, or an opposite effect of

mood and traits on cognition (incongruency). In the next section, I discuss some of the explanations researchers have proposed for explaining this lack of consistency.

Explanations for Inconsistencies in the Traditional Literature

Researchers have offered several possible explanations to account for the inconsistencies obtained in studies of mood congruency and trait congruency. These explanations range from specifying task characteristics responsible for the effects to discussing alternative situational and personality variables that may influence mood-congruency and trait-congruency effects.⁶

Methodological Problems

One possible reason for the inconsistencies in the traditional literature is that the studies yielding null findings suffer from methodological problems that lessen the impact of moods and traits on emotional processing. Some of the mood-congruency and trait-congruency studies described earlier as yielding no evidence for emotion-congruency involved small sample sizes, which prevented mood or trait effects from reaching statistical significance (e.g., Clark et al., 1983; Craighead et al., 1979; Gerrig & Bower, 1982; Hill & Knowles, 1991). In some of these cases, the studies included fewer than 30 participants to be divided into two or three mood induction conditions (Clark et al., 1983; Gerrig & Bower, 1982; Hill & Knowles, 1991). In other cases the pool of potential participants from which high and low trait individuals were selected was too small to produce meaningfully different groups. For example, Craighead et al. (1979) selected 32 depressed and nondepressed participants from a pool of 80 individuals. It is possible that the two groups were not different enough to produce significant differences in emotion-congruent processing.

It may also be the case that certain cognitive tasks suffer from specific problems that make them less likely to detect differences in emotional processing. For example, Hasher et al. (1985) were criticized for using narrative stories as material for later recall (Mayer & Bower, 1985). Mayer and Bower (1985) suggested that using a story instead of a list of words may have contributed to Hasher et al.'s null findings. They pointed out that the stories intermingled positive and negative statements, which could have reduced selectivity in mood effects. Because positive and negative statements were included in each story, it is possible that the recall of any one statement could bring to mind all positive and negative statements from the story. Thus, any task in which positive and negative emotional stimuli are intermingled could reduce mood-congruency effects.

⁶ The idea that emotion-congruency may depend on certain task and situational characteristics suggests that moods and traits may interact with these variables to influence emotional processing. This interaction is not predicted by the older theories, such as Bower's (1981) associative network model and Beck's (1976) schema theory. However, more recent theories do take into account and try to specify these variables (e.g., Forgas's, 1994, 1995, affect infusion model). The traditional approach therefore includes studies testing for the influence of certain task and situational variables on mood-congruency and trait-congruency effects.

A number of other task characteristics could reduce the possibility of detecting emotion-congruency effects. As discussed earlier, self-referent encoding appears to be particularly important for obtaining the effect. Whether the task is open-ended or constrained also seems to play a role. The extent to which the cognitive task used to measure emotional processing conforms to these features should play a significant role in obtaining the effect.

Methodological problems provide one possible explanation for the lack of evidence for emotion-congruency obtained in some studies in the literature. Insufficient power due to small sample sizes or unreliable measures could contribute to these null findings. However, such problems cannot account for the results of studies finding evidence for mood-incongruency or for asymmetrical effects of moods on emotional processing.

Different Mood-Induction Procedures

A related possibility is that the inconsistencies in the mood-congruency literature may depend on the mood induction procedure that is used to create the relevant mood state. Many of these studies used the Velten mood induction procedure, in which individuals read a series of elating or depressing statements designed to evoke the corresponding mood state (Velten, 1968). This procedure has been criticized for its susceptibility to demand effects, because participants may easily figure out (or actually be told) that the purpose of reading the statements is to induce elation or depression. In a recent meta-analysis, Larsen and Sinnett (1991) found evidence for demand effects in studies using the Velten technique. They found stronger Velten effects on mood for studies in which individuals were explicitly told that the purpose was to induce a mood than for studies in which individuals were given a deceptive cover story.

It is sometimes argued that participants who are aware of the relevance of mood to the study might additionally try to help the experimenter by deducing the hypothesis and showing the mood-congruency effect. Gayle (1997) noted that a major problem with many mood-congruency studies is that the experimenters are often aware of the hypothesis, and that this information is somehow disseminated to the study participants. However, such demand effects do not appear to influence mood-congruency. Mayer et al. (1990) varied the instructions given to participants prior to a judgment task so that some of the participants were told to "get into the mood" and others were given instructions with no mention of mood. The same mood-congruency pattern was obtained in both instructional conditions. Furthermore, studies using nonverbal mood induction procedures, such as odors or facial posing, also have yielded evidence for mood-congruency (Erlichman & Halpern, 1988; Riskind, 1983). Because participants were most likely unaware that mood was relevant to the study in these cases, such studies provide evidence against the possibility that demand effects influence mood congruency. Thus, although the Velten mood induction procedure may be susceptible to demand effects, such effects do not appear to influence mood congruency, and cannot entirely account for inconsistencies in the traditional literature.

There is some evidence indicating that the inconsistencies in the literature may be due to whether a mood is induced at all. Several studies have used measures of natural mood to put individuals into positive and negative mood categories, rather

than inducing a mood state. These natural mood studies tend to yield symmetrical support for the mood-congruency hypothesis across a variety of diverse cognitive tasks (e.g., Mayer et al., 1992; Mayer & Volanth, 1985; Mayer, Mamborg, & Volanth, 1988). It is interesting to note that because mood was not explicitly manipulated in these studies, the results may be due to stable personality variables that predispose individuals to experience the moods they were experiencing during the study. Perhaps the reason more supportive results have been obtained in natural mood studies is because they allow for the operation of both temporary mood and stable personality variables during the cognitive tasks.

Some evidence for this idea comes from research by Mayer et al. (1988), who conducted a series of studies examining the influence of mood states and personality traits together on a variety of judgment tasks. In each study, participants completed several judgment tasks, including probability estimates and free associations to positive and negative words. They also completed a current mood measure and trait measures of extraversion and neuroticism. Not only were both mood states and personality traits significantly related to mood-congruent judgment on a majority of the judgment tasks, but using mood state and personality trait measures together also produced slightly better predictions of performance on the tasks than measures of states or traits alone. This finding suggests that, on these types of judgment tasks, frameworks that take into account both moods and traits should produce stronger evidence for emotion congruency than those that keep the effects of moods and traits separate.

Another explanation for the inconsistencies in the mood-congruency literature is that different mood induction procedures may influence attempts to regulate emotional states, which then activate emotional concepts in memory that are both congruent and incongruent with the induced emotion. For example, Parrott and Sabini's (1990) mood-incongruent findings could be interpreted as the result of such mood-regulatory processes. In their field studies, Parrott and Sabini used performance on a midterm exam to induce mood, and individuals were placed in the positive mood group if they performed "better than expected" on the exam. Because individuals could not be randomly assigned to conditions in this study, their placement into this mood group could reflect a stable disposition. Those who performed "better than expected" on the exam could have low expectations regarding exam performance, and the context of an exam could prime negative memories for these individuals regardless of their actual performance. The situational characteristics of a mood induction procedure, and the way positive and negative mood groups are defined, may influence whether mood congruency or incongruency is obtained.

Mood Regulation

Several researchers have suggested that mood regulation may play an important role in obtaining emotion congruency (e.g., Blaney, 1986; Isen, 1985, 1987; Parrott & Sabini, 1990; Singer & Salovey, 1988; Smith & Petty, 1995). Some individuals may regulate negative moods by searching for positive information, thereby eliminating any negative mood-congruency effects. That is, some individuals may show mood-incongruent processing to relieve a negative mood and return to a more positive or neutral state.

Such individual differences may account for many of the inconsistencies in the mood-congruency literature. A good deal of accumulating evidence suggests that there are individual differences in the use of strategies to regulate different mood states, and that certain strategies are effective for different individuals. These studies have found individual differences in the use and effectiveness of strategies to regulate depressed mood (e.g., Nolen-Hoeksema, 1991; Nolen-Hoeksema & Morrow, 1993; Nolen-Hoeksema, Morrow, & Fredrickson, 1993), anxious mood (Thayer, Newman, & McClain, 1994), angry mood (Rusting & Nolen-Hoeksema, 1998), and general negative mood (Cattanzaro & Mearns, 1990). When people are under no situational constraints to maintain their moods, those who find negative moods particularly aversive may try to alleviate them by retrieving pleasant thoughts and associations. Taking into account both temporary mood states and stable personality traits related to emotion regulation may yield more consistent findings than studies examining the effects of moods and traits alone.

There may also be motivational characteristics associated with specific emotional states that influence whether emotion-congruency effects are obtained. Because different emotions are thought to include different action tendencies, motivational characteristics associated with those tendencies should influence emotional processing. For example, Taylor (1992) induced an angry mood before recall of positive or angry words, and found the mood-congruency effect for anger only for participants who expected to retaliate. Those who were not given the opportunity to retaliate did not show mood-congruent recall. This suggests that the opportunity to retaliate provided an impetus to prolong one's anger by retrieving anger-relevant material. One might predict a similar effect for other specific emotions. For example, anxiety may relate to mood-congruent processing only for individuals who are motivated to perform well on a difficult and important task.

The importance of such variables in research on the influence of mood on cognition was highlighted in L. L. Martin's recent work on "mood as input" (L. L. Martin, Achee, Ward, & Harlow, 1993; L. L. Martin & Stoner, 1996; L. L. Martin, Ward, Achee, & Wyer, 1993). According to this model, mood states suggest different motivations in different contexts, and they influence cognitive processing differently depending on the motivations they suggest. One of the strengths of this approach is that it predicts that people's use of mood-regulation strategies should vary with the context and the meaning that the mood has in that context. It is often assumed that people attempt to eliminate negative moods and maintain positive moods. However, there are some contexts in which one may wish to maintain a negative mood (e.g., anger when there is an opportunity to retaliate; sadness upon hearing tragic news from a friend). Unlike other models, the "mood as input" approach allows for the operation of such contextual variables and specifies how they influence emotional processing.

Within the traditional emotion-congruency literature there has been a lack of attention to such motivational variables. This lack of attention may be due in part to the tendency for classic models of emotion-congruency (e.g., associative network models) to leave out such regulatory variables. However, these motivational variables are clearly important for a comprehensive understanding of emotional processing. More recent theories have taken such variables into account (Forgas, 1994, 1995).

Different Cognitive Tasks

Another suggested explanation for the inconsistencies found across tasks in mood-congruency and trait-congruency studies is that certain cognitive tasks may be more sensitive to emotion congruency than others. According to the affect infusion model (Forgas, 1995), when faced with a complex or ambiguous judgment target, individuals should engage in more substantive processing, and mood-congruency effects should be more pronounced. In both the mood and trait literatures, most of the evidence is concentrated around interpretation studies, which typically involve a judgment about a complex and ambiguous cue. The affect infusion model therefore offers a nice framework for understanding the task characteristics that influence mood congruency.

The tendency for judgment/interpretation tasks to yield more consistent evidence for emotion congruency than attention and free recall tasks could also be purely methodological. Most judgment tasks allow for a range of responses (i.e., many involve open-ended cues), whereas most of the attention tasks and many free recall tasks involve presentation of a limited number of stimuli to participants. Judgment tasks may therefore best capture the idiosyncratic nature of emotion-congruent responding, which would contribute to their greater consistency in yielding evidence for emotion congruency. In other words, judgment tasks simply may be better measures of differential emotional processing than attention and free recall tasks.

Another possible explanation, however, is that the stronger effects obtained on judgment/interpretation tasks are due to individual differences in personality, rather than substantive processing per se. Perception, attention, and recall tasks have tended to rely on emotion words as cues. Such emotion words have fairly strict agreed-upon definitions, and are chosen because they fall neatly into a positive or negative category. Judgment tasks, on the other hand, use ambiguous cues that are open for interpretation. Because they are less constrained (i.e., they do not rely on shared meanings), judgment tasks may be more open to the effects of individual difference variables. It is possible that the stronger effects obtained in judgment tasks may be the result of such studies allowing for the operation of both situational and individual factors.

Emotional Specificity

Niedenthal and colleagues have argued that another possible reason for the inconsistencies in the mood-congruency literature could be a disparity in these studies between the specific emotional state induced and the specific emotions portrayed by the stimuli (Niedenthal & Setterlund, 1994; Niedenthal et al., 1994). To test this possibility, Niedenthal and Setterlund used specific happy and sad mood inductions to measure mood-congruency effects on words that were specifically happy and sad (rather than generally positive and negative). Unlike much of the mood and perception literature reviewed earlier, they obtained mood-congruent perception for both happiness and sadness. The inconsistencies in the mood-congruency literature may therefore be dependent on the match between the specificity of mood states and the specificity of processing cues.

Laird et al. (1989) provided another interesting explanation of the inconsistencies found in this literature. They noted that

many of the studies of mood and memory have focused only on two specific mood states: elation and depression (sometimes labeled positive and negative mood). They suggested that some of the failures to find differential mood-congruency effects for negative mood inductions occurred because the procedures used to induce mood have primarily only induced sadness. The effects of sadness may not be generalizable to other negative emotions. To test this assumption, they induced the specific emotions of sadness, anger, and happiness by means of facial manipulation. They found mood-congruency effects for happiness and anger, but not sadness. Happy individuals retrieved happy memories, angry individuals retrieved angry and disgust memories, and sad individuals showed no differential memory retrieval. The specificity of the induced mood may therefore determine the extent to which mood-congruency effects are obtained, and may help explain some of the inconsistent findings within this literature.

It is unclear to what extent such specificity effects can explain inconsistencies in the trait-congruency literature. One recent theoretical approach suggested that specificity is important in the trait-congruency literature (Williams, Watts, McCleod, & Mathews, 1988). In clinical studies, depression is often related to the retrieval of negative stimuli and experiences, but evidence linking depression to attentional processes is less commonly obtained. Anxiety shows the opposite pattern; individuals with anxiety disorders often show attentional effects on emotional processing, but there is little evidence for emotion-congruent retrieval in anxious individuals (MacLeod & Mathews, 1991; Mathews & MacLeod, 1994; Mineka & Nugent, 1995; Mineka & Sutton, 1992). Williams et al. provided a cognitive model to account for these findings. These authors have suggested that anxiety is characterized by an early automatic attentional bias for threat, and that depression is associated with greater elaboration of (and memory for) self-relevant negative information (MacLeod & Mathews, 1991; Williams et al., 1988). As a result, anxiety and depression influence emotional processing at different levels or stages of information processing. This perspective is consistent with a specificity approach to emotional processing.

On the other hand, some evidence suggests that specificity in emotional processing is not the case. As discussed earlier, some studies have demonstrated that the broad traits of neuroticism or negative affectivity facilitate the processing of negative emotional material in general, including material associated with various specific negative traits (e.g., Bradley & Mogg, 1994). Even though both levels of emotional processing likely exist, the broader dimensional approach may be more useful for understanding the underlying cognitive mechanisms associated with stable emotion-relevant personality traits. Although specific emotions may be conceptually distinct with different expressive patterns and arising from different precipitating circumstances, specific negative emotions, including depression and anxiety, tend to correlate with one another in self-report measures of emotional experience (Kendall & Watson, 1989; Watson & Clark, 1984). People also tend to experience different positive and negative moods simultaneously; in studies of daily mood experience, the negative emotions combine to form a broad negative affect factor and the positive emotions combine to form a broad positive affect factor (Watson, 1988; Watson et al., 1988; Watson & Tellegen, 1985). Because of the strong relations

among specific negative emotions over time, it is unlikely that specificity of stable emotional traits could explain the inconsistencies in the trait-congruency literature.

Self-Reference

Several researchers have argued that self-referent encoding could explain the inconsistencies in the emotion-congruency literature (see Blaney, 1986, for a review). In both the mood-congruency and trait-congruency literatures, studies that require self-referent encoding prior to recall or recognition tasks have yielded stronger trait-congruency effects than those that did not require such encoding (Bradley & Mathews, 1983; Denny & Hunt, 1992; Derry & Kuiper, 1981; Hammen et al., 1986; Ingram et al., 1983; Kuiper & Derry, 1982; Kuiper et al., 1985; Mathews & Bradley, 1983; Watkins et al., 1992; Zuroff et al., 1983). In addition, some of the strongest evidence for mood congruency and trait congruency comes from studies of autobiographical memory, which by definition are self-relevant.

The stronger self-reference effects in the emotion-congruency literature are consistent with self-schema models, which propose that material related to the self should be the most elaborated knowledge structure in memory (e.g., Markus & Sentis, 1982). Information related to the self is thought to be quite extensive and elaborate in memory, representing all significant self-relevant events and experiences for each individual. The fact that the self is a large complex structure made up of such diverse interconnected concepts should influence differential recall and recognition of self-referent versus non-self-referent emotional cues. When stimuli are presented that tap into this self-concept, stronger effects should be obtained than when non-self-relevant material is presented, because such self-referent stimuli should activate the diverse interconnected events and experiences related to the self in memory.

The stronger self-referent effects in the emotion-congruency literature are also consistent with the idea that such material in memory is part of a relatively stable self-concept. Beck's theory of depression and anxiety suggests that these stable memory structures need to be activated by a relevant stimulus in the current situation (Beck, 1976; Beck & Clark, 1988; Beck et al., 1979; Kovacs & Beck, 1978). A mood induction followed by a self-referent processing task may provide the necessary stimulus to activate these memory structures. Thus, studies that incorporate self-referent processing tasks may actually be tapping into stable structures in memory, rather than producing effects that are purely dependent on temporary mood states. The stronger effects obtained in these studies (than in studies using non-self-referent mood-congruency tasks) suggest that incorporating measures tapping into stable traits along with temporary mood states should yield the most consistent evidence for emotion congruency.

Lack of Attention to Both Temporary Mood States and Stable Personality Traits

Many of the above explanations may account for some of the inconsistencies obtained in studies examining the separate effects of moods and traits on emotional processing. Another explanation, however, is that studies of emotional processing must include measures of both stable traits and temporary mood

states to obtain meaningful results. Moods and traits are correlated, yet they also represent somewhat distinct aspects of experience. That is, personality traits represent underlying propensities toward mood states, but do not necessarily always produce them (e.g., an individual high in neuroticism can be in a good mood at least some of the time). Therefore, emotional processing is most likely influenced by both mood and trait variables. The best test of this proposition would be to include measures of both moods and traits in emotional processing studies, and to examine their independent and overlapping effects (by running multiple regressions, or some other type of analysis that allows for an investigation of the effects of each of these variables controlling for the other). Without measures of both variables, this type of analysis is not possible. The lack of simultaneous attention to the effects of both moods and traits in the traditional literature may have contributed to the inconsistencies obtained in mood-congruency and trait-congruency studies.

Some of the previous explanations suggest that both moods and traits play an important role in explaining emotion congruency. For example, the stronger results obtained in natural mood studies (as compared to studies using mood induction procedures) may be due to stable personality variables that predispose individuals to experience positive and negative mood states. It is possible that more supportive results have been obtained in natural mood studies because they allow for the natural operation of both temporary mood and stable personality variables. The mood-regulation explanation also proposes that both mood and personality variables play a significant role in obtaining emotion congruency. The incongruency effects obtained in the traditional literature are thought to result from individual differences in emotion regulation tendencies after certain mood states have been induced, and there appears to be some evidence that this is the case (Josephson, Singer, & Salovey, 1996; Sedikides, 1994; Smith & Petty, 1995). The self-reference explanation also points toward the importance of assessing both temporary mood states and stable personality traits. Studies that incorporate self-referent processing tasks may actually be tapping into a relatively stable knowledge structure representing information related to stable personality dispositions. The stronger effects obtained in studies using self-referent emotional cues suggest that incorporating measures that tap into this stable knowledge structure along with measures of temporary mood state may yield the most consistent evidence for emotion-congruency. Even though these explanations were not originally conceived as attempts to incorporate individual difference variables into the mood-congruency literature, they partially suggest that stable features of personality act in concert with temporary mood states to influence the processing of emotional cues.

In addition, the emotion-congruency theories reviewed earlier suggest that parts of a stable organization of emotion-relevant thoughts and associations are brought to mind only in the presence of an eliciting circumstance. For example, Beck's schema theory posits that depressive and anxiety-relevant information is encoded into memory during stressful childhood experiences (Beck, 1976; Beck & Clark, 1988; Beck et al., 1979; Kovacs & Beck, 1978). When later exposed to events or experiences that are similar to the earlier experiences these cognitive structures become reactivated. Isen et al.'s (1978) "cognitive loop" suggests a similar process. Emotion-congruent material in memory becomes accessible when activated by a positive or negative

emotional state. The accessibility of positive or negative associations in memory then prolongs the emotional state, and leads to cycle of positive or negative thoughts and emotions. This cycle may, in turn, reinforce the stable organization of emotional concepts in memory and contribute to the maintenance of stable emotional traits. That these associations are activated by temporary situations suggests that it is necessary to measure both stable underlying dispositions (which contribute to a stable organization of emotional concepts in memory) and temporary states (which activate those concepts) when investigating emotion congruency.

Because research within the traditional approach has focused on the separate effects of moods and traits on emotional processing, it may not adequately represent the processes suggested by emotion-congruency theories. Indeed, some researchers have suggested that both stable dispositions and temporary mood states contribute to the organization of affective structures in memory (e.g., Hamilton, 1983). Both moods and traits should also play a significant role in the retrieval of such affective memories. Furthermore, we know from the personality and emotion literature that personality traits and mood states are highly correlated, and that many personality traits also represent propensities to experience certain moods intensely or frequently (Costa & McCrae, 1980; Gilboa & Revelle, 1994; Watson & Clark, 1984; Watson et al., 1988). Because state and trait measures are highly correlated, it seems unlikely that the effects of states and traits are independent; it is more likely that state and trait measures overlap to some extent in their influence on cognition. Thus, taking into account both temporary mood states and stable personality traits may yield more consistent findings than studies examining effects of moods and traits separately. In the remainder of this article, I review the evidence supporting this combined mood/trait perspective.

Framework 2: The Moderation Approach

The moderation approach (shown in Figure 2) suggests that temporary mood states and stable personality traits interact to influence processing of emotional information. The effects of temporary moods on emotional processing may depend on individual differences in stable personality traits. In other words, personality may moderate the mood-congruency effect. An individual's standing on certain emotion-relevant personality traits may determine whether a mood-congruent, mood-incongruent, or no mood effect on emotional processing is obtained.

Researchers have only recently begun to test this possibility by conducting emotional processing studies that include measures of both traits and moods, and testing for interaction effects. Although the number of studies that include both mood and trait measures is growing, researchers rarely examine the Mood \times Trait interactions, instead pitting the mood-congruency and trait-congruency effects against one another to see which is stronger. Those who have examined interactions provide evidence supporting the moderation approach. The moderation literature is not as extensive as the traditional literature, yet the evidence provided by studies testing for moderation suggests that this framework better captures the processes underlying emotion congruency.

Does Personality Moderate the Mood-Congruency Effect?

Emotion-congruency theories, such as the associative network model, have traditionally focused on the effects of current mood states on emotional processing. However, more recent revisions and criticisms of these theories have emphasized the importance of including motivational influences such as the use of mood-regulation strategies (Forgas, 1995; Isen, 1985; Singer & Salovey, 1988). To the extent that such motivational influences are related to stable personality traits, such traits should have an impact on the processing of mood-congruent information.

Several personality variables may be associated with the extent to which individuals are able and willing to regulate their negative mood states. For example, Mayer and Salovey (1988) detailed some of the ways in which mood-regulatory variables may moderate the relationship between mood and cognition. Traits that tap directly into mood-regulation tendencies, such as negative mood regulation expectancies or meta-mood experience, should substantially alter the processing of emotional cues in the presence of a negative mood state. Individuals who score high on these traits should be most likely to regulate their moods, perhaps by avoiding negative cues or by focusing on positive cues. Positive emotional traits, such as extraversion, self-esteem, or positive affectivity, may have a similar effect on emotional processing. Individuals who score high on positive emotional traits or low on negative emotional traits may be more motivated and able to retrieve positive thoughts and memories in the face of a negative emotional state. Because these traits represent tendencies to avoid negative stimuli, to focus on positive stimuli, or both, when experiencing negative mood states, they should moderate the extent to which mood-congruency and mood-incongruency effects emerge.

There are at least two types of interaction effects possible in the emotion-congruency literature. One type of interaction involves opposite effects of mood on emotional processing, which vary with the individual's standing on personality variables related to mood-regulation. For example, individuals high in self-esteem might regulate an induced negative mood state by retrieving positive thoughts and memories (and would show mood-incongruency effects); individuals low in self-esteem might not do anything to regulate the negative mood state (and would show typical mood-congruency effects). Another type of interaction involves stronger mood effects for different trait levels. This type of interaction would produce an enhanced mood-congruency effect for individuals scoring high on certain traits. For example, individuals high in neuroticism might be especially prone to negative mood-congruent thoughts and memories, but individuals low in neuroticism might be less prone to negative mood-congruent thoughts and memories. As a result, high neuroticism individuals would show a stronger mood-congruency effect than low neuroticism individuals. The emotional processing literature provides some evidence for both of these types of interaction effects.

Evidence for Personality \times Mood Interactions

What is the evidence for the moderating influence of personality on mood-congruency? Similar to most of the emotion-congruency literature, the majority of studies measuring both mood

and personality variables have used memory procedures. Many of these studies provide evidence supporting a moderation effect.

Attention. Some researchers have begun to examine Personality \times Mood interactions in attention to emotional stimuli. Although few in number, these studies have generally yielded support for an interaction effect. In one study, Richards et al. (1992) induced an anxious mood in participants who scored high and low on trait anxiety, and observed performance on the emotional Stroop task. They found that individuals high in trait anxiety were slower to name anxiety-related words when an anxious mood had been induced. This effect was stronger than for individuals in the low trait anxiety group. Even though induced anxiety may influence attention to threatening cues for all individuals, those high in trait anxiety were less able than those low in trait anxiety to shift attention away from the threatening content of the anxiety-related words.

Attentional studies of recovered depressed patients also provide some evidence supporting the moderation approach. In one of these studies, Gotlib and Cane (1987) measured depressed and nondepressed individuals' color naming latencies on an emotional Stroop task on two occasions, once before treatment (when depressed mood was high) and once after treatment (when depressed mood was low). Before treatment, the depressed individuals were slower than the nondepressed controls to name depressed content words, indicating an increased attention to depressive word content. After treatment, however, there was no difference between the depressed and nondepressed individuals; the depressed individuals no longer showed selective attention to depressive word content; instead they evidenced equal attention to depressive, manic, and neutral words. Prior to treatment the depressed individuals were more prone to negative mood states, which influenced attention to negatively valenced words. The effects of depression on attention to emotion-congruent stimuli therefore appear to be dependent on current mood state, supporting the moderation approach.⁷

Others have found interaction effects on dichotic listening tasks, in which participants listen to two different messages (one in each ear) and their attention to emotional content in each channel is measured. For example, McCabe and Gotlib (1993) asked depressed and nondepressed individuals to respond to a light probe while concurrently listening to positive and negative cues on a dichotic listening task on two occasions. On the first occasion, depressed participants took longer to respond to the light probe when they heard negative cues than when they heard positive or neutral cues. This suggests that the

⁷ All recovery studies cited in this section of this article include two elements: (a) a clinical group and a control group (e.g., depressed vs. nondepressed), and (b) a cognitive task performed at two occasions (e.g., pre- and posttreatment). One could interpret the findings from these types of studies as simply evidence for the main effects of mood on emotional processing. However, these studies involve testing the same individuals at two occasions: one in which mood is depressed, and the other in which mood is neutral. These individuals should still have the same cognitive vulnerability factors (or personality traits) that made them susceptible to depression. If so, then any Group \times Time (or session) interaction effects could be interpreted as Trait \times Mood interaction effects. This interpretation rests on the assumption that recovered individuals still possess personality traits representing emotional vulnerabilities and that nonclinical individuals do not possess those traits.

negative cues were grabbing their attention and slowing their response to the light probe. The nondepressed participants did not differ in their attention to positive, negative, or neutral cues. Three months later, when the depressed individuals' depressed mood had lifted, their performance was no longer slowed by the negative cues, and they showed attentional effects similar to those of the nondepressed individuals. A similar pattern of findings was obtained by Ingram, Bernet, and McLaughlin (1994), who induced depressed or neutral mood, and had recovered depressed and never-depressed individuals perform a dichotic listening task. They found that during a neutral mood state, the two groups performed equally well when shadowing positive and negative messages. However, during depressed mood, the recovered depressed individuals made more errors in shadowing both positive and negative messages. This Mood \times Depression interaction remained significant even when the authors reran the analyses controlling for individual differences in baseline performance (which suggests that the effects were not simply because depressed individuals made more errors overall). Recovered depressed individuals therefore showed trait-congruent attentional processing, but only in the presence of a negative mood state.

These studies each suggest that attention to trait-congruent stimuli is enhanced when the individual is experiencing a mood state of the same valence. In other words, mood state moderates the relationship between personality (e.g., trait anxiety and depression) and attentional processing of emotional stimuli. Although supportive of the moderation approach, most of this evidence comes from studies of recovered depressed patients. Further research examining such effects in nonclinical samples is necessary before drawing strict conclusions regarding the moderation of attentional trait-congruency effects by current mood state.

Interpretation/judgment. Although still relatively few in number, studies of interpretation/judgment have included a broader variety of cognitive tasks and personality measures. The evidence for Personality \times Mood interactions in emotional processing is quite consistent across these studies.

Some of this evidence comes from studies of mood-congruent judgment in recovered clinically depressed or anxious individuals. For example, clinically depressed participants make higher probability ratings for negative outcomes than do recovered depressed or normal control participants, suggesting that negative judgments are dependent on current depressed mood (e.g., Lewinsohn, Steinmetz, Larson, & Franklin, 1981). Patients with generalized anxiety disorder also show an increase in negative interpretations/judgments that disappears after recovery, relative to nonanxious controls (M. W. Eysenck, Mogg, May, Richards, & Mathews, 1991; Mathews, Richards, & Eysenck, 1989). Mathews et al. had anxiety patients, recovered anxiety patients, and control participants complete a homophone task with cues that had threatening or neutral meanings, and found that the patients accessed more threatening meanings of homophones than recovered anxious and control participants. M. W. Eysenck et al. (1991) found the same pattern of findings for ambiguous sentences with threatening and neutral meanings. That the clinically anxious individuals were more likely to interpret the threatening meanings of ambiguous cues than recovered individuals suggests that an anxious state may be necessary to evoke such associations from memory. Thus, the effects of both clinical

depression and anxiety on emotional processing appear to be moderated by current mood state.

Smith and Petty (1995) provided some of the most direct evidence for the interactive effects of mood and personality on emotion-congruent judgment. They hypothesized that the personality traits of self-esteem and negative mood regulation expectancies would moderate the mood-congruency effect. In a series of studies they examined how an induced negative mood state interacted with these personality traits to influence performance on a variety of cognitive tasks. Their results indicated that self-esteem moderated the relationship between negative mood and valence of stories written in response to an emotionally ambiguous pictorial cue. Following the negative mood induction, individuals low in self-esteem wrote more negatively toned stories, whereas individuals high in self-esteem wrote more positive stories. The authors interpreted this finding as evidence for effective mood-regulation among high self-esteem individuals, speculating that they immediately sought out positive material to try to repair the negative mood that had been induced.

The recent emergence of research investigating individual differences in the tendencies to regulate negative emotions suggests that such tendencies may play a significant role in emotional experience (Catanzaro & Mearns, 1990). Those who are able to successfully regulate negative emotions should be less likely to show mood-congruent processing of emotional cues because they are able to successfully turn attention away from negative material in memory (Salovey et al., 1995). Gasper and Clore (1996, 1997) recently demonstrated that individual differences in attention to emotion (as measured by Salovey et al.'s, 1995, measure of trait meta-mood) influenced risk estimates for negative events. Dispositional attention to emotion interacted with an instructional manipulation of attention to emotion to influence judgment. Individuals scoring high on dispositional attention to emotion were more likely to make trait-congruent judgments of risk when they were instructed to focus on their mood than when they were instructed to focus on the "facts." These findings suggest that individual differences in mood-regulation tendencies (attention to emotion) interact with situational variables to influence mood-congruent judgment.

A similar moderating effect may be predicted for individual differences in other mood-regulative variables, such as ruminative or distracting response styles. Research by Nolen-Hoeksema and colleagues has documented that there are individual differences in the tendencies to ruminate or distract when depressed, and that these response styles are linked to the intensity and duration of depression episodes (Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 1993). Individuals with a ruminative response style experience longer and more severe periods of depression than individuals with a distracting response style. Lyubomirsky and Nolen-Hoeksema (1995) found that during a depressed mood, people who ruminated made more negative interpretations of hypothetical events than people who distracted. Rusting and Nolen-Hoeksema (1998) found a similar effect for individuals who had been induced to feel angry; those who ruminated about their anger wrote stories in response to an ambiguous cue that contained more negative and angry content than those who distracted. Taken together, these studies suggest that individual differences in tendencies to regulate or respond to emotions, such as rumination or distraction, may

moderate mood-congruency effects. For both depressed and angry moods, individuals who ruminate show mood-congruent judgment; those who distract do not show this effect (Lyubomirsky & Nolen-Hoeksema, 1995; Rusting & Nolen-Hoeksema, 1998).

Because interaction effects have been obtained for both positive traits such as self-esteem and negative traits such as depression and anxiety, the moderating influence of personality on mood-congruency appears to influence both positive and negative judgments. However, many more interpretation/judgment studies have focused on the separate effects of moods and traits on judgments than on interaction effects. More research testing for interactions in the judgment literature is necessary.

Recall/recognition. Studies using memory tasks to examine the influence of moods and traits on cognition are more numerous, and provide fairly consistent evidence supporting the idea that personality traits moderate the mood-congruency effect. Similar to the traditional literature, many of these studies involve presenting individuals with lists of emotionally valenced words, followed by a surprise free recall test. Unlike the traditional literature, however, the findings from these studies are generally consistent. Results supporting the moderation approach have been obtained for recall and recognition of emotional stimuli for a variety of personality traits and mood states and using a variety of mood induction techniques.

Some studies have found that subclinical depression levels moderate the mood-congruency effect in recall, such that depressed individuals show stronger negative mood-congruency and weaker positive mood-congruency effects than nondepressed individuals. For example, Ingram et al. (1983) had depressed and nondepressed people rate a series of positive and negative adjectives, manipulated mood with success or failure feedback, and then asked them to recall the words they had rated. They found that depressed and nondepressed individuals did not differ in recall of positive and negative adjectives in the failure (negative mood) condition. In the success (positive mood) condition, only nondepressed individuals showed the mood-congruency effect—nondepressed participants recalled more positive adjectives than depressed participants in this condition. Mayer et al. (1990) also found an interaction between depression and mood condition in mood-congruent recall. Following positive or negative mood inductions with “happy” or “sad” music and imagery, they had participants recall words from a previously presented list of positive and negative words. They obtained the typical positive mood-congruency effect for recall of positive words, but this effect was moderated by depression. More depressed individuals showed less mood congruency relative to nondepressed individuals in recall of positive words.

A similar pattern of findings comes from studies using clinically depressed and recovered depressed samples. For example, Dobson and Shaw (1987) gave a recall test to depressed, recovered depressed, and normal control participants, and found that depressed participants recalled more negative words than recovered and control participants. Recovered depressed participants (who were no longer in a depressed mood state) did not differ from normal controls in their recall of negative words. Hammen et al. (1986) and Slife, Miura, Thompson, Shapiro, and Gallagher (1984) gave depressed and nondepressed individuals recall tests at two different time points, once prior to treatment and

once following treatment. In both studies depressed participants showed trait-congruent recall of negative cues on the first testing occasion; the nondepressed controls did not show this effect. On the second occasion, those depressed individuals who had recovered following treatment no longer showed this recall effect.

Other traits also appear to moderate the mood-congruent recall effect. Bradley, Mogg, Galbraith, and Perrett (1993) had individuals high and low in neuroticism rate a series of positive and negative adjectives. After inducing a depressed or neutral mood, the participants were given a free recall test. After the depressed mood induction, high neuroticism participants showed greater recall of negative words than low neuroticism participants. After the neutral mood induction, the low neuroticism participants showed greater recall of neutral words than high neuroticism participants. A similar finding was obtained by Rusting (1998), where a significant Neuroticism \times Negative mood interaction effect was obtained on a free recall task. High neuroticism participants showed a stronger mood-congruency effect in the recall of negative adjectives than low neuroticism participants. These findings suggest that neuroticism amplified the negative mood-congruency effect.

The same pattern of findings has also been obtained in studies of trait anger/hostility. For example, Moser and Dyck (1989) had Type A individuals (hostility is a component of Type A) rate positive, hostile, and depressed adjectives, gave failure feedback (negative mood) or no feedback (neutral mood), and then asked participants to recall the adjectives. They found that in the failure condition, Type A individuals recalled more hostile adjectives than Type B individuals. Allred and Smith (1991) replicated this finding using a direct measure of hostility (the Cook-Medley Hostility Scale) and a specific anger mood induction (a hostile social interaction). This was followed by a recall test for a list of hostile and neutral adjectives that the participants had previously rated. Similar to Moser and Dyck, Allred and Smith found that following the hostile interaction, people high in trait hostility showed an increased recall of hostile adjectives. These studies all suggest that these negative emotional traits moderate the mood-congruent recall effect by amplifying mood-congruency effects.

There is also some evidence that traits related to mood-regulation may also interact with mood to produce mood-incongruency effects. Smith and Petty (1995) found some evidence for mood incongruency in their studies of self-esteem and negative mood regulation expectancies. They exposed participants to a series of newspaper headlines varying in positive, negative, and neutral emotional content, followed by a negative or neutral mood induction, and a recall test for the headlines. In addition to finding the typical trait-congruency effect (high self-esteem individuals remembered more positive headlines than low self-esteem individuals), they found an interaction between self-esteem and mood condition. Low self-esteem participants showed mood-congruent recall of headlines; they recalled more negative headlines in the negative mood condition, and more positive headlines in the positive mood condition. High self-esteem participants, however, recalled more positive headlines in the negative mood condition. According to Smith and Petty, individuals high in self-esteem may have retrieved such positive cues as an attempt to regulate the negative mood that had been induced.

A good deal of evidence suggests that personality traits in-

cluding trait anxiety, depression, neuroticism, trait anger/hostility, and self-esteem moderate the mood-congruency effect on recall tasks. High scores on these traits either amplify the mood-congruency effect or they change the effect by producing mood-incongruent recall. Thus, the moderation framework appears to be a viable representation of the variables and processes underlying emotion congruency.

Autobiographical memory. Fewer studies examining Personality \times Mood interactions have been conducted using autobiographical memory tasks, but those that exist support the moderation approach. Studies of emotional traits using autobiographical memories have produced results strikingly similar to those using word recall tasks. For example, in one of their studies Smith and Petty (1995) asked people high and low in self-esteem to list autobiographical memories after inducing a negative or neutral mood state. They obtained the same pattern of findings on this task as they found on judgment and free recall tasks. Low self-esteem participants showed mood-congruent memory; they retrieved more negative personal memories in the negative mood condition than in the neutral mood condition. High self-esteem participants, on the other hand, showed mood-incongruent recall. Following the negative mood induction, high self-esteem individuals retrieved more positive personal memories. As before, the authors interpreted this mood-incongruent recall as an attempt by people high in self-esteem to regulate the negative mood state that had been induced by retrieving positive memories and associations.

Josephson et al. (1996) found a similar effect for subclinically depressed and nondepressed individuals. They induced a sad or neutral mood state, and then asked participants to retrieve two "strongly positive or negative" personal memories. They found that in the sad mood condition, those who followed a first negative memory with a second positive memory reported a more positive mood than those who retrieved two negative memories. This finding suggests that positive memories may serve as an effective means of regulating a negative mood state. More important, those who retrieved two negative memories scored higher on depression than those who retrieved a positive second memory. Thus, subclinical depression moderated the mood-congruency effect in this study; nondepressed individuals appeared to regulate the negative mood that had been induced by retrieving positive second memories.

Summary of Evidence for the Moderation Approach

The evidence for the moderation approach is fairly consistent across attention, interpretation/judgment, recall and recognition, and autobiographical memory tasks. In each of these areas there is some evidence indicating that certain personality traits moderate whether mood-congruency or mood-incongruency effects are obtained. Traits related to mood regulation, such as self-esteem, lead to the regulation of induced negative moods and produce mood-incongruency effects. Other traits, such as neuroticism and trait anger/hostility magnify negative mood-congruency effects. Studies that take into account these Personality \times Mood interactions appear to produce a more consistent pattern of findings than studies examining the effects of moods and traits separately. However, far fewer studies have examined Mood \times Trait interactions than have examined separate effects

of moods and traits on emotional processing, and more research exploring interactions is needed.

Before drawing firm conclusions about the moderation approach, further research is needed to examine how mood and personality variables interact to influence emotional processing. Very few studies have investigated how personality traits may moderate mood-congruent perception and attention, and very few studies have included measures of traits directly related to mood regulation (e.g., negative mood-regulation expectancies, meta-mood experience). It is also necessary to understand the nature of Mood \times Personality interactions in these studies. For example, when are amplification versus incongruency effects obtained? Are interactions obtained for all emotional personality traits, or only for some?

Regardless of these gaps in the knowledge about the nature of such Personality \times Mood interactions, the moderation approach appears to be promising for future research. The approach better specifies some of the processes outlined in emotion-congruency theories and it can account for some of the inconsistencies in the traditional literature. Furthermore, although not as extensive as the traditional literature, the evidence supporting the moderation approach is fairly consistent. Continued research in this area should aid in the understanding of how temporary mood states and stable personality traits influence the processing of emotional stimuli.

Framework 3: The Mediation Approach

Although the moderation approach appears to provide some evidence for the combined effects of moods and trait on emotional processing, another possible route to emotional processing is exemplified by the mediation approach. The mediation approach (shown in Figure 3) suggests that stable personality traits influence emotional processing through temporary mood states. We know from the personality and emotion literature that emotional traits are highly correlated with mood experiences of the same valence. For example, extraversion and neuroticism correlate fairly strongly with positive and negative affect. Many traits are even defined as propensities to experience certain emotional states (e.g., positive and negative affectivity). Thus, the relationship between personality and processing of emotional cues may have emerged in prior research because of the tendency for those scoring high on emotional traits to be experiencing positive or negative mood states. In other words, current mood state may mediate the relationship between personality and emotional processing.

Research Consistent With the Mediation Approach

Research testing the mediation approach would require measures of both current mood states and stable personality traits. As discussed previously, studies in the traditional literature have tended to examine trait-congruent processing of emotional information without measuring current mood state. Without a measure of current mood in these studies, one cannot definitively attribute the findings to stable personality traits. Although some studies have included measures of both moods and traits, these studies have tended to focus on independent effects of moods and traits or, occasionally, on Mood \times Trait interactions. Unfortunately, investigations directly examining whether the trait-con-

gruency effect is mediated by current mood state are virtually nonexistent. Because of the lack of research directly testing mediation, the empirical evidence for this approach is not yet known. There are, however, several important reasons why the mediation approach is promising for future research on emotion congruency.

One reason is that it is more consistent with concepts from recent emotion-congruency theories than the traditional approach. Most emotion-congruency theories suggest that parts of a stable organization of emotion-relevant thoughts and associations are brought to mind only in the presence of an eliciting circumstance, such as a mood state (Bower, 1981) or an event related to previous emotional experiences (Beck, 1976; Beck & Clark, 1988; Beck et al., 1979). That these stable associations are activated by temporary moods or events suggests that any it is necessary to measure both stable underlying dispositions and temporary states when investigating emotion congruency. Because personality traits predispose individuals to experience related emotional states, such states may mediate the relationship between such stable dispositions and the processing of emotional stimuli.

Although not directly testing for mediation, natural mood studies may, in some cases, be interpreted as consistent with a mediation approach (e.g., Mayer et al., 1988, 1992; Mayer & Volanth, 1985). Natural mood studies do not involve an explicit manipulation of mood state, and they therefore cannot tease apart mood influences on emotional processing from personality influences that may be contributing to the mood state. The emotion-congruency effects obtained in natural mood studies may be due to both stable emotional traits and temporary mood states. Personality may be contributing to the natural mood state that is reported, which then influences emotional processing. As discussed previously, natural mood studies have yielded somewhat more consistent results than other studies reviewed in the traditional literature. Perhaps this consistency is due to the operation of personality variables that predispose participants to experience the natural mood states they report in those studies.

Furthermore, the effects obtained in natural mood studies better represent the relationships between mood and personality and their effects on emotional processing than studies that induce artificial mood states in the laboratory. Because certain personality traits predict the stable experience of positive or negative emotional states (i.e., some individuals return to the same mood over and over; Epstein, 1983; Larsen, 1987), the effects of personality and mood on emotional processing should also be fairly stable. Some evidence for this idea was recently obtained by Mayer and Hanson (1995), who measured natural mood and judgment across four different time periods. They found not only that mood and mood-congruent judgment varied together over time, but also that mood and judgment were fairly stable processes. This stability indicates that both mood and judgment result from stable personality traits that predispose individuals to such moods and judgments, which is precisely what the mediation approach predicts.

It is important to note that some studies of induced mood are also consistent with the mediation approach. There is some evidence indicating that emotional traits relate to increased susceptibilities to positive or negative mood induction procedures. For example, when given exactly the same positive mood induction task, individuals high in extraversion report stronger posi-

tive affect than individuals low in extraversion. When given the same negative mood induction task, individuals high in neuroticism report stronger negative affect than individuals low in neuroticism (Larsen & Ketelaar, 1989, 1991; Rusting & Larsen, 1997). The effects of mood induction procedures therefore differentially influence individuals' moods; some individuals are more responsive to positive or negative mood induction procedures than others. Personality therefore plays a role in the effectiveness of mood inductions, which may then be related to the processing of emotional cues. Such effects may be especially apparent in mood-induction studies where researchers eliminate participants for whom the mood induction did not produce a sufficiently strong mood state (e.g., Halberstadt et al., 1995; Teasdale & Fogarty, 1979; Teasdale & Taylor, 1981). Such studies include only those individuals who are susceptible to the mood induction, and these individuals are likely to be those who score high on the personality dispositions associated with those susceptibilities. Thus, even studies that manipulate mood states do not rule out the possible influence of personality on mood and emotional processing.

Because it takes into account personality-mood relationships and their combined influence on emotional processing, the mediation approach provides a promising avenue for future research. This approach is consistent with research demonstrating strong relationships between personality and mood, and with definitions of emotional traits as propensities to experience certain mood states (e.g., Watson & Clark, 1984). Research directly testing mediation is necessary before any conclusions may be drawn regarding support for this framework. However, in light of the often-obtained correlations between personality and mood, tests of mediation should increase the understanding of the variables related to the cognitive processing of emotional stimuli.

Conclusions

In this article, I have reviewed evidence for emotion-congruent processing of affective stimuli in relation to stable personality traits and temporary mood states. The review was organized around three conceptual frameworks: (a) the traditional approach, which has focused separately on mood-congruency and trait-congruency effects on emotional processing; (b) the moderation approach, which suggests that personality traits interact with mood states to influence emotional processing; and (c) the mediation approach, which suggests that personality traits are related to propensities to certain mood states that influence emotional processing. Each of these frameworks summarizes a different route to emotional processing through mood states and personality traits. On the basis of the evidence for each of these approaches, the following three conclusions may be drawn.

The Traditional Literature Is Not as Consistent as Predicted by Emotion-Congruency Theories

Most of the traditional emotion-congruency literature has examined the effects of moods and traits on the processing of emotional stimuli separately. However, this literature has yielded mixed findings across perception, attention, interpretation/judgment, recall and recognition, and autobiographical memory tasks. Although many studies do obtain evidence for mood-

congruency and trait-congruency, some studies have found mood-incongruency effects, and others have found no effects of mood or personality at all.

The Moderation and Mediation Approaches May Best Capture Effects Responsible for Emotion-Congruent Processing

The moderation and mediation approaches are promising because they take into account relationships between personality traits and mood states and allow for the combined effects of moods and traits on emotional processing. Studies testing for moderation have yielded more consistent evidence for emotion congruency than studies examining separate mood-congruency and trait-congruency effects. The mediation approach has not been directly tested; however, the personality and emotion literature suggests that a mediation framework may best capture the underlying process responsible for emotion-congruent processing. Furthermore, the predictions arising from these approaches are consistent with recent emotion-congruency theories that emphasize the necessity of temporary moods or events to activate stable associations in memory (e.g., Beck, 1976; Beck et al., 1979; Bower, 1981). The moderation and mediation approaches therefore better specify relations among traits, moods, and emotional processing, and they are viable frameworks for future research. Because there are relatively few studies focusing on these approaches (especially mediation), more research directly testing moderation and mediation is needed.

Combining the Mood-Congruency and Trait-Congruency Literatures Reveals Gaps in What Is Known About Emotional Processing

Throughout the emotion-congruency literature there is also significantly more attention to negative emotional processing than to positive emotional processing. This is especially true in the trait-congruency literature, which has tended to focus on negative emotional traits and disorders. Many of the mood-congruency studies have found stronger effects of positive mood than negative mood, indicating that positively valenced traits may have a significant impact on emotional processing. More research focusing on the emotional processing effects of positive emotional traits such as extraversion, self-esteem, and positive affectivity is needed. Because most of the literature has focused on depression and anxiety, there is also a lack of attention to other specific negative emotional traits and states. For example, relatively few studies have examined the way that anger may influence emotional processing, but the few studies that do exist suggest that it may have a rather strong effect.

In addition, many investigators have discussed the potential importance of mood regulation variables in obtaining emotion-congruent processing effects (e.g., Forgas, 1995; Isen, 1985; Parrott & Sabini, 1990; Singer & Salovey, 1988). However, studies incorporating mood-regulation manipulations and/or measures of traits related to emotion regulation have been surprisingly few in number. In light of the importance of such variables for emotion congruency discussed in this article and recent theories of emotion and cognition, such variables need to be included in future research on emotion-congruency.

Although the moderation and mediation approaches discussed

in this article do not describe all possible routes to emotional processing, they provide a first step toward integrating the somewhat separate mood-congruency and trait-congruency literatures, and they emphasize the importance of taking into account relationships between stable traits and mood states in understanding the processing of emotional stimuli. The routes to emotional processing described in these frameworks are perhaps more realistic accounts of the ways in which emotional variables (moods and traits) impact everyday information processing. Research based on these integrative approaches should therefore contribute to a better understanding of individual differences in emotional experience and the differential processing of emotional information.

References

- Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, *96*, 358–372.
- Alexander, L., & Guenther, K. (1986). The effect of mood and demand on memory. *British Journal of Psychology*, *77*, 343–350.
- Allred, K. D., & Smith, T. W. (1991). Social cognition in cynical hostility. *Cognitive Therapy and Research*, *15*, 399–412.
- Alloy, L. B., & Ahrens, A. H. (1987). Depression and pessimism for the future: Biased use of statistically relevant information in predictions for self versus others. *Journal of Personality and Social Psychology*, *52*, 366–378.
- Anderson, J. R. (1976). *Language, memory, and thought*. Hillsdale, NJ: Erlbaum.
- Asmundson, G. J., Sandler, L. S., Wilson, K. G., & Walker, J. R. (1992). Selective attention toward physical threat in patients with panic disorder. *Journal of Anxiety Disorders*, *6*, 295–303.
- Bargh, J. A., Lombardi, W. J., & Higgins, E. T. (1988). Automaticity of chronically accessible constructs in Person \times Situation effects on person perception: It's just a matter of time. *Journal of Personality and Social Psychology*, *55*, 599–605.
- Bargh, J. A., & Pratto, F. (1986). Individual construct accessibility and perceptual selection. *Journal of Experimental Social Psychology*, *22*, 293–311.
- Bartlett, F. C. (1995). *Remembering: A study in experimental and social psychology*. Cambridge, England: Cambridge University Press. (Original work published 1932)
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. New York: International Universities Press.
- Beck, A. T., & Clark, D. A. (1988). Anxiety and depression: An information-processing perspective. *Anxiety Research*, *1*, 23–36.
- Beck, A. T., & Emery, G. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Wiley.
- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.
- Berenbaum, H., Fujita, F., & Pfennig, J. (1995). Consistency, specificity, and correlates of negative emotions. *Journal of Personality and Social Psychology*, *68*, 342–352.
- Berkowitz, L. (1990). On the formation and regulation of anger and aggression: A cognitive-neoassociationistic analysis. *American Psychologist*, *45*, 494–503.
- Berkowitz, L., & Troccoli, B. T. (1990). Feelings, direction of attention, and expressed evaluations of others. *Cognition and Emotion*, *4*, 305–325.
- Blaney, P. H. (1986). Affect and memory: A review. *Psychological Bulletin*, *99*, 229–246.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, *36*, 129–148.
- Bower, G. H. (1991). How might emotions affect learning? In S. Chris-

- tianson (Ed.), *The handbook of emotion and memory* (pp. 3–31). Hillsdale, NJ: Erlbaum.
- Bower, G. H., & Cohen, P. R. (1982). Emotional influences in memory and thinking: Data and theory. In M. S. Clark & S. T. Fiske (Eds.), *Affect and cognition* (pp. 291–331). Hillsdale, NJ: Erlbaum.
- Bower, G. H., Gilligan, S. G., & Monteiro, K. P. (1981). Selectivity learning caused by affective states. *Journal of Experimental Psychology, General*, *110*, 451–473.
- Bower, G. H., & Mayer, J. D. (1989). In search of mood-dependent retrieval. *Journal of Social Behavior and Personality*, *4*, 121–156.
- Bradley, B., & Mathews, A. (1983). Negative self-schemata in clinical depression. *British Journal of Clinical Psychology*, *22*, 173–181.
- Bradley, B. P., & Mogg, K. (1994). Mood and personality in recall of positive and negative information. *Behaviour Research and Therapy*, *32*, 137–141.
- Bradley, B., Mogg, K., Galbraith, M., & Perrett, A. (1993). Negative recall bias and neuroticism: State vs. trait effects. *Behaviour Research and Therapy*, *31*, 125–127.
- Breck, B. E., & Smith, S. H. (1983). Selective recall of self-descriptive traits by socially anxious and nonanxious females. *Social Behavior and Personality*, *11*, 71–76.
- Broadbent, D., & Broadbent, M. (1988). Anxiety and attentional bias: State and trait. *Cognition and Emotion*, *2*, 165–183.
- Bruner, J. S., & Klein, G. S. (1960). The function of perceiving: New Look retrospect. In S. Wapner & B. Kaplan (Eds.), *Perspectives in psychological theory: Essays in honor of Heinz Werner* (pp. 61–77). New York: International Universities Press.
- Bruner, J. S., & Postman, L. (1947a). Emotional selectivity in perception and reaction. *Journal of Personality*, *16*, 69–77.
- Bruner, J. S., & Postman, L. (1947b). Tension and tension-release as organizing factors in perception. *Journal of Personality*, *15*, 300–308.
- Bruner, J. S., & Postman, L. (1949). Perception, cognition, and behavior. *Journal of Personality*, *18*, 14–31.
- Bullington, J. C. (1990). Mood congruent memory: A replication of symmetrical effects for both positive and negative moods. *Journal of Social Behavior and Personality*, *5*, 123–134.
- Burke, M., & Mathews, A. (1992). Autobiographical memory and clinical anxiety. *Cognition and Emotion*, *6*, 23–35.
- Butler, G., & Mathews, A. (1987). Anticipatory anxiety and risk perception. *Cognitive Therapy and Research*, *11*, 551–565.
- Byrne, D. (1961). The Repression-Sensitization Scale: Rationale, reliability, and validity. *Journal of Personality*, *29*, 334–349.
- Byrne, D. (1964). Repression-sensitization as a dimension of personality. In B. A. Maher (Ed.), *Progress in experimental personality research* (Vol. 1, pp. 169–220). New York: Academic Press.
- Campbell, J. D., Chew, B., & Scratchley, L. S. (1991). Cognitive and emotional reactions to daily events: The effects of self-esteem and self-complexity. *Journal of Personality*, *59*, 473–505.
- Catanzaro, S. J., & Mearns, J. (1990). Measuring general expectancies for negative mood regulation: Initial scale development and implications. *Journal of Personality Assessment*, *54*, 546–563.
- Challis, B. H., & Krane, R. V. (1988). Mood induction and the priming of semantic memory in a lexical decision task: Asymmetric effects of elation and depression. *Bulletin of the Psychonomic Society*, *26*, 309–312.
- Claeys, W. (1989). Social anxiety, evaluative threat and incidental recall of trait words. *Anxiety Research*, *2*, 27–43.
- Clark, D. M., & Teasdale, J. D. (1985). Constraints on the effects of mood on memory. *Journal of Personality and Social Psychology*, *48*, 1595–1608.
- Clark, D. M., Teasdale, J. D., Broadbent, D. E., & Martin, M. (1983). Effect of mood on lexical decisions. *Bulletin of the Psychonomic Society*, *21*, 175–178.
- Clifford, P. I., & Hemsley, D. R. (1987). The influence of depression on the processing of personal attributes. *British Journal of Psychiatry*, *150*, 98–103.
- Cloitre, M., & Liebowitz, M. R. (1991). Memory bias in panic disorder: An investigation of the cognitive avoidance hypothesis. *Cognitive Therapy and Research*, *15*, 371–386.
- Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review*, *82*, 407–428.
- Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology*, *38*, 668–678.
- Coyne, J. C. (1994). Self-reported distress: Analog or ersatz depression? *Psychological Bulletin*, *116*, 29–45.
- Craighead, W. E., Hickey, K. S., & DeMonbreun, B. G. (1979). Distortion of perception and recall of neutral feedback in depression. *Cognitive Therapy and Research*, *3*, 291–298.
- Crowne, D. P., & Marlowe, D. (1964). *The approval motive*. New York: Wiley.
- Dalgleish, T., & Watts, F. N. (1990). Biases of attention and memory in disorders of anxiety and depression. *Clinical Psychology Review*, *10*, 589–604.
- Darvill, T. J., & Johnson, R. C. (1991). Optimism and perceived control of life events as related to personality. *Personality & Individual Differences*, *12*, 951–954.
- Denny, E. B., & Hunt, R. R. (1992). Affective valence and memory in depression: Dissociation of recall and fragment completion. *Journal of Abnormal Psychology*, *101*, 575–580.
- Derry, P. A., & Kuiper, N. A. (1981). Schematic processing and self-reference in clinical depression. *Journal of Abnormal Psychology*, *90*, 286–297.
- Derryberry, D., & Reed, M. A. (1994). Temperament and attention: Orienting toward and away from positive and negative signals. *Journal of Personality and Social Psychology*, *66*, 1128–1139.
- Desrosiers, G., & Robinson, D. (1992). Memory and hedonic tone: “Personality” or “mood” congruence? *Psychological Medicine*, *22*, 117–129.
- Diener, E., & Larsen, R. J. (1984). Temporal stability and cross-situational consistency of affective, behavioral, and cognitive responses. *Journal of Personality and Social Psychology*, *47*, 871–883.
- Dobson, K. S., & Shaw, B. F. (1987). Specificity and stability of self-referent encoding in clinical depression. *Journal of Abnormal Psychology*, *96*, 34–40.
- Dodge, K. A. (1993). Social-cognitive mechanisms in the development of conduct disorder and depression. *Annual Review of Psychology*, *44*, 559–584.
- Dodge, K. A., & Crick, N. R. (1990). Social information-processing bases of aggressive behavior in children. *Personality and Social Psychology Bulletin*, *16*, 8–22.
- Dodge, K. A., Price, J. M., Bachorowski, J., & Newman, J. P. (1990). Hostile attributional biases in severely aggressive adolescents. *Journal of Abnormal Psychology*, *99*, 385–392.
- Dodge, K. A., & Tomlin, A. M. (1987). Utilization of self-schemas as a mechanism of interpretational bias in aggressive children. *Social Cognition*, *5*, 280–300.
- Ehlers, A., Margraf, J., Davies, S., Roth, W. T. (1988). Selective processing of threat cues in subjects with panic attacks. *Cognition and Emotion*, *2*, 201–219.
- Epps, J., & Kendall, P. C. (1995). Hostile attributional bias in adults. *Cognitive Therapy and Research*, *19*, 159–178.
- Epstein, S. (1983). A research paradigm for the study of personality and emotions. In M. M. Page (Ed.), *Personality: Current theory and research* (pp. 92–154). Lincoln: University of Nebraska Press.
- Erber, R., & Erber, M. W. (1994). Beyond mood and social judgment: Mood incongruent recall and mood regulation. *European Journal of Social Psychology*, *24*, 79–88.
- Erdelyi, M. H. (1974). A new look at the New Look: Perceptual defense and vigilance. *Psychological Review*, *81*, 1–25.

- Eriksen, C. W. (1966). Cognitive responses to internally cued anxiety. In C. D. Spielberger (Ed.), *Anxiety and behavior* (pp. 327–360). New York: Academic Press.
- Erllichman, H., & Halpern, J. N. (1988). Affect and memory: Effects of pleasant and unpleasant odors on retrieval of happy and unhappy memories. *Journal of Personality and Social Psychology*, *55*, 769–779.
- Eysenck, H. J., & Eysenck, M. W. (1985). *Personality and individual differences: A natural science approach*. New York: Plenum Press.
- Eysenck, M. W. (1992). *Anxiety: The cognitive perspective*. Hillsdale, NJ: Erlbaum.
- Eysenck, M. W., & Byrne, A. (1994). Implicit memory bias, explicit memory bias, and anxiety. *Cognition and Emotion*, *8*, 415–431.
- Eysenck, M. W., Mogg, K., May, J., Richards, A., & Mathews, A. (1991). Bias in interpretation of ambiguous sentences related to threat in anxiety. *Journal of Abnormal Psychology*, *100*, 144–150.
- Fitzgerald, J. M., Slade, S., & Lawrence, R. H. (1988). Memory availability and judged frequency of affect. *Cognitive Therapy & Research*, *12*, 379–390.
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin*, *99*, 20–35.
- Foa, E. B., McNally, & Murdock, T. B. (1989). Anxious mood and memory. *Behaviour Research and Therapy*, *27*, 141–147.
- Forgas, J. P. (1990). Affective influences on individual and group judgments. *European Journal of Social Psychology*, *20*, 441–453.
- Forgas, J. P. (1994). The role of emotion in social judgments: An introductory review and an affect infusion model (AIM). *European Journal of Social Psychology*, *24*, 1–24.
- Forgas, J. P. (1995). Mood and judgment: The affect infusion model (AIM). *Psychological Bulletin*, *117*, 39–66.
- Forgas, J. P., Bower, G. H., & Krantz, S. E. (1984). The influence of mood on perceptions of social interactions. *Journal of Experimental Social Psychology*, *20*, 497–513.
- Forgas, J. P., Burnham, D. K., & Trimboli, C. (1988). Mood, memory, and social judgments in children. *Journal of Personality and Social Psychology*, *54*, 697–703.
- Forgas, J. P., & Moylan, S. (1987). After the movies: Transient mood and social judgments. *Personality and Social Psychology Bulletin*, *13*, 467–477.
- Galbraith, G. G., & Lieberman, H. (1972). Associative responses to double entendre words as a function of repression-sensitization and sexual stimulation. *Journal of Consulting and Clinical Psychology*, *39*, 322–327.
- Gasper, K., & Clore, G. L. (1996, May). *Mood and judgment: The influence of attention to emotion*. Paper presented at the meeting of the Midwestern Psychological Association, Chicago, IL.
- Gasper, K., & Clore, G. L. (1997, August). *Estimating risks from facts and feelings: Individual and situational factors*. Paper presented at the 105th Annual Convention of the American Psychological Association, Chicago, IL.
- Gayle, M. C. (1997). Mood-congruency in recall: The potential effects of arousal. *Journal of Social Behavior and Personality*, *12*, 471–480.
- Gerrig, R. J., & Bower, G. H. (1982). Emotional influences on word recognition. *Bulletin of the Psychonomic Society*, *21*, 175–178.
- Gilboa, E., & Revelle, W. (1994). Personality and the structure of affective responses. In S. H. M. Van Goozen, N. E. Van de Poll, & J. A. Sergeant (Eds.), *Emotions: Essays on emotion theory* (pp. 135–159). Hillsdale, NJ: Erlbaum.
- Gilligan, S. G., & Bower, G. H. (1983). Reminding and mood-congruent memory. *Bulletin of the Psychonomic Society*, *21*, 431–434.
- Gillis, J. S., & Bernieri, F. J. (1993). Effects of depressed mood on social perception. *Perceptual and Motor Skills*, *76*, 674.
- Gotlib, I. H., & Cane, D. B. (1987). Construct accessibility and clinical depression: A longitudinal investigation. *Journal of Abnormal Psychology*, *96*, 199–204.
- Gotlib, I. H., & McCann, C. D. (1984). Construct accessibility and depression: An examination of cognitive and affective factors. *Journal of Personality and Social Psychology*, *47*, 427–439.
- Gotlib, I. H., McLachlan, A. L., & Katz, A. N. (1988). Biases in visual attention in depressed and nondepressed individuals. *Cognition and Emotion*, *2*, 185–200.
- Gotlib, I. H., & Meyer, J. P. (1986). Factor analysis of the Multiple Affect Adjective Check List: A separation of positive and negative affect. *Journal of Personality and Social Psychology*, *50*, 1161–1165.
- Greenberg, M. S., & Alloy, L. B. (1989). Depression versus anxiety: Processing of self- and other-referent information. *Cognition and Emotion*, *3*, 207–223.
- Halberstadt, J. B., Niedenthal, P. M., & Kushner, J. (1995). Resolution of lexical ambiguity by emotional state. *Psychological Science*, *6*, 278–282.
- Hamilton, V. (1983). *The cognitive structures and processes of human motivation and anxiety*. New York: Wiley.
- Hammen, C., Milkowitz, D. J., & Dyck, D. G. (1986). Stability and severity parameters of depressive self-schema responding. *Journal of Social and Clinical Psychology*, *4*, 23–45.
- Haney, J. N. (1973). Approach-avoidance reactions by repressors and sensitizers to ambiguity in a structured free-association task. *Psychological Reports*, *33*, 97–98.
- Hasher, L., Rose, K. C., Zacks, R. T., Sanft, H., & Doren, B. (1985). Mood, recall, and sensitivity effects in normal college students. *Journal of Experimental Psychology: General*, *114*, 104–118.
- Hepburn, L., & Eysenck, M. W. (1989). Personality, average mood, and mood variability. *Personality and Individual Differences*, *10*, 975–983.
- Higgins, E. T., & King, G. A. (1981). Accessibility of social constructs: Information-processing consequences of individual and contextual variability. In N. Cantor & J. F. Kihlstrom (Eds.), *Personality, cognition, and social interaction* (pp. 69–121). Hillsdale, NJ: Erlbaum.
- Higgins, E. T., King, G. A., & Mavin, G. H. (1982). Individual construct accessibility and subjective impressions and recall. *Journal of Personality and Social Psychology*, *43*, 35–47.
- Hill, A. B., & Dutton, F. (1989). Depression and selective attention to self-esteem threatening words. *Personality and Individual Differences*, *10*, 915–917.
- Hill, A. B., & Knowles, T. H. (1991). Depression and the “Emotional” Stroop effect. *Personality and Individual Differences*, *12*, 481–485.
- Hock, M., Krohne, H. W., & Kaiser, J. (1996). Coping dispositions and the processing of ambiguous stimuli. *Journal of Personality and Social Psychology*, *70*, 1052–1066.
- Holmes, D. S. (1974). Investigations of repression: Differential recall of material experimentally or naturally associated with ego threat. *Psychological Bulletin*, *81*, 632–653.
- Holtgraves, T., & Athanassopoulou, M. (1991). Depression and processing information about others. *Journal of Research in Personality*, *25*, 445–453.
- Howes, D. H., & Solomon, R. L. (1950). A note on McGinnies’ “Emotionality and perceptual defense.” *Psychological Review*, *57*, 229–234.
- Hughes, J., Worchel, F., Stanton, S., Stanton, H., & Hall, J. (1990). Selective memory for positive and negative story content in children with high self- and peer-ratings of symptoms of depression. *School Psychology Quarterly*, *5*, 265–279.
- Ingram, R. E. (1984). Toward an information-processing analysis of depression. *Cognitive Therapy and Research*, *8*, 443–478.
- Ingram, R. E., Bernet, C. Z., & McLaughlin, S. C. (1994). Attentional allocation processes in individuals at risk for depression. *Cognitive Therapy & Research*, *18*, 317–332.
- Ingram, R. E., Smith, T. W., & Brehm, S. S. (1983). Depression and information processing: Self-schemata and the encoding of self-referent information. *Journal of Personality and Social Psychology*, *45*, 412–420.
- Isen, A. M. (1985). Asymmetry of happiness and sadness in effects on

- memory in normal college students: Comments on Hasher, Rose, Zacks, Sanft, and Doren. *Journal of Experimental Psychology: General*, 114, 388–391.
- Isen, A. M. (1987). Positive affect, cognitive processes, and social behavior. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 20, pp. 203–253). New York: Academic Press.
- Isen, A. M. (1990). *Affect and social behavior*. New York: Cambridge University Press.
- Isen, A. M., & Shalke, T. E. (1982). The effect of feeling state on evaluation of positive, neutral, and negative stimuli: When you "accentuate the positive," do you "eliminate the negative"? *Social Psychology Quarterly*, 45, 58–63.
- Isen, A. H., Shalke, T. E., Clark, M., & Karp, L. (1978). Affect, accessibility of material in memory, and behavior: A cognitive loop? *Journal of Personality and Social Psychology*, 36, 1–12.
- Johnson, E. J., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal of Personality and Social Psychology*, 45, 20–31.
- Josephson, B. R., Singer, J. A., & Salovey, P. (1996). Mood regulation and memory: Repairing sad moods with happy memories. *Cognition and Emotion*, 10, 437–444.
- Kelly, G. A. (1955). *A theory of personality: The psychology of personal constructs*. New York: Norton.
- Kendall, P. C., Hollon, S. D., Beck, A. T., Hammen, C. L., & Ingram, R. (1987). Issues and recommendations regarding use of the Beck Depression Inventory. *Cognitive Therapy and Research*, 11, 289–299.
- Kendall, P. C., & Watson, D. (1989). *Anxiety and depression: Distinctive and overlapping features*. New York: Academic Press.
- King, G. A., & Sorrentino, R. M. (1988). Uncertainty orientation and the relation between individual accessible constructs and person memory. *Social Cognition*, 6, 128–149.
- Kirsch, I., Mearns, J., & Catanzaro, S. J. (1990). Mood-regulation expectancies as determinants of dysphoria in college students. *Journal of Counseling Psychology*, 37, 306–312.
- Kovacs, M., & Beck, A. T. (1978). Maladaptive cognitive structures in depression. *American Journal of Psychiatry*, 135, 525–533.
- Krohne, H. W. (1993). Vigilance and cognitive avoidance as concepts in coping research. In M. Ziedner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, and applications* (pp. 381–409). New York: Wiley.
- Kuiper, N. A., & Derry, P. A. (1982). Depressed and nondepressed content self-reference in mild depressives. *Journal of Personality*, 50, 67–80.
- Kuiper, N. A., Olinger, L. J., & MacDonald, M. R. (1988). Vulnerability and episodic cognitions in a self-worth model of depression. In L. B. Alloy (Ed.), *Cognitive Processes in depression*. New York: Guilford Press.
- Kuiper, N. A., Olinger, L. J., MacDonald, M. R., & Shaw, B. F. (1985). Self-schema processing of depressed and nondepressed content: The effects of vulnerability to depression. *Social Cognition*, 4, 77–93.
- Kwiatkowski, S. J., & Parkinson, S. R. (1994). Depression, elaboration, and mood congruence: Differences between natural and induced mood. *Memory & Cognition*, 22, 225–233.
- Laird, J. D., Cuniff, M., Sheehan, K., Shulman, D., & Strum, G. (1989). Emotion specific effects of facial expressions on memory for life events. *Journal of Social Behavior and Personality*, 4, 87–98.
- Laird, J. D., Wagener, J. J., Halal, M., & Szegda, M. (1982). Remembering what you feel: Effects of emotion on memory. *Journal of Personality and Social Psychology*, 42, 646–657.
- Larsen, R. J. (1987). The stability of mood variability: A spectral analytic approach to daily mood assessments. *Journal of Personality and Social Psychology*, 52, 1195–1204.
- Larsen, R. J., & Diener, E. (1992). Problems and promises with the circumplex model of emotion. *Review of Personality and Social Psychology*, 13, 25–59.
- Larsen, R. J., & Ketelaar, T. (1989). Extraversion, neuroticism, and susceptibility to positive and negative mood induction procedures. *Personality and Individual Differences*, 10, 1221–1228.
- Larsen, R. J., & Ketelaar, T. (1991). Personality and susceptibility to positive and negative emotional states. *Journal of Personality and Social Psychology*, 61, 132–140.
- Larsen, R. J., & Sinnett, L. M. (1991). Meta-analysis of experimental manipulations: Some factors affecting the Velten mood induction procedure. *Personality and Social Psychology Bulletin*, 17, 323–334.
- Leitenberg, H., Yost, L. W., & Carroll-Wilson, M. (1986). Negative cognitive errors in children: Questionnaire development, normative data, and comparisons between children with and without self-reported symptoms of depression, low self-esteem, and evaluation anxiety. *Journal of Consulting and Clinical Psychology*, 54, 528–536.
- Lewinsohn, P. M., Steinmetz, J. L., Larson, D. W., & Franklin, J. (1981). Depression-related cognitions: Antecedent or consequence? *Journal of Abnormal Psychology*, 90, 213–219.
- Lishman, W. A. (1972). Selective factors in memory. *Psychological Medicine*, 2, 248–253.
- Lishman, W. A. (1974). The speed of recall of pleasant and unpleasant experiences. *Psychological Medicine*, 4, 212–218.
- Lloyd, G. G., & Lishman, W. A. (1975). Effect of depression on the speed of recall of pleasant and unpleasant experiences. *Psychological Medicine*, 5, 173–180.
- Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology*, 69, 176–190.
- MacLeod, A. K., Andersen, A., & Davies, A. (1994). Self-ratings of positive and negative affect and retrieval of positive and negative affect memories. *Cognition and Emotion*, 8, 483–488.
- MacLeod, C., & Cohen, I. L. (1993). Anxiety and the interpretation of ambiguity: A text comprehension study. *Journal of Abnormal Psychology*, 102, 238–247.
- MacLeod, A. K., & Croypley, M. L. (1995). Depressive future-thinking: The role of valence and specificity. *Cognitive Therapy and Research*, 19, 35–50.
- MacLeod, C., & Hagan, R. (1992). Individual differences in the selective processing of threatening information and emotional responses to a stressful life event. *Behaviour Research and Therapy*, 30, 151–161.
- MacLeod, C., & Mathews, A. (1988). Anxiety and the allocation of attention to threat. *Quarterly Journal of Experimental Psychology: Human Experimental Psychology*, 40 (A), 653–670.
- MacLeod, C., & Mathews, A. M. (1991). Cognitive-experimental approaches to the emotional disorders. In P. R. Martin (Ed.), *Handbook of behavior therapy and psychological science* (pp. 116–150). New York: Pergamon Press.
- MacLeod, C., Mathews, A., & Tata, P. (1986). Attentional bias in emotional disorders. *Journal of Abnormal Psychology*, 95, 15–20.
- MacLeod, C., & Rutherford, E. M. (1992). Anxiety and the selective processing of emotional information: Mediating roles of awareness, trait and state variables, and personality relevance of stimulus materials. *Behaviour Research and Therapy*, 30, 479–491.
- MacLeod, C., Tata, P., & Mathews, A. (1987). Perception of emotionally valenced information in depression. *British Journal of Clinical Psychology*, 26, 67–68.
- Madigan, R. J., & Bollenbach, A. K. (1982). Effects of induced mood on retrieval of personal episodic and semantic memories. *Psychology Reports*, 50, 147–157.
- Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology*, 35, 63–78.
- Markus, H., & Sentis, K. (1982). The self in social information processing. In J. W. Suls (Ed.), *Psychological perspectives on the self* (Vol. 1, pp. 41–70). Hillsdale, NJ: Erlbaum.
- Martin, L. L., Achee, J. W., Ward, D. W., & Harlow, T. F. (1993). The role of cognition and effort in the use of emotions to guide behavior. In R. S. Wyer & T. K. Srull (Eds.), *Advances in social cognition* (Vol. 6, pp. 147–157). Hillsdale, NJ: Erlbaum.

- Martin, L. L., & Stoner, P. (1996). Mood as input: What we think about how we feel determines what we think. In L. L. Martin & A. Tesser (Eds.), *Striving and feeling: Interactions among goals, affect, and self-regulation* (pp. 279–302). Mahwah, NJ: Erlbaum.
- Martin, L. L., Ward, D. W., Achee, J. W., & Wyer, R. S. (1993). Mood as input: People have to interpret the motivational implications of their moods. *Journal of Personality and Social Psychology*, *64*, 317–326.
- Martin, M. (1985). Neuroticism as cognitive predisposition toward depression: A cognitive mechanism. *Personality and Individual Differences*, *6*, 353–365.
- Martin, M., Ward, J. C., & Clark, D. M. (1983). Neuroticism and the recall of positive and negative personality information. *Behaviour Research and Therapy*, *21*, 495–503.
- Martin, M., Williams, R. M., & Clark, D. M. (1991). Does anxiety lead to selective processing of threat-related information? *Behaviour Research and Therapy*, *29*, 147–160.
- Mathews, A., & Bradley, B. (1983). Mood and the self-reference bias in recall. *Behaviour Research and Therapy*, *21*, 233–239.
- Mathews, A., & MacLeod, C. (1994). Cognitive approaches to emotion and emotional disorders. *Annual Review of Psychology*, *45*, 25–50.
- Mathews, A., & Milroy, R. (1994). Processing of emotional meaning in anxiety. *Cognition and Emotion*, *8*, 535–553.
- Mathews, A., Richards, A., & Eysenck, M. (1989). Interpretation of homophones related to threat in anxiety states. *Journal of Abnormal Psychology*, *98*, 31–34.
- Matlin, M. W., & Gowron, V. J. (1979). Individual differences in Pollyannaism. *Journal of Personality Assessment*, *43*, 411–412.
- Matt, G. E., Vazquez, C., & Campbell, W. K. (1992). Mood-congruent recall of affectively toned stimuli: A meta-analytic review. *Clinical Psychology Review*, *12*, 227–255.
- Mathews, G., & Antes, J. R. (1992). Visual attention and depression: Cognitive biases in the eye fixation of the dysphoric and the nondepressed. *Cognitive Therapy and Research*, *16*, 359–371.
- Mayer, J. D., & Bower, G. H. (1985). Naturally occurring mood and learning: Comment on Hasher, Rose, Zacks, Sanft, and Doren. *Journal of Experimental Psychology: General*, *114*, 396–403.
- Mayer, J. D., & Gaschke, Y. N. (1988). The experience and meta-experience of mood. *Journal of Personality and Social Psychology*, *55*, 102–111.
- Mayer, J. D., Gaschke, Y. N., Braverman, D. L., & Evans, T. W. (1992). Mood-congruent judgment is a general effect. *Journal of Personality and Social Psychology*, *63*, 119–132.
- Mayer, J. D., Gayle, M., Meehan, M. E., & Haarman, A. (1990). Toward better specification of the mood-congruity effect in recall. *Journal of Experimental Social Psychology*, *26*, 465–480.
- Mayer, J. D., & Hanson, E. (1995). Mood-congruent judgment over time. *Personality and Social Psychology Bulletin*, *21*, 237–244.
- Mayer, J. D., Mamborg, M. H., & Volanah, A. J. (1988). Cognitive domains of the mood system. *Journal of Personality*, *56*, 453–486.
- Mayer, J. D., McCormick, L. J., & Strong, S. E. (1995). Mood-congruent memory and natural mood: New evidence. *Personality and Social Psychology Bulletin*, *21*, 736–746.
- Mayer, J. D., & Salovey, P. (1988). Personality moderates the interaction of mood and cognition. In K. Fiedler & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 87–99). Toronto, Ontario, Canada: Hogrefe.
- Mayer, J. D., Salovey, P., Gomberg-Kaufman, S., & Blainey, K. (1991). A broader conception of mood experience. *Journal of Personality and Social Psychology*, *60*, 100–111.
- Mayer, J. D., & Stevens, A. A. (1994). An emerging understanding of the reflective (meta-) experience of mood. *Journal of Research in Personality*, *28*, 351–373.
- Mayer, J. D., & Volanah, A. J. (1985). Cognitive involvement in the mood response system. *Motivation and Emotion*, *9*, 261–275.
- Mayo, P. R. (1983). Personality traits and the retrieval of positive and negative memories. *Personality and Individual Differences*, *4*, 465–471.
- Mayo, P. R. (1989). A further study of the personality-congruent recall effect. *Personality and Individual Differences*, *10*, 247–252.
- McAdams, D. P., Lensky, D. B., Daple, S. A., & Allen, J. (1988). Depression and the organization of autobiographical memory. *Journal of Social and Clinical Psychology*, *7*, 332–349.
- McCabe, S. B., & Gotlib, I. H. (1993). Attentional processing in clinically depressed subjects: A longitudinal investigation. *Cognitive Therapy and Research*, *17*, 359–377.
- McGinnies, E. (1949). Emotionality and perceptual defense. *Psychological Review*, *56*, 244–251.
- McNally, R. J., Riemann, B. C., & Kim, E. (1990). Selective processing of threat cues in panic disorder. *Behaviour Research and Therapy*, *28*, 407–412.
- Mearns, J. (1991). Coping with a breakup: Negative mood regulation expectancies and depression following the end of a romantic relationship. *Journal of Personality and Social Psychology*, *60*, 327–334.
- Mecklenbrauker, S., & Hager, W. (1984). Effects of mood on memory: Experimental tests of a mood-state-dependent retrieval hypothesis and of a mood-congruity hypothesis. *Psychological Research*, *46*, 355–376.
- Meyer, G. J., & Shack, J. R. (1989). Structural convergence of mood and personality: Evidence for old and new “directions.” *Journal of Personality and Social Psychology*, *57*, 691–706.
- Millimet, C. R., & Cohen, H. J. (1973). A test of the homogenous versus heterogeneous categorization of the repression-sensitization dimension. *Educational and Psychological Measurement*, *33*, 773–785.
- Mineka, S., & Nugent, K. (1995). Mood-congruent memory biases in anxiety and depression. In D. Schacter (Ed.), *Memory distortion: How minds, brains, and societies reconstruct the past* (pp. 173–196). Cambridge, MA: Harvard University Press.
- Mineka, S., & Sutton, S. K. (1992). Cognitive biases and the emotional disorders. *Psychological Science*, *3*, 65–69.
- Mischel, W., & Ebbesen, E. B. (1973). Selective attention to the self: Situational and dispositional determinants. *Journal of Personality and Social Psychology*, *27*, 129–142.
- Mogg, K., Bradley, B. P., Williams, R., & Mathews, A. (1993). Subliminal processing of emotional information in anxiety and depression. *Journal of Abnormal Psychology*, *102*, 304–311.
- Mogg, K., & Marden, B. (1990). Processing of emotional information in anxious subjects. *British Journal of Clinical Psychology*, *29*, 227–229.
- Mogg, K., Mathews, A., & Eysenck, M. W. (1992). Attentional bias to threat in clinical anxiety states. *Cognition and Emotion*, *6*, 149–159.
- Mogg, K., Mathews, A., & Weinman, J. (1989). Selective processing of threat cues in anxiety states: A replication. *Behaviour Research and Therapy*, *27*, 317–323.
- Moser, C. G., & Dyck, D. G. (1989). Type A behavior, uncontrollability, and the activation of hostile self-schema responding. *Journal of Research in Personality*, *23*, 248–267.
- Nasby, W. (1994). Moderators of mood-congruent encoding: Self/other reference and affirmative/nonaffirmative judgment. *Cognition and Emotion*, *8*, 259–278.
- Nasby, W., & Yando, R. (1982). Selective encoding and retrieval of affectively valent information: Two cognitive consequences of children's mood states. *Journal of Personality and Social Psychology*, *43*, 1244–1253.
- Natale, M., & Hantas, M. (1982). Effect of temporary mood states on selective memory about the self. *Journal of Personality and Social Psychology*, *42*, 927–934.
- Niedenthal, P. M. (1992). Affect and social perception: On the psychological validity of rose-colored glasses. In R. Bornstein & T. Pittman (Eds.), *Perception without awareness* (pp. 211–235). New York: Guilford Press.

- Niedenthal, P. M., & Setterlund, M. B. (1994). Emotion congruence in perception. *Personality and Social Psychology Bulletin*, *20*, 401–411.
- Niedenthal, P. M., Setterlund, M. B., & Jones, D. E. (1994). Emotional organization of perceptual memory. In P. M. Niedenthal & S. Kitayama (Eds.), *The heart's eye: Emotional influences in perception and attention* (pp. 87–113). New York: Academic Press.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, *100*, 569–582.
- Nolen-Hoeksema, S., & Morrow, J. (1993). Effects of rumination and distraction on naturally-occurring depressed moods. *Cognition and Emotion*, *7*, 561–570.
- Nolen-Hoeksema, S., Morrow, J., & Fredrickson, B. L. (1993). Response styles and duration of depressed moods. *Journal of Abnormal Psychology*, *102*, 20–28.
- O'Banion, K., & Arkowitz, H. (1977). Social anxiety and selective memory for affective information about the self. *Social Behavior and Personality*, *5*, 321–328.
- Okun, M. A., Stock, W. A., Snead, L., & Wiermaa, P. (1987). Neuroticism and autobiographical memory for positive and negative events. *Personality and Individual Differences*, *8*, 965–967.
- Ormel, J., & Schaufeli, W. B. (1991). Stability and change in psychological distress and their relationship with self-esteem and locus of control: A dynamic equilibrium model. *Journal of Personality and Social Psychology*, *60*, 288–299.
- Parrott, W. G., & Sabini, J. (1990). Mood and memory under natural conditions: Evidence for mood incongruent recall. *Journal of Personality and Social Psychology*, *59*, 321–336.
- Pietromonaco, P. R., & Markus, H. (1985). The nature of negative thoughts in depression. *Journal of Personality and Social Psychology*, *48*, 799–807.
- Postman, L., & Brown, D. R. (1952). The perceptual consequences of success and failure. *Journal of Abnormal and Social Psychology*, *47*, 213–221.
- Pyszczynski, T., Holt, K., & Greenberg, J. (1987). Depression, self-focused attention, and expectancies for positive and negative future life events for self and others. *Journal of Personality and Social Psychology*, *52*, 994–1001.
- Quiggle, N. L., Garber, J., Panak, W. F., & Dodge, K. A. (1992). Social information processing in aggressive and depressed children. *Child Development*, *63*, 1305–1320.
- Reed, M. A., & Derryberry, D. (1995). Temperament and attention to positive and negative trait information. *Personality and Individual Differences*, *18*, 135–147.
- Rehm, L. P. (1977). A self-control model of depression. *Behavior Therapy*, *8*, 787–804.
- Rholes, W. S., Riskind, J. H., & Lane, J. W. (1987). Emotional states and memory biases: Effects of cognitive priming and mood. *Journal of Personality and Social Psychology*, *52*, 91–99.
- Richards, A., & French, C. C. (1991). Effects of encoding and anxiety on implicit and explicit memory performance. *Personality and Individual Differences*, *12*, 131–139.
- Richards, A., & French, C. C. (1992). An anxiety-related bias in semantic activation when processing threat/neutral homographs. *Quarterly Journal of Experimental Psychology: Human Experimental Psychology*, *45* (A), 503–525.
- Richards, A., French, C. C., Johnson, W., Naparstek, J., & Williams, J. (1992). Effects of mood manipulation and anxiety on performance of an emotional Stroop task. *British Journal of Psychology*, *83*, 479–491.
- Richards, A., & Millwood, B. (1989). Colour-identification of differentially-valenced words in anxiety. *Cognition and Emotion*, *3*, 171–176.
- Richards, A., Reynolds, A., & French, C. C. (1993). Anxiety and the spelling and use in sentences of threat/neutral homophones. *Current Psychology: Research and Reviews*, *12*, 18–25.
- Richards, A., & Whittaker, T. M. (1990). Effects of anxiety and mood manipulation in autobiographical memory. *British Journal of Clinical Psychology*, *29*, 145–154.
- Rinck, M., Glowalla, U., & Schneider, K. (1992). Mood-congruent and mood-incongruent learning. *Memory & Cognition*, *20*, 29–39.
- Riskind, J. H. (1983). Nonverbal expressions and the accessibility of life experience memories: A congruence hypothesis. *Social Cognition*, *2*, 62–86.
- Riskind, J. H., Rholes, W. S., & Eggers, J. (1982). The Velten mood induction procedure: Effects on mood and memory. *Journal of Consulting and Clinical Psychology*, *50*, 146–147.
- Roth, D., & Rehm, L. P. (1980). Relationships among self-monitoring processes, memory, and depression. *Cognitive Therapy and Research*, *4*, 149–157.
- Ruiz-Caballero, J. A., & Bermudez-Moreno, J. (1992). Individual differences in depression, induced mood, and perception of emotionally toned words. *European Journal of Personality*, *6*, 215–224.
- Ruiz-Caballero, J. A., & Bermudez-Moreno, J. (1993). The role of affective focus: Replication and extension of mood congruent memory. *Personality and Individual Differences*, *14*, 191–197.
- Ruiz-Caballero, J. A., & Gonzalez, P. (1994). Implicit and explicit memory bias in depressed and nondepressed subjects. *Cognition and Emotion*, *8*, 555–569.
- Rule, B. G., Taylor, B. R., & Dobbs, A. R. (1987). Priming effects of heat on aggressive thoughts. *Social Cognition*, *5*, 131–143.
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, *39*, 1161–1178.
- Rusting, C. L. (1998). *Interactive effects of personality and mood on judgment and recall*. Manuscript submitted for publication.
- Rusting, C. L., & Larsen, R. J. (1995). Moods as sources of stimulation: Relationships between personality and desired mood states. *Personality and Individual Differences*, *18*, 321–329.
- Rusting, C. L., & Larsen, R. J. (1997). Extraversion, neuroticism, and susceptibility to positive and negative affect: A test of two theoretical models. *Personality and Individual Differences*, *22*, 607–612.
- Rusting, C. L., & Larsen, R. J. (1998). Personality and cognitive processing of affective information. *Personality and Social Psychology Bulletin*, *24*, 200–213.
- Rusting, C. L., & Nolen-Hoeksema, S. (1998). Regulating responses to anger: Effects of rumination and distraction on angry mood. *Journal of Personality and Social Psychology*, *74*, 790–803.
- Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., & Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the meta-mood scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp. 125–154). Washington, DC: American Psychological Association.
- Sedikides, C. (1994). Incongruent effects of sad mood on self-conception valence: It's a matter of time. Special Issue: Affect in social judgments and cognition. *European Journal of Social Psychology*, *24*, 161–172.
- Sedikides, C., & Skowronski, J. J. (1990). Towards reconciling personality and social psychology: A construct accessibility approach. *Journal of Social Behavior and Personality*, *5*, 531–546.
- Segal, Z. V., & Ingram, R. E. (1994). Mood priming and construct activation in tests of cognitive vulnerability to unipolar depression. *Clinical Psychology Review*, *14*, 663–695.
- Seidnitz, L., & Diener, E. (1993). Memory for positive versus negative life events: Theories for the differences between happy and unhappy persons. *Journal of Personality and Social Psychology*, *64*, 654–664.
- Singer, J. A., & Salovey, P. (1988). Mood and memory: Evaluating the network theory of affect. *Clinical Psychology Review*, *8*, 211–251.
- Slife, B. D., Miura, S., Thompson, L. W., Shapiro, J. L., & Gallagher, D. (1984). Differential recall as a function of mood disorder in clinically depressed patients: Between- and within-subject differences. *Journal of Abnormal Psychology*, *93*, 391–400.
- Small, S. A., & Robins, C. J. (1988). The influence of induced depressed mood on visual recognition thresholds: Predictive ambiguity of asso-

- ciative network models of mood and cognition. *Cognitive Therapy and Research*, 12, 295–304.
- Smith, S. M., & Petty, R. E. (1995). Personality moderators of mood congruency effects on cognition: The role of self-esteem and negative mood regulation. *Journal of Personality and Social Psychology*, 68, 1092–1107.
- Snyder, M., & White, P. (1982). Moods and memories: Elation, depression, and the remembering of the events of one's life. *Journal of Personality*, 50, 149–167.
- Steinberg, M. S., & Dodge, K. A. (1983). Attributional bias in aggressive adolescent boys and girls. *Journal of Social and Clinical Psychology*, 1, 312–321.
- Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology*, 18, 643–662.
- Taylor, L. (1992). Relationship between affect and memory: Motivation-based selective generation. *Journal of Personality and Social Psychology*, 62, 876–882.
- Taylor, S. E., & Crocker, J. (1981). Schematic bases of social information processing. In E. T. Higgins, C. P. Herman, & M. P. Zanna (Eds.), *Social cognition: The Ontario Symposium* (Vol. 1, pp. 89–134). Hillsdale, NJ: Erlbaum.
- Teasdale, J. D. (1983). Negative thinking in depression: Cause, effect, or reciprocal relationship. *Advances in Behaviour Research and Therapy*, 5, 3–25.
- Teasdale, J. D. (1988). Cognitive vulnerability to persistent depression. *Cognition and Emotion*, 2, 247–274.
- Teasdale, J. D., & Fogarty, S. J. (1979). Differential effects of induced mood on retrieval of pleasant and unpleasant events from episodic memory. *Journal of Abnormal Psychology*, 88, 248–257.
- Teasdale, J. D., & Russell, M. L. (1983). Differential effects of induced mood on the recall of positive, negative and neutral words. *British Journal of Clinical Psychology*, 22, 163–171.
- Teasdale, J. D., & Taylor, R. (1981). Induced mood and accessibility of memories: An effect of mood state or of induction procedure? *British Journal of Clinical Psychology*, 20, 39–48.
- Teasdale, J. D., Taylor, R., & Fogarty, S. J. (1980). Effects of induced elation-depression on the accessibility of memories of happy and unhappy experiences. *Behaviour Research and Therapy*, 18, 339–346.
- Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report. In A. H. Tuma & J. D. Maser (Eds.), *Anxiety and the anxiety disorders* (pp. 681–706). Hillsdale, NJ: Erlbaum.
- Thayer, R. E., Newman, J. R., & McClain, T. M. (1994). Self-regulation of mood: Strategies for changing a bad mood, raising energy, and reducing tension. *Journal of Personality and Social Psychology*, 67, 910–925.
- Tudor, T., & Holmes, D. (1973). Differential recall of successes and failures: Its relationship to defensiveness, achievement motivation, and anxiety. *Journal of Experimental Research in Personality*, 7, 208–224.
- Velten, E. (1968). A laboratory task for induction of mood states. *Behaviour Research and Therapy*, 6, 473–482.
- Vestre, N. D., & Caufield, B. P. (1986). Perception of neutral personality descriptions by depressed and nondepressed subjects. *Cognitive Therapy and Research*, 10, 31–36.
- von Hippel, W., Hawkins, C., & Narayan, S. (1994). Personality and perceptual expertise: Individual differences in perceptual identification. *Psychological Science*, 5, 401–406.
- Watkins, P. C., Mathews, A., Williamson, D. A., & Fuller, R. D. (1992). Mood-congruent memory in depression: Emotional priming of elaboration? *Journal of Abnormal Psychology*, 101, 581–586.
- Watson, D. (1988). Intraindividual and interindividual analyses of positive and negative affect: Their relation to health complaints, perceived stress, and daily activities. *Journal of Personality and Social Psychology*, 54, 1020–1030.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin*, 96, 465–490.
- Watson, D., & Clark, L. A. (1992a). Affects separable and inseparable: On the hierarchical arrangement of the negative affects. *Journal of Personality and Social Psychology*, 62, 489–505.
- Watson, D., & Clark, L. A. (1992b). On traits and temperament: General and specific factors of emotional experience and their relation to the five-factor model. *Journal of Personality*, 60, 441–476.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology*, 54, 1063–1070.
- Watson, D., & Slack, A. K. (1993). General factors of affective temperament and their relation to job satisfaction over time. *Organizational Behavior and Human Decision Processes*, 54, 181–202.
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, 98, 219–235.
- Watson, D., & Walker, L. M. (1996). The long-term stability and predictive validity of trait measures of affect. *Journal of Personality and Social Psychology*, 70, 567–577.
- Wegner, D. T., & Petty, R. E. (1994). Mood management across affective states: The hedonic contingency hypothesis. *Journal of Personality and Social Psychology*, 66, 1034–1048.
- Weinberger, D. A., Schwartz, G. E., & Davidson, R. J. (1979). Low-anxious, high-anxious, and repressive coping styles: Psychometric patterns and behavioral and physiological responses to stress. *Journal of Abnormal Psychology*, 88, 369–380.
- Weintraub, M., Segal, R. M., & Beck, A. T. (1974). An investigation of cognition and affect in the depressive experiences of normal men. *Journal of Consulting and Clinical Psychology*, 42, 911.
- Wessman, A. E., & Ricks, D. F. (1966). *Mood and personality*. New York: Rinehart.
- Williams, J. M. G., & Nulty, D. D. (1986). Construct accessibility, depression, and the emotional Stroop task: Transient mood or stable structure? *Personality and Individual Differences*, 7, 485–491.
- Williams, J. M. G., Watts, F. N., MacLeod, C., & Mathews, A. (1988). *Cognitive psychology and emotional disorders*. Chichester, England: Wiley.
- Wright, W. F., & Bower, G. H. (1992). Mood effects on subjective probability assessment. *Organizational Behavior & Human Decision Processes*, 52, 276–291.
- Yang, J. A., & Rehm, L. P. (1993). A study of autobiographical memories in depressed and nondepressed elderly individuals. *International Journal of Aging and Human Development*, 36, 39–55.
- Young, G. C. D., & Martin, M. (1981). Processing of information about self by neurotics. *British Journal of Clinical Psychology*, 20, 205–212.
- Zuroff, D. C., Colussy, S. A., & Wielgus, M. S. (1983). Selective memory and depression: A cautionary note concerning response bias. *Cognitive Therapy and Research*, 7, 223–232.

Received August 2, 1996

Revision received June 30, 1997

Accepted March 23, 1998 ■