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Abstract

This study investigated the relationship between awareness and acknowledgement of mood, intensity of emotions, and types of memories retrieved after a negative mood induction. Ninety-four participants completed questionnaires containing the predictor variables that assessed ability to attend to moods, experience clear emotions, repair and regulate mood, and ability to experience intense emotions. Participants were exposed to a negative mood induction, after which they wrote four memory events from the previous week. The memory events were evaluated by independent raters for their positivity or negativity. A positive overall rating of the reported memories for each participant represented mood incongruent effects and negative overall ratings represented mood congruent effects. The first hypothesis that awareness and acknowledgement of current negative mood predicted intensity of experienced emotions was supported. The second hypothesis that awareness, acknowledgement of current negative mood, and ability to experience intense emotions are predictors of mood congruent and mood incongruent recall effects was not supported.

Introduction

For several decades, researchers have investigated the relationship between emotion and memory (Blaney, 1986; Singer & Salovey, 1988). Much of the research concentrated on the impact of mood states on diverse cognitive operations including attention, perception, judgment, recognition procedures, and recall (Rusting & DeHart, 2000; Singer & Salovey, 1988). The research suggests that moods influence the way people interpret, remember, and make judgments about events or experiences (Bower, 1981; Rusting & DeHart, 2000; Singer & Salovey, 1988; 1996). There is evidence that positive moods bring about positive thoughts and memories, while negative moods bring about negative thoughts and memories (McFarland & Buehler, 1998; Rusting, 1999). However, unpleasant moods do not always lead to negative thoughts and memories and on occasion, individuals spontaneously remember positive thoughts after negative mood inductions (Eber & Wang-Eber, 1994; Parrott & Sabini, 1990; Smith & Petty, 1995).

Uncovering and understanding the relationship between mood and memory may help to increase the understanding of several mood disorders such as depression, anxiety, and phobias (McNally, 1999; Parrott & Sabini, 1990; Singer & Salovey, 1996). The literature on mood and memory is extensive. In this review, several models that have emerged to explain the relationship between mood and memory will be discussed. Specially, the associative network model and the schema theory will be presented. In addition, the constructive, context-sensitive, and motivational approaches to understand the relationship between

mood and memory will be reviewed. Finally, several personality characteristics associated with some of these mood-memory relationships will be examined.

Before presenting the current literature, it is necessary to define terms used throughout this review, including definitions of mood and emotion. Isen (1984) pointed out the difficulty researchers have had in finding a consensual definition of mood and emotion. Several researchers have defined these terms by denoting the distinctions between them (Gendolla, 2000; Gross, 1998). That is, moods are often described as sustained pervasive, long-lasting affective states that bias cognition. Moods can be influenced by environmental factors such as light, weather, odors, as well as physiological changes, particularly in the endocrine system (Gendolla, 2000; Gross, 1998). Emotions, on the other hand, are brief intense states that are caused by significant events in the environment such as physical threats or social interaction (Gendolla, 2000). Emotions tend to elicit specific actions aimed at maintaining or changing that emotion. Further clarification can be facilitated by providing examples of mood and emotion. For example, an individual experiencing a depressive mood is more likely to demonstrate negative cognitions such as worthlessness, incompetence, pessimism, and decreased motor behavior for long periods of time (American Psychiatric Association, 1994). On the other hand, someone experiencing a strong emotion such as fear may demonstrate impaired cognitive ability to focus attention away from the fear inducing stimuli and decreased ability to solve problems (McNally, 1999). In addition, people experiencing fear may tend to engage in fight or flight behavior in order to reduce their affective experience (Gendolla, 2000).

Moods and emotions are terms used to indicate affective states with varying degrees of similarities and differences. These terms have been treated by other researchers as synonymous and have been used interchangeably (Lewis & Williams, 1989; Strongman, 1989). In this review, the terms "moods and emotional states" will be used interchangeably to indicate that individuals are experiencing affective states such as happiness, sadness, anxiety, etc.

Terms associated with memory processes also need to be defined. Throughout this review, terms "encoding" and "recall" will be used. Encoding is used to identify a phase of the memory process that involves the creation of a memory trace that represents some event or experience (Kihlstrom & Barnhardt, 1993; Searleman & Herrmann, 1994). Recall or retrieval are used interchangeably to indicate the individual's mental process intended to recollect material or information previously stored in memory (Kihlstrom & Barnhardt, 1993; Searleman & Herrmann, 1994).

Mood and Memory Relationships

The manner by which different emotional states affect memory has been investigated from a variety of different perspectives. According to Parrott and Spackman (2000), emotional states affect content of the memories being remembered, as well as the individual's ability to encode and retrieve specific memories or material. Emotional states can affect the content of memories by causing individuals to attribute either positive or negative connotations to the content of the material being remembered. These positive or negative attributions to content are derived from the individuals' life experiences. For example, the

word "landing" may have neutral connotations to most people, but an individual that experienced an airplane crash may associate this word with a threatening life event. In this case, the life experience (crash) and the emotions of fear and anxiety associated with the event (or word) being remembered change the neutral emotional content of the memory to a negative emotional content. It is attributions whether positive or negative and derived from personal experiences that affect the content of the material being remembered.

Emotional states can also affect the individual's ability to encode material. In this case, the emotional state of the individual at the time when information is first presented may hinder and in some cases, improve encoding of information. Individuals experiencing negative mood states such as sadness or depression at the time when information is presented may experience deficits in processing information that requires categorical organization (Mathews, 1996). In this case, the sad or depressed state of the individual may be interfering with the individual's ability to implement cognitive strategies that promote encoding of information. Research also indicates that during encoding, sad and depressive mood states impair the processing of incompatible material while at the same time enhancing encoding of similarly valenced material (Bower, 1981; Isen, Clark, Shalker, & Karp, 1978; Nasby & Yando, 1982). In particular, Nasby and Yando (1982) reported that anger experienced at the time of encoding facilitated the processing of negative material and Bower (1981) found that happiness at encoding facilitated the processing of positive material.

In addition to affect encoding emotional states can also affect the individual's ability to recall information. In this particular case, the emotional state of the individual at the time when information is retrieved may promote the retrieval of similarly valenced information, while hindering the retrieval of incompatible information. Bower (1981) reported that sadness and happiness at recall facilitated remembering of similarly valenced personally relevant memories. Other researchers reported depression induced prior to retrieval of information decreased recall of positive, self-relevant information, while elation decreased recall of negative life experiences (Natale & Hantas, 1982).

The above examples show how emotional states affect several aspects of the memory process including content, encoding, and recall. Most of the literature on mood and memory has focused on studying the relationships between just two of these three aspects at a time. One of these relationships is observed when the emotional state of the individual at the time of encoding interacts with the emotional content of the material to be learned. This may result in mood congruent learning or mood incongruent learning. Better learning when the emotional state of the individual at time of learning (encoding) and the emotional content of the material being learned are similar, reflects mood congruent learning. On the other hand, better learning when the emotional state of the individual at time of learning (encoding) contrasts with the emotional content of the material being learned, reflects mood incongruent learning.

Another mood and memory relationship occurs when the emotional state of an individual at time of encoding and retrieval is emotionally similar.

Similarity of emotional states at encoding and retrieval may produce enhanced recall of what has been termed mood dependent recall. Mood dependent recall occurs when material that is learned in a particular mood is best remembered when experiencing the same or similar mood (Bower, 1981; Ellis & Ashbrook, 1989; Parrott & Spackman, 2000).

Finally, the third mood and memory relationship is derived form the interaction between the content of the material being remembered and the emotional state of the individual at time of retrieval. This interaction can result in mood congruent recall or mood incongruent recall. Mood congruent recall describes the condition where individuals experiencing a negative mood retrieve a higher proportion of negative events, than individuals experiencing a neutral or positive mood (McFarland & Buehler, 1997). Mood incongruent recall describes a condition where individuals experiencing a negative mood retrieve a higher proportion of positive events than individuals experiencing a neutral or positive mood.

The above relationships: mood congruent learning, mood incongruent learning, and mood dependent recall represent a large proportion of current research on mood and memory. The focus of this review will center only on mood congruent and mood incongruent recall effects. The literature that examines these effects is extensive and will be discussed in the following pages.

Mood Congruent Recall and Mood Incongruent Recall

Mood congruent recall is said to occur when individuals recall more material that is emotionally congruent with their prevailing mood than material

that is emotionally incongruent with their current mood (Ellis & Ashbrook, 1989; Parrott & Sabini, 1990; Rusting, 1998). In contrast, mood incongruent recall is said to occur when individuals recall more material that is emotionally incongruent with their current emotional state than material that is emotionally congruent with their current mood.

Investigation of mood and memory require the temporary induction of a particular mood state followed by a request for free-recall. Mood inductions are accomplished through presentation of emotive (sad or happy) stimuli such as music, pictures or videotapes (Blaney, 1986; Boden & Baumeister, 1997). Several studies have induced moods by asking participants to remember and re-experience personally relevant events that were very happy or sad (Blaney, 1986; Snyder & White, 1982). In this induction procedure, participants are instructed to remember the event as vividly as possible and to dwell on these memories for the duration of the experiment. This type of mood induction has been effective in changing participants' mood state (Blaney, 1986; Ellis & Ashbrook, 1989).

Following the temporary induction of a mood state, participants are required to engage in free-recall, or recall of the material presented after the mood induction in no particular order. The material or events remembered by participants during free recall are later evaluated to assess the positivity or negativity of these memories. Oftentimes, participants in the happy mood induction condition remember events that are equally happy and reflective of their current emotional state while those in the sad mood induction remember events

that are sad or unpleasant (Rusting, 2000). These results reflect mood congruent recall.

Many researchers have been able to confirm mood congruent recall effects; other researchers have obtained mood incongruent recall effects (for reviews see Blaney, 1986; Bower, 1981; Rusting, 1998). In several studies, participants had sad moods induced and yet they retrieved happy memories, i.e., memories that were incongruent with their induced mood state (Eber & Wang-Eber, 1994; Parrott & Sabini, 1990; Smith & Petty, 1995). Other participants who had a happy mood induced showed greater recall of more negative events than those recalled by people induced to experience sad moods (Parrott & Sabini, 1990).

Parrott and Sabini (1990) conducted a series of five experiments to evaluate the conditions under which these seemingly paradoxical and counterintuitive mood incongruent recall effects occur. Two experiments were conducted under natural non-laboratory conditions. The remaining three experiments were conducted in the laboratory to test the reliability of mood incongruent recall effects and to evaluate alternative explanations for their field studies.

One of these experiments was conducted during a class session in which midterm exams were returned to students. Students were informed that the purpose of the experiment was to investigate students' expectations and perceptions of exams. Mood scales were administered to students both before and after receiving their mid-term grades. Interpretation of the scales showed the

expected moods in students. Students who received a lower grade than expected reported a more negative mood when before and after mood scales were compared. Students who received higher grades than expected reported a more positive mood using the same procedure. When applied to types of memories, students who received lower grades than expected recalled memories with more positive affect and overall less negative affect (mood incongruent recall) than students who received higher grades than expected. A closer analysis of the reported memories showed mood incongruent effects for the first memory, but this effect was not maintained for the second and third memories.

In another experiment conducted under natural non-laboratory conditions, the researchers recruited and tested participants inside a university library during sunny or cloudy days. Previous studies documented the impact of weather on self-reported mood, helping behavior, and life satisfaction (Cunningham, 1979; Schwarz & Clore, 1983). Participants were asked to describe the first single event that came to mind that took place during their high school years at nighttime. The task was restricted to events occurring at nighttime to avoid confounding effects of weather and mood as retrieval cues. After the events were described, participants were required to rate their present mood on a scale from 0 to 10 (0 = bad mood and 10 = great mood). Participants recruited during sunny days reported better moods but recalled events with more intense negative affect than participants recruited on cloudy days. The results pointed toward an incongruency effect between current mood and the emotional content of the recalled memories. These results generally replicated those obtained in the first experiment.

The subsequent experiments conducted by Parrott and Sabini were conducted under laboratory conditions. In these laboratory experiments, different mood induction procedures were used to expand current available information about mood congruent and mood incongruent recall effects. These experiments demonstrated that mood incongruent effects were obtained not only under natural conditions as shown in previously discussed experiments, but also under controlled laboratory conditions. Mood incongruent effects were obtained with memories occurred in the distant past, as well as memories from events that occurred during the previous week. Furthermore, these experiments demonstrated that mood incongruent effects were more readily observed when participants were unaware of the relevance of their moods to the experiment. Interestingly, when participants knew or suspected that their moods were relevant to the experiment, only mood congruent effects were observed. Close examination of the recalled memories showed that mood incongruent effects were observed in the first of the three memories provided by participants, while the remaining memories demonstrated mood congruent effects.

Parrott and Sabini (1990) interpreted their findings as indicating that mood incongruent recall represents the individuals' efforts to regulate their negative moods by recalling memories incongruent with their current affective state. Furthermore, they argued that mood incongruent recall effects are reliably obtained under natural as well as controlled laboratory conditions.

Other researchers have suggested other conditions that increase likelihood of these effects. Specifically, Sedikides (1994) proposed that mood congruent and

mood incongruent recall effects occur as a function of time delay. Unlike Parrott and Sabini (1990), Sedikides proposed that after negative mood induction, mood congruent recall effects will be observed initially and will be immediately followed by mood incongruent recall effects. Sedikides found partial support for his "first congruency then incongruency" hypothesis after sad, neutral, and happy moods were induced in participants who were later requested to describe themselves in writing. Results indicated that sad moods affected the first half of their self-descriptions in a congruent manner, but affected the second half of self-descriptions in a mood incongruent manner. Participants in the neutral and happy mood conditions reported self-descriptions congruent with their moods in both the first and second halves of their descriptions.

Sedikides' hypothesis was supported by the results of the analysis of participants in sad moods, but not in neutral or happy moods. Two explanations were offered by the author. First, Sedikides argued that sad moods primed negative self-conceptions (congruency). Therefore, sad moods render similarly valenced memories more accessible to memory, which causes the recall of mood congruent memories. However, with the passage of time and awareness of their mood bias, participants engaged in mood regulation strategies via recall of memories incongruent with their current mood. His second explanation proposed that after sad mood induction, participants became overwhelmed by the emotions associated with sad moods. Previously, other researchers proposed that processing emotional information depleted available cognitive and attention resources, which reduced one's ability to attend to or perform cognitive or motor tasks (Ellis &

Ashbrook, 1989). Therefore, experiencing, remembering, and processing sad events consumes most of the individuals' cognitive resources, and consequently, they are unable to engage in cognitive strategies to repair their mood. In these instances, individuals engage in mood congruent recall, which maintains their sad mood. However, Sedikides argues that after some time, participants overcome the initial shock caused by their sad moods, and regain some of their cognitive resources. Once some cognitive resources are regained, individuals may begin coping with their sad mood by recalling memories incongruent with their sad moods.

Sedikides (1994) proposed that close analysis of the memories provided by participants demonstrated that mood congruent recall occurs first, and is immediately followed by mood incongruent recall. According to Sedikides, this phenomenon occurs as a function of the time between the mood induction and participants' recalled memories. Sedikides "first congruency then incongruency" hypothesis and findings contradict the results obtained earlier by Parrott and Sabini (1990) in which mood incongruent effects were detected in the first of the three requested memories. It is not clear what may have caused the discrepancy of these results. Other researchers have not closely examined the emotional valence of each of the memories recalled by participants as a function of time delay. What seems evident from the research previously discussed is that mood incongruent effects are found with frequency and appear to occur with greater reliability than other mood and memory effects (mood dependent recall)

Theoretical Models of Mood and Memory Effects

The extensive body of research on mood and memory has motivated researchers to develop models that integrate available findings. Two of the early models that emerged were the associative network model and the self-schema model. More recently, alternative models such as the constructivist, contextualist, and motivational models have emerged in response to the shortcomings of the earlier models. These models will be reviewed briefly.

Early Models of Mood and Memory Effects

Early work conducted by Isen and colleagues suggested that positive feelings cue retrieval of positive material from memory (Isen, 1984; Isen et. al., 1978). Furthermore, their work suggested that positive affective states influenced other cognitive processes such as judgment, evaluation, expectations, decision making, as well as behaviors that followed these cognitive processes (Isen, 1984). Isen's work suggested a positive cognitive loop in which positive moods and emotions lead to positive thoughts, opinions, expectations etc. Bower and colleagues expanded on Isen's work and developed it into what is known as the associative network model (Bower, 1981; Bower, Monteiro, & Gilligan, 1978). The model states that each emotion has a specific node or unit of memory that collects many aspects of a particular emotion. These nodes are interconnected by their associative pointers, which gather information from autonomic reactions, expressive behaviors, life situations, etc. When the associative pointers become activated, they evoke a particular emotion that triggers equally valenced memories and emotions (Bower, 1981; Ellis & Ashbrook, 1989). For example,

when a person experiences a negative life situation, congruent emotions are activated (e.g., sadness). These emotions activate the network, equally valenced emotions are stimulated, and information that is consistent and congruent with that emotional state is retrieved. It is in this way that negative mood states increase the tendency to retrieve negative memories and lead to negative or incorrect evaluations and assessments (mood congruency). Similarly, positive mood states increase the tendency to retrieve positive memories and lead to positive evaluations or assessments.

Similar to the associative network model is the schema model (Beck, 1967; Ellis & Ashbrook, 1989). Schemas are organized knowledge structures acquired during childhood and used in adulthood to interpret new information or situations (Rusting, 1998). This model, based on Beck's work on depression, proposes that people use cognitive schemas similar to their prevailing mood. For example, sad or depressed people are believed to have a depressive schema to organize information and self-concepts. When specific stressors reach significant thresholds, they activate the prevailing schema, which encodes negative information, thereby more readily maintaining the prevailing mood or emotional state. The idea of prevalent negative self-schemas has been useful in predicting and explaining many of the features observed in clinical depression. It has been proposed that when specific stressors activate a prevailing depressive schema, that activated schema tends to continuously encode negative information that maintains the depression (Kovacs & Beck, 1978; Ellis & Ashbrook, 1989).

Taken in combination, the above models explain several mood related memory effects including mood congruent recall, mood congruent learning, and mood dependent recall (Parrott & Spackman, 2000; Rusting, 1998). However, these models and the associative network in particular have been criticized for being too mechanistic and static. The implication is that the associative network model regards individuals as repetitive creatures consistently engaging in "loop-like" behavior rather than as evolving individuals searching for self-understanding through reflection and achievement of personal goals (Parrott & Spackman, 2000). The associative network model has also been criticized for its inability to account for mood incongruent recall, and mood incongruent learning effects as well as for its inability to reliably predict effects such as mood dependent recall. Furthermore, the associative network model fails to predict mood incongruent recall effects, since it posits that when emotional nodes are activated, similarly valenced emotions and memories will be stimulated and retrieved perpetuating that particular mood. Due to these predictive shortcomings of the associative network model, other researchers have proposed alternative models to explain mood and memory effects. These new approaches represent a valuable addition to the research on the relationship between mood and memory.

Contemporary Models of Mood and Memory Effects

The contemporary approaches to mood and memory address mood congruent and mood incongruent recall effects, which were found to occur naturally in everyday life and with significant frequency. These approaches are the constructive, the contextualist, and the motivational models.

Constructivist Model

The constructive model is based on Bartlett's research on visual perception and verbal accounts (Bartlett, 1932). His work has demonstrated that with repeated presentation of the same stimuli, recollections associated with the presented stimuli changed repeatedly. The changes in recollections were attributed to the participants' mood, interests, and attitudes believed to affect the content of the perceived material (Erderlyi, 1992).

The constructive model proposes that people constantly organize past experiences and reactions to events in order to build schemas. Schemas are considered unconscious mental structures used to organize knowledge related to plans, spatial arrangements, sequences of events, etc., (Brewer & Nakamura, 1984). Schemas are influenced by the emotional state of the individuals as well as the context of the situations surrounding individuals.

According to Bartlett (1932), schemas are composed of old knowledge that interacts with new knowledge. This does not necessarily mean that schemas operate as large fixed units of knowledge, but rather, that new information contributes to the development of qualitatively different schemas. In addition, schemas are generative in the sense that they can integrate a large number of new events and information (Brewer & Nakamura, 1984).

Proponents of this model argue that humans actively construct schemas representative of their view of the world (Meichenbaum & Fong, 1993). Common among the proponents of the constructivist model is the view that the human mind is a product of symbolic activities, and that reality is the product of the personal

meaning that individuals assign to events in their lives. According to this view, individuals respond to events, to their interpretation of such events, as well as to the implications associated with these events.

Several studies have investigated the impact that schema activation has on memory processes (Brewer & Nakamura, 1984; Kardash, Royer, & Greene, 1988). In these studies, participants were instructed to take a distinctive point of view while reading a story that could be interpreted from the perspective of a burglar or a homebuyer. Perspectives were assigned prior to reading, after reading and a week after reading the story. Results demonstrated that activated schema (burglar or homebuyer) enhanced both encoding and recall of information (Anderson, Pichert, & Shirey, 1983; Pichert & Anderson, 1977). Other researchers attempted replications of these early studies and obtained only modest support for the proposition that schema activation influences recall of information, but not encoding of information (Kardash, et. al., 1988).

Despite the discrepancy of schema activation influencing encoding of information, the bulk of the evidence indicates that schema activation influences several memory processes. In a review of literature on schema activation and their functions, several researches reported that schemas influence attention, framework, integration, retrieval, and editing of memory processes (Brewer & Nakamura, 1984). According to these researchers schemas influence the amount of attention allocated to particular information (attention), provide a background to preserve incoming information (framework), and provide a generic schema where old and new information interact (integration). In addition, the authors

propose that schemas serve as retrieval cues to locate information in memory (retrieval) as well as help individuals choose from retained information to be used in a memory task (editing). Research on schema activation and its effects on memory processes continue to the present day.

Contextualist Model

Like the constructivist model, the context-sensitive model also explains the relationship between mood and memory. The context-sensitive model is based on William James' philosophical precepts, which were later expanded by Stephen Pepper into what is now known as "contextualism" (Lewis, 1997). According to this view, to understand meaning, meaning has to be extracted from events or situations occurring now. Contextualism does not extract meaning from past experiences and, according to James, there is no way of knowing if events in the past are related to events occurring now. Supporters of this view argue that there is no linear progression or linear causal relation. That is, events occurring now are not caused by events from the past (Lewis, 1997). Other supporters take a less strict stance, and include past experiences in their studies of the contextualist model and memory (Ross, 1989; McFarland, Ross, & Giltrow, 1992).

This model when applied to memory disputes the view of memory as a photographic, accurate depiction of what occurred. According to Lewis (1997), memories may or may not resemble what truly happened. He argues that psychological states (needs, goals, desires, moods, etc.,) influence memories. For example, how childhood memories are recalled depends on the present psychological state of the individual doing the remembering, rather than the actual

nature of the event. Therefore, the context in which remembering takes place influences the retrieved memories.

Investigative efforts that support the contextualist model have grown in the past ten years (Isen, 1984; Lewis, 1997; Meichenbaum & Fong, 1993; Mischel & Shoda, 1995; Ross, 1989). Ross (1989) argues that people selectively recall memories consistent with their current beliefs and with their current emotional states. In a study, McFarland, Ross and Giltrow (1992) investigated how self-perceptions of personality traits and culturally shared beliefs influenced recall of memories that support these beliefs. Two groups of 68-year olds and two groups of 38-year olds rated themselves using a series of questionnaires relating to personality traits. The groups of 68-year olds rated their current standing on personality traits believed to increase with age (wisdom, patience, etc.,) as well as personality traits believed to decrease with age (level of activity and mental abilities). The 68-year olds also rated their status on the same traits at an early age (38 years of age). The 38-year olds rated their current standing on the same traits believed to increase or decrease with age. On the traits believed to increase with age, older participants rated themselves as having lower levels at an early age than younger participants rated having now. On the traits believed to decrease with age, older participants recalled having higher levels at a young age than the younger group reported having at present.

The results were interpreted as being influenced by culturally shared beliefs related to change or stability of personal traits as one matures. Participants used available information such as: current age, needs, goals, desires, moods, as

well as culturally shared beliefs in their self assessments of personality traits and selectively recalled memories that supported their beliefs. In other words, the participants' present context including age, needs, goals, desires, moods, as well as cultural beliefs were used to recall memories that supported their beliefs about personality traits believed to increase or decrease with age. Applying the contextualist model to the effects of mood on memory implies that the individual's present context determines the types of memories (congruent or incongruent) recalled.

In summary, the constructive and contextual models share one important similarity. Both models view emotions not only as retrieval cues, but also as a dynamic aspect of the schema or context of the memory trace that is helpful during encoding as well as retrieval of a particular memory or event. The constructive model views emotions and memories as a dynamic and integral part of the development of schemas and their activation. The contextualist model views emotional states as dynamic in the sense that they provide a source of referential information about the situation (context) from which individuals make assessments about change or stability of their personalities.

In addition to sharing similarities, these models have some differences. According to the constructivist model, past memories are important because they interact with new memories to form qualitatively different schemas, capable of integrating a great deal of new information. Strict proponents of the contextualist model on the other hand, do not consider past experiences important, because the past cannot be accurately argued to influence events occurring now. The most

important aspect of the contextualist model is the focus on the situation (context) and events occurring in the present.

Motivational Theory

In addition to the constructivist and contextualist models to the relationship between emotion and memory, the motivational model has also emerged. Research on the motivational model is extensive (Eber & Wang-Eber, 1994; McFarland & Buehler, 1997, 1998; Parrott & Sabini, 1990; Singer & Salovey, 1996). Motivational models have drawn support from the evidence accumulated against the associative network model that considers memories as static nodes that become activated by congruent stimuli (Isen, 1984, 1987; Singer & Salovey, 1993, 1996). In contrast, the motivational model views emotional memories as dynamic aspects of the individual's personality that represent wishes, needs, desires, and goals (Sedikides & Green, 2000; Singer & Salovey, 1996). These wishes, needs, desires, and goals influence the types of memories that will be stored and retrieved. From this perspective, memories provide individuals with constantly evolving cognitive and emotional information related to their past, present, and future (Singer & Salovey, 1996). This implies that emotions attached to memories of the success or failure of achieving desired goals will have an impact on cognitive processes. Individuals will selectively retrieve memories of past successes and emotions associated with them as a source of motivation and encouragement to pursue their goals and wishes (Parrott, 1993). Selective retrieval of memories of past failures and the emotions attached to them

may provide an estimate of the difficulty in achieving desired goals that may motivate or discourage further pursuit of these goals (Singer & Salovey, 1996).

To clarify the influence of motivation on the relationship between emotions and memory, it is necessary to examine the types of memories recalled by individuals while pursuing goals. Mood congruent memories and mood incongruent memories are considered by the motivational model as mood regulatory strategies (Parrott, 1993; Parrott & Sabini, 1990). For example, an individual may be motivated to recall mood congruent memories if sustaining or intensifying the presently experienced mood is considered necessary to achieve a goal (Parrott & Spackman, 2000). Similarly, an individual may be motivated to recall mood incongruent memories to change the presently experienced mood or to decrease its intensity if the present mood is considered to interfere with the attainment of the desired goal. Therefore, mood congruent recall and mood incongruent recall can be conceptualized as motivated efforts to regulate moods (Mischel, Ebbesen, & Zeiss, 1976; Sedikides, 1994).

Moffitt and Singer (1994) conducted an experiment to examine motivation and its relationship to mood and memory. The authors hypothesized that emotional responses to memories (positive or negative) are connected to the importance of these memories for the attainment or non-attainment of goals. To test their hypothesis, researchers asked participants to recall ten memories that were personally significant and emotionally evocative. Participants were asked to indicate their affective response to these memories. In a subsequent session, the participants were asked to generate a list of 15 personal goals. These 15 goals

could include goals that the participants were trying to attain (positive goal) or trying to avoid (negative goal). Participants also rated these personal goals along ten dimensions that included the positive or negative qualities of their goal; anticipated happiness if successful, or anticipated unhappiness if unsuccessful, anticipated unhappiness if successful (ambivalence); the importance of the goal; amount of prior success when pursuing goals; assessment of probability of success; assessment of opportunities provided to achieve success; difficulties associated with the desired goal, as well as the social desirability of the goal. Results showed that the more positively participants felt about their memories the more relevant their memories were to the attainment of their personal goals. At the same time, the more negative, embarrassed, sad, or angry they felt about their memories the more their memories reflected non-attainment of their goals.

The researchers interpreted the results to mean that individuals selectively retrieve memories considered relevant to the achievement of desired goals as a way to provide self-encouragement when pursuing goals. The researchers indicated that the affective responses of the personal memories were linked to the participants' goals. In addition, interpretation of the results indicated that individuals learn to desire goals for which they have had greater success in the past. In contrast, individuals who avoid their goals tend to constantly retrieve memories associated with past failures. The emotions evoked by this type of negative recall may reinforce their choice to avoid pursuing their goals.

Singer and Salovey (1996) indicated that the influence of motivation on mood and memory could be ascertained by examining the type of memories

retrieved when attempting to achieve goals. According to the authors, memories provide emotional and cognitive information about desired goals. The emotional tone (positive or negative) attributed to retrieved memories is linked to the achievement of goals. Recalling past memories, whether negatively or positively valenced may indicate self-regulation efforts aimed at adjusting behaviors to achieve personal goals (Singer & Salovey, 1996). Then, if there is motivation to achieve a goal, it is likely that an individual will retrieve memories of prior successes. The memories of prior successes will represent retrieval of memories emotionally congruent with the individual's motivation to achieve the desired goal. On the other hand, it is possible that motivation to achieve a goal will guide an individual to retrieve memories of past failures in order to gather information about conditions or preparation necessary to achieve a goal. These memories will represent retrieval of cognitively incongruent information with the individual's motivation for the desired goal. Recalling congruent or incongruent memories may be used to regulate emotional states and gather cognitive information when striving for goals. Then, it is important to examine under which conditions individuals will engage in self-regulation (of mood) to achieve their desired goals.

Situational and Personality Determinants of Motivation

Motivation to regulate mood appears to be activated by different situations and personality characteristics. Some of these situational demands include anticipation of social interaction as well as anticipation of cognitively demanding tasks. In addition to situational determinants, there are certain personality characteristics that are associated with mood regulation (Parrott & Spackman,

2000). Some of these personality characteristics include repressive coping style, self-esteem, self-focused attention, as well as acknowledgment of current affective states.

Research on the situational and personality determinants associated with motivation for mood regulation is extensive. A review of situations that compel individuals to regulate their moods and the personality traits associated with greater mood regulation will be presented in the following sections

It has been argued that individuals experiencing positive/happy moods are motivated to maintain these moods and engage in mood congruent recall in order to sustain their existing positive moods (Parrott, 1993). On the other hand, individuals experiencing negative or sad moods will experience distress which will motivate them to repair their moods through mood incongruent recall (Parrott, 1993; Parrott & Spackman, 2000). However, Parrott and Sabini (1990) suggest that mood incongruent recall occurs not only when participants are trying to alleviate their current negative moods, but also when participants experience happiness or elation. More recently, Parrott (1993) suggested that recall of negative or less positive memories by participants in happy moods indicated attempts to promote problem solving, motivate harder effort, to prepare for or prevent future bad fortune, etc. Although some of these suggestions are plausible, no empirical evidence to support these suggestions has been presented by the author.

Evidence exists that individuals will engage in mood regulation when social interaction is anticipated (Erber, 1996; Wegner & Erber 1993). Mood

regulation is attempted as a way to facilitate social interaction by restraining extreme moods if these moods are considered disruptive (Wegner & Eber, 1993). There is also a tendency to neutralize mood when social interaction is anticipated (Erber, 1996). In a recent study, Erber, Wegner, and Therriault (1996) investigated whether participants would engage in mood regulation when told that they would be working with a stranger. The researchers induced happy or sad moods by using uplifting or depressing music. Following mood induction, participants were asked to select from a number of headline stories that they would likely read. The headline stories were cheerful, neutral, or depressing. Prior to selection of the stories, participants were told that they would be doing an unspecified task. Half of the participants were told that they would be doing a task with another subject while the other half of the participants were told that they would be working alone. Participants who were in happy or sad moods selected headline stories that were congruent with their current mood as long as they were expected to work alone. When participants expected to work with another individual, they chose headline stories that were incongruent with their current mood state. The researchers interpreted these results as an indicator of the participants desire to neutralize their mood in anticipation of social interaction.

In addition to mood regulation in anticipation of social interaction, other situations motivate individuals to regulate their mood. Situations that require performance of cognitively demanding tasks appear to motivate individuals to engage in mood regulation. Trying to engage in serious thinking while experiencing depression or elation may be a futile effort. While in either of these

states, producing mood congruent thoughts which interfere with people's capacity to process information is common (Erber, 1996). Erber and Wang-Erber (1994) suggest that people might attempt to regulate their moods if their current mood is anticipated to interfere with task performance. They argue that if people in sad moods engage in cognitively demanding tasks (i.e., taking notes, taking a test, solving problems) they will attempt to neutralize their mood and possibly improve their current mood through mood incongruent recall. On the other hand, if situations are judged to require low cognitive skills or incentives for good performance are low, then motivation for mood regulation and effort will be low and more likely to produce mood congruent effects.

Recently, Erber and Wang-Erber (1994) examined whether mood regulation was linked to the level of effort by participants when recalling mood congruent or mood incongruent memories. In one of a series of studies, the researchers induced moods through elicitation of a personally relevant event (sad or happy) and requested as much detail of the event as possible. Participants were encouraged to remember and experience the event as if it was happening now. Once mood induction was achieved, participants were assigned to three conditions according to the level of recall required. The conditions were high effort recall, low-effort recall, and no recall (control group). After the mood induction and assignment of the experimental conditions, participants were asked to recall an event incongruent with the initial event. The high effort recall group was asked to recall an incongruent event with as much detail as the original event. The low effort recall group was prompted with questions about the facts (such as

when, where, or how long ago, etc.) of the incongruent event. The no recall group was given an 8-item mood scale to complete. Participants in the high effort recall condition demonstrated greater mood incongruent effect than participants in the low effort recall group and the control group.

The previously discussed studies indicate that certain situations will increase the likelihood of mood regulation strategies, such as instances in which individuals want to maintain their positive moods or want to repair their negative moods in anticipation of social interaction. Furthermore, situations in which mood, regardless of valence, is judged to interfere with cognitive demands or performance of cognitive tasks will trigger mood regulation strategies through recall of mood congruent or mood incongruent memories.

In addition to specific situations in which individuals will be motivated to regulate their moods, it has been demonstrated that certain personality characteristics increase the likelihood of mood regulation attempts. Specifically, repressive coping style, self-esteem, self-focused attention, as well as affect acknowledgment have been associated with emotional self-regulation. Before reviewing these personality traits, three models that offer potential explanations for the relationships between personality traits, mood states, and cognitive processes will be presented.

The literature on the relationship between mood and memory focuses on three areas of study: moods, personality traits, and cognitive processes (Blaney, 1986; Rusting, 1998; Singer & Salovey, 1988). Specifically, personality characteristics are assessed to examine the role of personality traits and mood

regulation as well as their impact on emotional and cognitive processes. Personality measures used in mood and memory research include measures of repression-sensitization traits, anxiety trait scales, social desirability scales, and others (Rusting, 1998). The personality variables that are usually investigated include extraversion/neuroticism, positive/negative affectivity, repression/sensitization, sub-clinical depression, trait anxiety, and anger/hostility traits. Personality traits such as repressive coping, self-esteem, negative mood regulation, and self-focused attention, that play a significant role in the generation of mood congruent and mood incongruent effects, will be reviewed.

Repressive Coping Style

One of the personality characteristics of individuals demonstrating mood incongruent recall is repression. Repression has been described as an unconscious defense mechanism or alternatively, a conscious strategy that becomes automatic and helps individuals banish unwanted thoughts from consciousness (Myers, Brewin, & Power, 1998). Weinberger, Schwartz, and Davidson (1979) defined the repressive coping style as a self-deceptive maneuver aimed at reducing awareness of threat and negative affect. Myers, and colleagues reported that when exposed to learning material containing negative, positive, or neutral lists of words, repressors demonstrated significantly poorer recall for negative material than non-repressors. The researchers concluded that repressors have an enhanced capability of inhibiting negative material, suggesting that such a tendency is specific to negative material, rather than global or attributable to overall poor recall or memory.

Compared to other individuals, repressors demonstrate difficulty retrieving negative autobiographical information. Repressors also tend to produce low scores on self-report measures of anxiety traits and high scores on self-report measures of defensiveness (Myers, et. al., 1998; Newman & Hedberg, 1998). Furthermore, repressors tend to produce mood incongruent recall while non-repressors produced mood congruent recall (Boden & Baumeister, 1997).

Recently, Boden and Baumeister (1997) conducted a series of studies to investigate the exact mechanisms by which repressors regulate moods. The researchers investigated whether exposure to distressing stimuli would result in faster accessibility to happy (mood incongruent) memories. All participants filled out the Marlowe-Crowne Social Desirability Scale (1964) and the Taylor Manifest Anxiety Scales. These instruments have proved useful in identifying individuals with repressive coping styles (Weinberger, et. al., 1979). After completing the above scales, individuals were required to watch either neutral or distressing videotapes. Later, participants were asked to recall a time in their life in which they felt particularly happy. The time duration between request of the happy memory and actual recall was measured (latency). There was a significant interaction between trait repression (repressors/non-repressors) and videotape (neutral/distressing). Individuals identified as repressors recalled happy memories faster after viewing the unpleasant videotape than after the neutral videotapes. Individuals identified as non-repressors recalled more happy memories after viewing the unpleasant videotape than after viewing the neutral videotape, but they required more time to produce these happy memories than the repressors.

In subsequent experiments, after induction of negative moods, repressors were faster to recall happy memories than sad memories, and spontaneously generated pleasant thoughts after viewing an unpleasant film whereas non-repressors did not. Boden and Baumeister (1997) concluded that repressors coped with unpleasant stimuli by recalling pleasant thoughts and memories (mood incongruent memories). The authors hypothesized that the repressors' recall of mood incongruent thought and memories represents their attempts to regulate their mood.

Self-Esteem

Self-esteem is another personality trait that had been found to interface between mood and memory (Smith & Petty, 1995). The construct of self-esteem refers to differences in people's thoughts, moods, and actions associated with favorable or unfavorable feelings toward themselves (Kernis, Cornell, Sun, Berry, & Harlow, 1993). Self-esteem is considered an element of the self-concept and most theorists agree that this construct includes elements of global evaluation of oneself (Brown & Mankowski, 1993). Others define self-esteem as a combination of self-worth that includes perceived ability to achieve desired goals, and feelings associated with reaching these goals (Smith & Petty, 1995). Self-esteem research has shown that individuals with high self-esteem tend to be confident that their efforts will lead to success, are receptive to positive feedback from others, and are less vulnerable to mood swings than low self-esteem individuals (Brown & Mankowski, 1993; Smith & Petty, 1995). Individuals with low self-esteem react more negatively to aversive events, internalize negative feedback and threats as

well as being at a greater risk for depression (Andrews & Brown, 1993; Kernis, et. al., 1993; Smith & Petty, 1995).

According to Smith and Petty (1995), ability to generate mood congruent or mood incongruent recall might be attributable to individuals' motivation to regulate their moods. The authors suggest that motivation to regulate moods may be linked to individual differences in levels of self-esteem. According to the authors, individuals with high self-esteem may perceive themselves as worthy and capable of achieving their desired goals, and may experience positive feelings associated with their self-evaluations. Low self-esteem individuals on the other hand may perceive themselves as unworthy and incapable of achieving their desired goals, and may experience negative feelings associated with their self-evaluations. Therefore, when facing a challenging situation or event, it is likely that the self-evaluations held by individuals may have an impact on their cognitions. Thus, individuals with high self-esteem, when facing an aversive situation may retrieve positive memories (mood incongruent memories) while individuals with low self-esteem may be more likely to retrieve more negative memories (mood congruent memories).

Smith and Petty (1995) examined the relationship between trait self-esteem, negative mood, and cognitions. The authors hypothesized that participants with low self-esteem and poor ability to regulate their moods would show mood congruent effects, while high self-esteem participants with greater ability to regulate their moods would be more likely to generate mood incongruent effects. In a series of experiments, participants were presented instruments to measure

self-esteem and mood regulation. The self-esteem was measured using the Self-Esteem Scale (Rosenberg, 1965), and the participants' ability to regulate mood was measured with the Negative Mood Regulation Scale (Catanzaro & Mearns, 1990). Participants were told that the studies investigated the effects of personality on memory. During the first phase of the study, participants completed the Negative Mood Regulation Scale. Participants scoring in the upper or lower third of scores were contacted for the second phase of the experiment. The participants were randomly assigned to neutral or sad mood induction groups. After the mood induction, participants filled out several personality inventories that included three mood manipulation checks, followed by a request to list three memories from their high school years. After memories were recalled, the Self-Esteem Scale was administered. Independent raters coded the recalled memories for their positivity or negativity. Median scores of the self-esteem scale were calculated to assess high and low levels of the self-esteem trait. Results demonstrated that after negative mood induction, participants with low self-esteem produced mood congruent memories that represented continuation of their mood induction. Further analyses of these results indicated that the more negative the low-self-esteem participants were feeling, the more negative were the memories they recalled. On the other hand, high self-esteem participants demonstrated opposite patterns. Among high-self-esteem participants, the more negative the high self-esteem participants were feeling, the more positive were the memories they recalled.

Smith and Petty (1995) concluded that high self-esteem individuals, when facing a negative mood inducing situation, tend to engage in thinking that counteracts their negative mood (mood incongruent effects), while low self-esteem do not (mood congruent effects). The researchers considered the possibility that high self-esteem individuals have greater ability to think positive thoughts than low self-esteem individuals. It is possible that high-self-esteem individuals have learned to regulate their moods by using strategies that proved successful in the past, such as recalling positive thoughts when facing an aversive situation. It appears that high self-esteem individuals are motivated to engage in attempts to repair their negative moods by recalling memories incongruent with their current mood state. Low self-esteem individuals seem unable to implement this strategy, and recall mood congruent memories that prolong their current mood state.

Self-Focused Attention

Self-focused attention has been considered a personality characteristic that moderates the relationship between mood and memories (McFarland & Buehler, 1998). Self-focused attention has been defined by researchers as the individuals' attention toward internal and covert aspects of the self, such as attitudes, standards, and feelings (Duval, Duval, & Mulilis, 1992; Wood, Saltzberg, and Goldsamt, 1990). Wood and colleagues proposed that self-focused attention is heavily influenced by the valence of moods (negative or positive moods) and their 1990 study showed partial support for their proposition. These researchers found that only sad moods generated self-focused attention, while happy moods did not.

More recently, McFarland and Buehler (1998) operationalized self-focused attention as either a trait or a state characteristic. According to them, self-focused attention as a trait reflects a chronic focus on internal qualities that are associated with depression and low self-esteem. Self-focused attention as a state represents a temporary induced focus on oneself, usually induced by watching oneself on mirrors or cameras. The authors indicated that self-focused attention demonstrates detrimental as well as beneficial consequences. The detrimental effects include low self-esteem, as well as increased cognitive, affective, and behavioral features of depression, negative self-schemas related to their expectations about the future and their ability to solve problems (Lyubomirsky & Nolen-Hoeksema, 1995; Wood, Saltzberg, & Goldsamt, 1990). Some of the beneficial effects associated with self-focused attention include greater self-knowledge, greater accuracy of self-perceptions, and greater self-awareness of internal states (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998; Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990).

Detrimental effects of self-focused attention have been linked to mood congruent recall, in which mood congruent recall aggravates the individuals' dysphoric mood, negative self-schemas, or both (Lyubomirsky, et. al., 1998). Beneficial effects of self-focused attention have been linked to mood incongruent recall, in which mood incongruent recall constitutes an effective mood regulation strategy used when coping with the distress caused by self-focused attention (Mullen & Suls, 1982).

Self-focused attention appears to increase likelihood of both mood congruent and mood incongruent recall. McFarland and Buehler (1998) have suggested looking at the precise manner in which the individuals attend to their moods. Previously, Campbell and her colleagues (1996), demonstrated two ways in which individuals engage in self focused attention: ruminative self-focus and reflective self-focus (Campbell, Trapnell, Heine, Katz, Lavallee, & Lehman, 1996; Trapnell & Campbell, 1999). Ruminative self-focus was defined as a neurotic tendency to passively dwell on distress, while reflective self-focus encompasses willingness to acknowledge distress, explore possible reasons for these feelings and interpret distress as a signal for mood regulation efforts.

Based on the above conceptualization of self-focused attention, McFarland and Buehler (1998) propose that directing attention to the individuals' moods increase the likelihood of mood congruent and incongruent effects. The type of recall (mood congruent or mood incongruent) will depend on the way in which individuals attend to negative moods. According to the researchers, different procedures can help achieve differentiation of how participants attend to their negative moods. The researchers tested their hypothesis by inducing negative or neutral moods in participants followed by procedures aimed at identifying their style of self-focused attention. In these experiments mood induction was attained by providing participants with performance feedback on the completion of a test measuring accurate judgments about people or by requiring participants to visualize unpleasant events or neutral events in their lives. Self-focused attention states were achieved by instructing participants to consider how they were feeling

about their feedback or the recalled event. In additional studies, temporary states reflecting ruminative orientation and reflective orientation styles of self-focused attention were obtained by the development of a list of items measuring tendency toward either style. Each list consisted of twelve items compiled from other measurements associated with these self-focused tendencies. The ruminative list contained items that identified thoughts representative of confusion about their feelings and inclination to dwell passively and repetitively on their feelings without consideration for mood repair strategies. The reflective list contained items that identified participants' willingness to attend openly to their feelings, ability to clearly label their feelings, and inclination to improve feelings. The authors reported support for their hypothesis that the type of recall (mood congruent or mood incongruent) was dependent on the way in which individuals attend to negative moods. Their findings indicated mood incongruent effects were obtained when individuals focused on their mood in a reflective manner. Mood congruent effects were obtained when participants focused on their negative moods in a ruminative manner.

Although self-focused attention has been associated with detrimental and beneficial effects, these effects seem to be linked to the reflective or the ruminative manner in which individuals attend to their moods. The reflective manner of attending to one's mood is associated with recall of memories incongruent with the current mood. These incongruent memories appear to alleviate or improve one's mood. The ruminative manner of attending to one's mood is associated with recall of memories congruent with the current mood. The

McFarland and Buehler (1997) proposed that mood incongruent recall as a mood regulation strategy is a two step process. The process includes acknowledgement of current negative mood state followed by implementation of recall strategies that may alleviate the experienced distress. The authors proposed that a willingness to acknowledge negative feelings determined whether mood congruent or mood incongruent effects occur. For this, personality traits such as sensitization or repression may identify individuals willingness to acknowledge negative feelings. Sensitizers were defined as individuals that focus attention on threatening stimuli and their reaction to it, while repressors tend to avoid threatening material and deny their reaction to it (McFarland & Buehler, 1997; Weinberger, 1990).

To investigate if affect acknowledgement predicts the occurrence of mood incongruent recall, McFarland and Buehler (1997) conducted several experiments to test their two-stage process. The researchers proposed that those individuals high in both affect acknowledgement and mood regulation will demonstrate a willingness to accept and fully experience negative emotions prior to implementation of a strategy to repair their current negative mood. Furthermore, individuals low in both affect acknowledgement and mood regulation will demonstrate a defensive approach and a reluctance to confront negative emotional states and therefore a low inclination to take an active role in regulating moods. To identify individuals with high and low affect acknowledgement as well as high and low abilities to regulate moods, the researchers used the Meta-Mood Experience Scale (MMES, Mayer & Gaschke, 1988). This scale assesses beliefs

about emotions, including a willingness to openly acknowledge mood states and inclinations to regulate mood states. The scale contained 60 items from which 16 items were selected and submitted to participants. The study was introduced as an investigation of the relationship between personality and social skills. All participants were instructed that they would be completing a personality test (i.e., MMES) followed by a social skills test. Participants were randomly assigned to the high anxiety or low anxiety mood induction conditions. Those in the high anxiety condition were told that they would be interviewed for 15 minutes by a team of social skills experts, that the interview would be videotaped, and that other participants reported that the interview was highly evaluative and stressful. The participants in the low anxiety condition were told that the social skills test involved filling out a questionnaire concerning social situations. Immediately after the mood inductions, all participants were asked to recollect and describe in detail a situation from their own life involving social skills. After completing this part of the experiment, participants were provided with a list of eight social skills situations, from which they were to select one and describe a relevant personal experience. This task was followed by a list of items intended to rate the positivity or negativity of the event described. After rating the event, participants in the high anxiety condition were informed that they would not be interviewed and were debriefed. Results demonstrated that participants who scored high on affect acknowledgement recalled more positive memories following the high anxiety mood induction than participants in the low anxiety mood induction condition. Results also showed that participants that scored low on affect acknowledgement

recalled more negative memories following the high anxiety mood induction than participants in the low anxiety mood induction condition.

The researchers interpreted the results to indicate that negative moods at recall can have two contrasting effects on memory (mood congruent or mood incongruent recall). In addition, an individual difference in affect acknowledgement determines whether mood congruent or mood incongruent recall occurs when faced with negative emotions.

In summary, the previously discussed personality traits: repressive coping, self-esteem, self-focused attention, and affect acknowledgement had been associated with mood regulation and repair through recall of mood congruent and mood incongruent memories. It appears that individuals demonstrating higher scores in these personality traits also possess greater abilities to regulate negative moods. These abilities to regulate moods are associated with greater tendencies to recall memories incongruent with experienced negative moods. On the other hand, individuals demonstrating lower scores in these personality traits also possess less ability to regulate negative moods. Inability to regulate negative mood is associated with greater tendencies to recall memories congruent with experienced negative moods. Thus, mood incongruent recall seems to be a strategy used by individuals to regulate or repair negative moods, while mood congruent recall maintains individuals' negative mood states.

Summary

For several decades, researchers have investigated the relationship between mood states and cognitive processes. Specifically, the impact that some

emotional states such as sadness or happiness have on attention, social judgments, encoding, recall, and other cognitive process have been investigated. Some of these findings have been discussed throughout this review.

In addition, analysis of the current literature indicates that emotional states affect memory in a variety of ways. According to Parrott and Spackman (2000), emotional states can affect the content of memories by attributing either positive or negative emotional tones to the material being remembered. Emotional states can also have an impact on memory when material is first presented or learned (encoding), or when the material is being remembered (recall). Therefore, it can be inferred that emotional states can have an impact on three aspects of remembering: content, encoding, and recall of the material. The impact of emotional states on the aspects of remembering results in several memory effects such as mood congruent learning and mood incongruent learning, mood dependent recall, mood congruent recall and mood incongruent recall. Although these effects are important, this review focused on mood congruent and mood incongruent recall effects.

Mood congruent and mood incongruent recall are robust effects found frequently in literature (Blaney, 1986; Bower, 1981; Bower & Mayer, 1989; Rusting, 1998). Mood congruent and mood incongruent recall effects have been obtained under natural condition, under laboratory conditions, and when retrieving recent and distant past memories. Mood incongruent recall is more likely to occur when participants are unaware that their mood is relevant to the

experiments, while mood congruent recall appears with regularity when participants are aware that their mood is relevant to the experiments.

The literature on mood and memory effects is very extensive and several researchers have attempted to integrate current findings into coherent models of mood and memory. The associative network and the schema models arose early on. Both models adequately explain mood congruent learning, mood incongruent learning, and mood dependent recall (Parrott & Spackman, 2000; Rusting, 1998). These models were criticized by several researchers for being too mechanistic and static (Parrott & Spackman, 2000). These models have also received criticism for not being able to reliably predict mood dependent recall, and for their inability to explain mood incongruent recall (Bower & Mayer; 1989; Parrott & Spackman, 2000). Due to the predictive shortcomings of these models, other researchers have proposed alternative models to explain the relationship between mood and memory, as well as to explain mood congruent and mood incongruent recall effects. These models include the constructive, contextualist, and motivational models.

The constructive and contextual models share one important similarity. Both view emotions not only as retrieval cues, but also as a dynamic aspect of the memory helpful during encoding and retrieval. The constructive approach views emotions and memories as a dynamic and integral part of the development of schemas and their activation. The contextualist approach views emotions as dynamic in the sense that they provide a source of referential information about the situation (context) from which individuals make assessments about change or

stability of their personalities. These approaches have some differences. According to the constructivist approach, past memories are important because they interact with new memories to form qualitatively different schemas, capable of integrating a great deal of new information. Strict proponents of the contextualist approach on the other hand, do not consider past experiences as important, because the influence of the past cannot be measured.

In addition to the constructivist and contextualist model, the motivational model also explains the relationship between mood and memory. The motivational model also views emotional memories as dynamic aspects of the individual's personality that represent wishes, needs, desires, and goals (Sedikides & Green, 2000; Singer & Salovey, 1996). These wishes, needs, desires, and goals influence the types of memories that will be stored and retrieved. Proponents of this model consider mood congruent recall and mood incongruent recall as motivated efforts to sustain or regulate moods (Mischel, Ebbesen, & Zeiss, 1976; Sedikides, 1994). Motivation to sustain or to regulate moods appears to be determined by situations as well as personality traits. Situations in which social interactions are anticipated seem to motivate individuals to regulate their moods. In addition, situations in which mood, regardless of valence is judged to interfere with cognitive demands or performance of cognitive tasks will trigger mood regulation. The personality traits associated with motivation to regulate moods include individuals with high traits of repressive coping style, self-esteem, self-focused attention, as well as affect acknowledgment. Possessing these traits in

lower proportions has been associated with lower abilities to regulate mood and greater recall of memories congruent with negative moods.

Prior to discussion of the proposed study, it is important to mention several methodological aspects shared by the previously reviewed studies. These methodological aspects include mood induction, gender, and deception. Conducting mood-memory research requires induction of temporary mood states to investigate its effects on memories. Different moods are usually induced by using previously established procedures. These procedures include reading mood inducing statements that evoke feelings of elation or depression (Velten mood induction), undergoing hypnosis, listening to music, watching videotapes depicting unpleasant or pleasant stimuli, or remembering autobiographical memories to induce the desired mood states (Blaney, 1986; Singer & Salovey, 1988). Also false information about the difficulty of an anticipated test has been used to temporarily induce anxiety (McFarland & Buehler, 1997). It is important to mention that the induced moods are short-lived and no detrimental effects have been reported by participants or researchers.

Another aspect examined is the possible impact that gender differences may have on the relationship between mood and memory. Early studies of mood and memory demonstrated only mild effects of gender on memory effects (Buchwald, 1977; Clark & Teasdale, 1985). More recently, studies investigating mood congruent and mood incongruent recall have not found main effects associated with gender differences (Erber & Wang-Erber, 1994; Parrott & Sabini, 1990; Rusting & DeHart, 2000; Wood, Saltzberg, & Goldsamt, 1990).

In addition to mood inductions and gender effects, researchers use deception when conducting mood and memory studies. The literature indicates that researchers used deception in the form of concealment of the true purpose of their investigations. Several researchers have pointed out that demand characteristics can have an effect on the results of their experiments (Erber & Wang-Erber, 1994; Parrott & Sabini, 1990; Sedikides, 1994; Smith & Petty, 1995; Wood, Saltzberg, & Goldsmant, 1990). It has been argued that participants' awareness of the purpose of the study may eliminate, diminish, or alter the effects of mood on memories retrieved (Sedikides, 1994). In fact, Parrott and Sabini (1990) argued that cooperative participants who hinted or were aware of the relevance of their moods to the experiments tended to generate memories congruent with their current moods. Specifically, when informed or participants knew of the relevance of mood states to the studies, the participants inhibited attempts to alleviate their negative moods, fearing that such efforts may interfere with the experiments. When informed, participants demonstrated greater mood congruent recall than mood incongruent recall. On the other hand, when participants did not know or were unaware of the relevance of moods to the studies, the participants engaged in mood regulation or repair strategies when experiencing negative moods. When uninformed, participants demonstrated mood incongruent effects.

Deceiving participants appears to be a necessary strategy to observe which memory effect emerges as participants experience negative moods. In the studies reviewed, deception has not caused detrimental effects to participants. After

deception was used, participants were thoroughly debriefed. Debriefing has been shown to repair any possible negative feelings caused by the deception.

Overview of present study

The present study will expand previous research conducted by McFarland and Buehler (1997) on individual differences and motivational factors associated with regulation of negative moods. It is based on their argument that mood regulation is a two step process in which individuals first acknowledge their negative moods and later implement strategies to alleviate them. McFarland and Buehler proposed that individuals high in both affect acknowledgement and mood regulation demonstrate a willingness to accept and fully experience their negative emotions prior to implementing negative mood repair strategies. They also proposed that individuals low in both affect acknowledgement and mood regulation demonstrate a defensive approach and reluctance to confront their negative emotional states and therefore a low inclination to take an active role in regulating their moods.

Hypotheses

Two hypotheses guide the present study. It is hypothesized that the level of awareness and acknowledgement of current negative mood state is related to the intensity of experienced emotions. That is, experiencing intensely sad moods increases the level of awareness and acknowledgement of current negative moods. While, less intense negative moods produce lower levels of awareness and acknowledgement. It is also hypothesized that as awareness and acknowledgement of current negative mood states increases, in association with

ability to experience intense emotions, the likelihood of regulating or repairing that negative mood state increases by recalling mood incongruent memories. Furthermore, as the likelihood of repair increases, the presence of the mood incongruent recall effect will also increase.

The purpose of the proposed study is to increase current available knowledge about the relationship between mood and memory. Its goal is to investigate the relationship between affect intensity and affect acknowledgement and types of memories retrieved after experiencing negative moods.

Methods

Participants

The participants were 94 students (75 women and 19 men) enrolled in psychology and sociology courses at Barry University. Their ages ranged from 17 to 41 years of age (M= 21.06 ; SD = 3.65). They participated individually in 1-hour sessions and received extra credit for their participation (See Appendix A for sample of Consent Form).

Materials

Trait Meta Mood Scale

To measure affect acknowledgement and mood regulation, a recently developed instrument called the Trait Meta-Mood Scale was used (TMMS, Salovey et. al., 1995, see Appendix B). The TMMS was derived from the Meta-Mood Experience Scale (MMES) developed initially by Mayer and Gaschke (1988). The MMES was used by McFarland and Buehler in their 1997 studies. Both scales tap into similar constructs. They differ in that MMES measures

thoughts about current mood states, while the TMMS assesses more stable individual differences on similar constructs. Specifically, the TMMS was developed to assess relatively stable individual differences in tendencies to attend to, discriminate, and regulate moods (Salovey, et. al., 1995; see Appendix B). The TMMS consists of 30 items and responses are scored on a 1 (strongly disagree) through 5 (strongly agree) range. Items are clustered around three sub-scales: attention, clarity, and mood repair. The attention scale contains 13 items that assess the degree to which individuals take notice of and think about their feelings and emotions (e.g., " I often think about my feelings"). The clarity scale contains 11 items that assess ability to distinguish among feelings (e.g., " I usually know my feelings about a matter"). The mood repair scale contains 6 items that assess ability to repair and regulate negative moods (e.g., " I try to think good thoughts no matter how badly I feel").

The internal consistency of the TMMS sub-scales was reported to be high (attention: $\alpha = .86$; clarity: $\alpha = .88$; and repair: $\alpha = .82$). Also, convergent and discriminant validity studies of the TMMS sub-scales against other instruments measuring mood and mood management were conducted (Salovey, et. al., 1995). Comparisons were conducted against the Self-Consciousness Scale (SCS; private and public sub-scales); the Ambivalence Over Emotional Expressiveness Questionnaire (AEQ); the Life Orientation Test (LOT; optimism scale); Negative Mood Regulation (NMR); and the Center for Epidemiological Studies Depression Scale (CES-D). The attention sub-scale was associated with private and public self-consciousness scales ($r = .42$ and $r = .36$ respectively). This indicates that

people who attend to their feelings also attend to external aspects of their emotional experience. The clarity sub-scale demonstrated a negative association with ambivalence (r = -.25) and depression (r = -.25). These results indicated that people who identify their feelings clearly tend to be less depressed and experience lower levels of ambivalence about their feelings when expressing them to others. The correlations of other instruments and the attention and clarity sub-scales were moderate. The repair scale was negatively associated with depression (r = -. 37) and positively associated with beliefs about negative mood regulation (r = .53) and optimism (r = .57). These results indicated that people experiencing depression tend to believe that they cannot repair their moods and demonstrate an overall pessimistic view.

The TMMS has shown great potential in its ability to measure tendencies to attend to, regulate, and experience clear moods and emotions. It has also shown great potential in discriminative and convergent comparisons against other established instruments. Using the TMMS instead of the MMES may prove useful in identifying a willingness to acknowledge and regulate moods as stable personality characteristics (see Appendix B).

Affect Intensity Measure

In addition to identifying personality traits that may predict affect acknowledgement and mood regulation, it is suspected that intensity of experienced emotions may have an impact on whether or not mood regulation strategies are implemented. It has been proposed that intensity of emotions may increase motivation to regulate negative moods (Moffitt & Singer, 1996; Singer &

Salovey, 1996). To investigate whether intensity of emotions has an impact on the implementation of mood regulatory strategies, intensity of emotions will be examined by using a mood intensity scale. The instrument used in this study was the Affect Intensity Measure (AIM, see Appendix C) developed by Larsen and Diener (1984). It contains 40 items that assess the magnitude and intensity with which individuals experience positive or negative emotions (e.g. "When I feel happy it is a strong type of exuberance" or " When I am nervous I get shaky all over"). Responses are scored on a 1 (never) to 6 (always) frequency scale.

The internal consistency of the AIM range from .90 to .94 across four samples (Larsen & Diener, 1987). Test re-test reliability of the AIM at one, two, and three month intervals shows strong correlations (r = .80; r = .81; and r =. 81 respectively). Comparison with related instruments shows positive correlations with sociability (r = .29 to .45), arousability and reactivity (r =. 39 to .49) and emotionality (r =. 27 to .57) as well as somatic and neurotic symptoms (r =. 32 to .48; Gohm & Clore, 2000).

The affect intensity measure assesses the magnitude and intensity of emotional experiences. It shows that if positive emotions are strongly experienced then negative emotions are also strongly experienced. It has shown that after mood induction, intensity of affect has an impact on attitudes, stereotypes, and feeling towards groups (Haddock, Zanna, & Esses, 1994).

Permission to use the TMMS has been received from Salovey and permission to use the AIM has been received from Larsen. Both permissions were received by e-mail.

Mood Induction

In addition to measuring affect acknowledgement and intensity of affect, a mood induction procedure was performed. Participants were presented with an information sheet that contained the mood manipulation procedure (see Appendix D). The information sheet informed participants that as part of the study they would be tested on their social skills by a team of three experts and that the test would be videotaped. They were also informed that previous participants reported that the test was highly stressful and evaluative.

Design and Procedures

The design of this study followed a multiple regression analysis format with continuous variables. The continuous variables include two predictor variables and one criterion variable. The predictor variables determined the status of participants on their abilities to acknowledge and regulate their mood states (TMMS) and their abilities to experience emotions intensely (AIM). The criterion variable assessed the type of memories retrieved. Assessment of the participants' memories by independent raters determined whether mood congruent or mood incongruent memories were retrieved.

This study was presented to the participants as an investigation of the relationship between personality traits and social skills. As part of the study, participants were asked to complete a personality questionnaire and later take a social skills test. The personality questionnaires included the TMMS and the AIM. Filler items aimed at distracting them from the true purpose of the study were also included. Once these questionnaires and filler items were completed,

participants read an information sheet containing the mood induction procedure. In a prior study, this information sheet was successful in inducing anxiety in participants (McFarland & Buehler, 1997). After the introduction of the mood induction procedure, the experimenter left participants alone for several minutes while preparing the second packet of questionnaires. Upon returning, the experimenter informed participants that since this was a short study, they would be asked to complete another survey conducted by the advisor of the experimenter. This survey, which contained the criterion variable, was introduced as a study of gender differences in people's recollections. Participants were again assured anonymity for their responses to this survey. Included in the survey were 10 items denoting emotional and cognitive states used previously by Parrott and Sabini (1990). These adjectives contained scales that assess sadness (sad-depressed), happiness (cheerful-happy), anxiety (anxious-apprehensive), confusion (confused-uncertain), and irritability (annoyed-irritable). Each item contained a 1-7 Likert scale, anchored by 1 (not at all) through 7 (extremely) provided to assess their current mood state (see Appendix E). As part of this survey, participants were also asked to recall four events in their lives that happened during the past week. Completing the second survey took approximately 10 minutes.

After participants listed the four events from the previous week, they were informed that the demonstration of their social skills was not required. Participants were thoroughly debriefed prior to discharge and asked not to reveal details of the study to other potential participants.

Mood induction checks. The effectiveness of the mood induction procedure was assessed. The scores for the happiness scale were reversed as previously done by other researchers (Lyubomirsky et. al., 1998; Parrott & Sabini, 1990). The mood scale scores of each of the two items in the five scales: sadness, happiness, anxiety, confusion, and irritability were averaged to determine the effectiveness of the mood induction procedure.

Analysis of memory events. Analysis of memory events was conducted by two groups of raters with two raters each. Each group of raters scored all the sets of memories, and their scores were compared using Cohen's Kappa analysis of inter-rater agreement. The raters were trained to assess the positivity or negativity of the events reported by participants. Specific criteria for the analysis of memories, as well as examples of positive, negative, and neutral memory events were used to train independent raters. Once raters were thoroughly familiar with the criteria and practiced rating the sample events, they proceeded to the analysis of events. The independent raters read and then rated each event by answering four questions; two positive ("How positive is this event?" and "How happy do you feel about this event looking back on it now?"), and two negative questions ("How negative is this event?" and "How unhappy do you feel about this event looking back on it now?" see Appendix F). A 7-point Likert scale was used by the raters to score each question. There were four rater questions for each reported event of the participants, meaning (4 questions X 4 recalled events) a total of 16 rater scores for each participant (see Appendix G). The scores of rater questions 1 and 2 relating to the positivity of the recalled events were averaged

and the same was done for rater questions 3 and 4 for each reported event. The average of questions 3 and 4 was then subtracted from the average of questions 1 and 2 to yield either a positive or a negative number (see Appendices F and G). Positive scores were considered to represent a mood incongruent recall and negative scores were considered to indicate a mood congruent recall. After each event was scored and evaluated as representative of mood congruent or mood incongruent recall, the scores of all 4 of the reported events were added to obtain an overall score for the four events of each participant (see Appendix G). Overall scores greater than zero were interpreted as overall mood incongruent recall effect. Overall score less than zero were interpreted as overall mood congruent recall effect.

Results

The Statistical Package for the Social Sciences, version 10 (SPSS-10) was used to analyze the data. Results presented are rounded off to two decimal places.

Initially, an overall index reflecting the negativity of mood was created by averaging the responses to the 10 mood items of the five mood scales: depression, happiness, anxiety, confusion, and irritability (see Appendix E). As done in previous studies, the scores of the happiness scale were reversed (Lyubomirsky et.al., 1998; Parrott & Sabini, 1990).

It was expected that after the mood induction procedure, participants would report negative moods by endorsing higher scores on the depression, anxiety, confusion, and irritability scales while endorsing lower scores on the happiness scale. A 7-point Likert scale in which 1 indicated "not at all" and 7

indicated "extremely" were provided for each item of the scales. Results of the overall mood mean indicated that scores fell on the lower end of the mood scales (*Mean* = 2.71; *Median* = 2.50, see Table 1). Results also showed that contrary to expectations, participants endorsed higher scores for the happiness mood scale (*Mean* = 4.00 ; *Median* = 4.00) than the expected scores for the anxiety scale (*Mean* = 3.35; *Median* = 3.0). The second highest mean was observed for the anxiety scale (*Mean* = 3.35; *Median* = 3.0), which was slightly above the overall mood mean (*M* = 2.71; *Median* = 2.50). The overall results of the mood scales indicate a neutral to low anxious mood.

Table 1

Means, Median, and Standard Deviations of Mood Scales

Mood	Mean	Median	Standard Deviations
Depression	1.88	1.50	1.26
Happiness *	4.00	4.00	1.23
Anxiety	3.35	3.00	1.47
Confusion	2.36	2.0	1.35
Irritability	1.96	1.5	1.35
Overall Mood	2.71	2.50	.89

Note. Each scale contains two mood items that were averaged. Items included in the happiness scale (cheerful and happy) were reversed.

The four memory events reported by participants were evaluated for positivity and/or negativity by two groups of two raters each. An index reflecting the positivity or negativity of each memory event was created using previously mentioned procedures (see Appendix G). Overall negative scores were as congruent with the negative mood induction. Overall positive scores were interpreted as incongruent with the negative mood induction. Reliability of the memory ratings was evaluated using Cohen's Kappa. An excellent Cohen's Kappa inter-rater reliability coefficient was obtained ($r_k = 0.80$; $p < .05$). A subsequent analysis of each memory event also showed significantly high inter-rater agreement, (see Table 2).

Table 2

Inter-rater Reliability Coefficients

Memory Event	Number of Valid Cases	Cohen's Kappa Coefficients (r_k)
Mem 1	94	.89
Mem 2	93	.76
Mem 3	93	.79
Mem 4	89	.77
Group 1 and Group 2	93	.80

Note. Values of kappa (r_k ; $p < .05$) greater than 0.75 indicate excellent agreement beyond chance.

The first hypothesis stated that awareness and acknowledgement of negative mood defined as greater ability to attend to moods, experience clear emotions, and repair or regulate negative moods is related to the intensity of experienced emotions. Awareness and acknowledgement of negative mood was measured by the TMMS and the intensity of participants' experienced emotions was measured by the AIM. A multiple regression analysis in which the summary index of the TMMS overall mean scores, TMMS sub-scales scores, and AIM scores were entered at once was conducted. In the analysis, the TMMS summary index, as well as the means of the TMMS sub-scales were the predictor variables, and the AIM was the criterion variable (see Table 3).

Table 3

Mean and Standard Deviations of Variables Entered in the Multiple Regression Analysis (N= 94).

Variable	Mean	Standard Deviation
AIM	3.86	.54
Attention	4.03	.54
Clarity	3.65	.65
Repair	3.85	.65

The multiple regression analysis showed that the overall mean of the TMMS did not predict the AIM score and it was removed from the computation. The multiple regression analysis between the TMMS sub-scales and the AIM

resulted in an $R^2 = .10$ that was significant $F(3,90) = 3.30$; $p < .05$. The results support the hypothesis that ability to attend to moods, experience clear emotions, as well as ability to repair or regulate mood predicted the scores associated with experiencing intense emotions. Examination of the predictor variables showed that the attention and repair sub-scales contributed most to the variance (attention: ß = .26 ; p < .05; and repair: ß = .23 ; p < .05) while the contribution of the clarity sub-scale was not significant (ß = -.13 ; p <.25; see Table 4).

Table 4

Summary of Multiple Regression Analysis for TMMS Subscales Variables Predicting AIM Scores (AIM) (N = 94).

Variable	B	SE B	ß	P Value
Attention	.26	.11	.26	.017
Clarity	-.11	.10	-.13	.247
Repair	.19	.09	.23	.034

Note. $R^2 = .10$ was significant at $p < .05$. Attention and Repair sub-scales were significant at the $p < .05$ level. Clarity sub-scale was not significant at the $p = .247$ level.

Further examination of the obtained Pearson correlations coefficients showed the significance of the attention and repair sub-scales (see Table 5). A weak, although significant relationship was found between the attention sub-scale

and AIM ($r = .22$; $p < .05$), and repair sub-scale and AIM ($r = .19$; $p < .05$). The relationship between clarity and AIM was not significant ($r = .02$; $p = .44$). Relationships between the TMMS sub-scales and the AIM indicate that participants' abilities to attend to and repair their moods are related to the intensity in which emotions are experienced.

Table 5

Summary of Pearson Correlations for AIM and TMMS Sub-scales

Variable	AIM	Attention	Clarity	Repair
AIM		.22*	.02	.19*
Attention			.31*	.02
Clarity				.29*
Repair				

Note. Asterisk (*) indicates that correlation is significant at the 0.05 level (1-tailed).

The second hypothesis stated that as awareness, acknowledgement of current negative mood, and ability to experience intense emotions increases, the likelihood of repairing or regulation mood increases by recalling more mood incongruent memories. As previously stated, awareness and acknowledgement of current negative mood is defined as the participants' ability to attend to their emotions, experience clear emotions, as well as ability to repair or regulate their

mood. To test the second hypothesis, a multiple regression analysis was conducted in which the AIM, and the TMMS sub-scales were the predictor variables and the reported memory events were the criterion variables.

Before testing the second hypothesis, the rating scores provided by the two groups of raters for memory event 1 (n = 94) were averaged to obtain an overall mean rating score for the first reported memory event (Mem 1). The ratings provided by the two groups of raters for memory events 2, 3, and 4 (Mem 2-3-4) were combined to obtain an overall mean rating score of these reported events (see Table 6). This procedure was conducted in order to assess whether mood congruent effects would be observed for the mean rating score of the first reported memory event, while a mood incongruent effect would be observed for subsequent reported memory events. Prior research indicates that mood congruent effects are observed when evaluating the initial reported memories, but as time goes by, mood incongruent effects are observed for later events ("first congruent then incongruent effect" hypothesis; Sedikides, 1994).

The overall mean rating score computed for Mem 1 indicates a weak negativity rating (*Mean* = -.16, see Table 6) representing a weak mood congruent effect. The overall mean rating score computed for Mem 2-3-4 represents a modest positivity rating (*Mean* = .70, see Table 6) representing a modest mood incongruent effect. Although modest, the results indicate that initially, participants reported memory events that were slightly negative and congruent with their (induced) negative moods, but as time went by, their memories became more positive and incongruent with their (induced) negative moods. This supports

Sedikides (1994) findings in which mood congruent effects were detected in early reported memories, followed by mood incongruent effects on the last reported memories.

Table 6

Means and Standard Deviations of Average Rating Scores for Memory Events

Memory Events	N	Mean	Standard Deviation
Mem 1	94	-.16	3.95
Mem 2-3-4	88	.70	2.58

Note. Mem 1 , and Mem 2-3-4 indicate average of scores provided by independent raters for the reported memory events The "N" indicates the number of valid memory events entered in the calculation of means and standard deviations. The difference between the number of memory events (94 and 88) indicates that data were missing because participants reported less than four memory events.

To assess whether AIM and TMMS sub-scales predicted the rating scores associated with negative (mood congruent effect) or positive (mood incongruent effect) ratings for Mem 1, a multiple regression analysis was computed. In the analysis, AIM and TMMS sub-scales were the predictor variables, and Mem1 was the criterion variable. Multiple regression analysis resulted in $R^2 = .05$ which was not significant at $F(4,89) = 1.14$; $p < .343$, indicating that the predictor variables

were not able to predict mood congruent or mood incongruent effects for Mem 1. See Table 7 for summary of multiple regression results of predictor variables.

Table 7

Summary of Multiple Regression Analysis for Variables Predicting Mean Rating Scores for Memory Event 1 (N = 94).

Variable	B	SE B	ß	P Value
AIM	-.41	.80	-.06	.611
Attention	.20	.83	.03	.811
Clarity	.69	.69	.11	.324
Repair	.94	.68	.15	.168

Note: R^2= .05 was not significant at p = .343. None of the above predictors showed significance at the $p < .05$ level.

Analysis of the Pearson correlation coefficients showed a weak, although significant relationship between the repair sub-scale and Mem 1 ($r = .18$; $p < .05$). A relationship that approached significance was found between the clarity sub-scale and Mem 1 ($r = .17$; $p = .055$). The relationship between the AIM and Mem 1 was not significant ($r = -.02$; $p < .05$; see Table 8).

Although TMMS sub-scales and the AIM scores did not predict the ratings scores for Mem 1, partial support for the second hypothesis was derived from the Pearson correlation coefficients. The relationships indicate that as participants

show greater scores in their abilities to repair and regulate their moods, the rating scores for Mem 1 increased, indicating a small tendency toward mood incongruent recall effect. Furthermore, as participants show greater scores in their abilities to experience clear emotions, the ratings for Mem 1 increased, indicating a very small tendency toward mood incongruent recall effect. See Table 9 for summary of Pearson' correlation coefficients for Mem 1.

Table 8

Summary of Multiple Regression Analysis for Variables Predicting Rating Scores for Memory Events 2-3-4 (N = 94).

Variable	B	SE B	ß	P Value
AIM	-.25	.53	-.05	.634
Attention	.81	.55	.17	.148
Clarity	.18	.48	.05	.710
Repair	.83	.47	.20	.084

Note: $R^2 = .08$ not significant at $p = .134$.

To assess whether AIM and TMMS sub-scales would predict the rating scores associated with negative (mood congruent effect) or positive (mood incongruent effect) ratings for the average of Mem 2-3-4, another multiple regression analysis was computed. Similar to the procedure for multiple regression for Mem 1, AIM and TMMS sub-scales were the predictor variables,

and the average scores for Mem 2-3-4 were the criterion variable. The multiple regression analysis resulted in $R^2 = .08$ which was also not significant at $F(4,83) = 1.82$ ($p = .134$, see Table 8). The combination of predictor variables does not predict the rating scores associated with mood congruent or mood incongruent effects for Mem 2-3-4. Analysis of the Pearson correlation coefficients for these variables are significant for the relationship between the attention sub-scale and the average scores for Mem 2-3-4 ($r = .18$; $p < .05$), as well as repair sub-scale and the memory events 2,3, and 4 ($r = .2$; $p < .05$). In addition, the relationship between the clarity sub-scale and Mem 2-3-4 approach significance ($r = .17$; $p < .055$). The relationship between the AIM and Mem 2-3-4 is not significant ($r = .03$; $p = .395$).

Table 9

Pearson Correlations for AIM, TMMS Sub-scales, and Memory Events.

	AIM	Attention	Clarity	Repair
Mem 1	-.02	.05	.17 [1]	.18*
Mem 2-3-4	.03	.18*	.17 [1]	.21*

Note: For Mem 1, only the repair sub-scale reached significance. For Mem 2-3-4 the attention and the repair sub-scales are significant. Superscript ([1]) on clarity scale for Mem 1 and Mem 2-3-4 indicate that the sub-scale approaches significance. All correlations computed at $p < .05$ (1-tailed).

Discussion

Based on previous literature, it was expected that the mood induction procedure would produce low to moderate levels of anxiety in participants. Contrary to expectations, an overall neutral to very low level of anxious mood was reported by participants. On a 7-point Likert scale, overall mood scores fell at the lower end of the scale. Interestingly, the mean scores for the happiness scale contradicted the expectation of lower overall scores for this mood scale after a negative mood induction. Some possible explanations for these results are offered at the end of the discussion. At this time, it can only be pointed out that the mood induction was not as effective as expected.

The analysis of inter-rater reliability for raters scoring for mood congruent and mood incongruent recall effects of reported memory events was significant. Evaluation of the reported memory events, after averaging scores of both groups of raters for Mem 1, and combined Mem 2-3-4, scores showed a slight move from the mood congruent effect to the mood incongruent effect. Previous research found that while experiencing a negative mood, participants engage in recall of memories congruent with their current negative moods (Sedikides, 1994). As time goes by, and participants become aware of their negative mood bias and engage in recall of memories that are incongruent with their current negative moods. Sedikides (1994) proposes that by engaging in mood incongruent recall, participants are attempting to repair their negative moods. The findings of the present study are consistent with Sedikides (1994) "first congruency then incongruency" hypothesis as a function of time delay.

The first hypothesis stated that as awareness and acknowledgement of current negative mood (defined as greater ability to attend to moods, experience clear emotions, and repair moods) would be related to the intensity of experienced emotions. This hypothesis is supported by the results obtained in the multiple regression analysis between the TMMS sub-scales and the AIM. The variability in TMMS scores accounted for by the attention and repair sub-scales is significant, while the clarity sub-scale is not significant. Although the relationships found among these variables are statistically significant. This suggests that participants that attend to their moods, and show greater abilities to repair and regulate their moods do so within the context of experiencing more intense emotions. Overall the hypothesis that awareness and acknowledgement of current negative mood is related to the intensity in which emotions are experienced is supported by the results.

The second hypothesis stated that as the participants awareness and acknowledgement of current negative mood, in addition to their ability to experience intense emotions, increases the likelihood of repairing or regulating mood increases by recalling mood incongruent memories. The first part of the hypothesis that attempts to predict mood congruent effects for Mem 1 was not supported. The second part of the hypothesis that attempts to predict mood incongruent effects for Mem 2-3-4 also was not supported.

Although the second hypothesis is not supported by the regression model, interesting relationships between the TMMS sub-scales and both Mem 1 and Mem 2-3-4 can be observed. A weak, but significant relationship exists between

the repair sub-scale and Mem 1. This relationship indicates that as participants demonstrate ability to repair and regulate moods, they also show a slight tendency to recall memories that are incongruent with their current negative moods. Also, a weak but significant relationship was found between the repair sub-scale and Mem 2-3-4 and the attention sub-scale and Mem 2-3-4. The combined relationships indicate that participants that attend to their moods and are able to repair and regulate their moods show a slight tendency to recall memories incongruent with their current negative mood states.

The lack of support for the second hypothesis may be caused by the low anxiety of participants following the anxiety induction. Two explanations are offered that might account for the limited mood induction effect. The possibility that being assigned to a deception condition as stated on the informed consent form may have alerted participants to monitor their responses and increase their self-regulatory strategies prior to completion of the questionnaires, mood induction, and mood scales. Although this is only a possible explanation for the lack of support for the second hypothesis, previously reviewed research indicates that individuals engage in mood regulation when social situations are expected (Erber, 1996; Wegner & Erber, 1993). In the present study, participants were led to believe that they were to be interviewed by three experts in the area of social skills. Earlier research indicated that when expecting to work with a stranger or in situations in which mood is considered to potentially interfere with performance, participants tend to neutralize their moods in anticipation of these situations

(Erber, Wegner, & Therriault, 1996). In the present study, deception was alerted early on and, participants may have engaged in mood regulation strategies.

In addition, the low effectiveness of the mood induction for this population sample may be explained by the demanding academic endeavors of this particular population sample. Their demanding academic schedules, deadlines, exams, etc. exposed them to situations in which they are constantly tested. It possible that this population sample experiences anxious moods with regularity and their tolerance thresholds may be higher than those found in non-student populations. Furthermore, the population sample of this study demonstrated mood repair abilities as indicated by the scores of the TMMS repair-sub-scale found during the evaluation of the first and second hypotheses. A recent study conducted with the same student population sample showed that the student population under study was not affected by a different mood induction procedure (Madura, 2001). In Madura (2001), three different types of music were used to induce depression, elation, or neutral mood states. Participants were later asked to evaluate a series of emotionally evocative pictures. Results showed that participants reported few effects associated with depressive moods after listening to all three types of music suggesting that the mood inductions were not effective for their intended purpose.

In conclusion, the question of the relationship among awareness, acknowledgement of affect, intensity of emotion, and mood incongruent recall as a negative mood repair strategy remains unanswered. Further exploration is needed to examine the possible link or links that may exists among these traits.

Future research encompassing these components may benefit from a comparison or control group. Furthermore, the unique characteristics of this particular population sample should be explored to assess the specific causes that prevent mood inductions from being effective when proven successful in other student populations.

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Appendix A

Informed Consent for a Psychological Research Study

Dear Research Participant:

Your participation in a research project is requested. The research is being conducted by Adelma Caram, a master's student in the Department of Psychology at Barry University. It concerns the relationship between personality traits and social skills. You will be asked to fill out several questionnaires. The study may involve some level of deception, if you are in the deception condition, the nature of the deception will be fully disclosed at the end of the study. The experiment will take approximately 40-60 minutes to complete. We anticipate that eighty (80) participants will take part in this study.

Although there are no direct benefits to you, your participation will help our understanding of the relationship between personality and social skills. There are no known physical or psychological risks associated with this study.

Your participation is strictly voluntary, and you have the right to withdraw from the experiment at any time without any penalty. Your extra credit points will not be affected. The information that you will provide will be anonymous, that is, you will not be identified by name or any other labels. In addition, all information from the study will remain confidential to the extent permitted by law. The raw data will be kept in a locked file cabinet in the psychology department. All data will be available only to the researcher and the researcher's supervisor. Any data that are published will be in terms of group results, and no individuals will be able to be identified. Once the data are collected, they cannot be withdrawn since no

individual will be identifiable. You can know the results of the experiment by contacting the experimenter in approximately 10 weeks.

If you have any questions or concerns regarding the study or your participation in the study, you may contact the researcher, Adelma Caram at (305) 899-3270 through the Psychology Department secretary or her supervisor, Dr. Christopher Starratt, at (305) 899-3478.

Voluntary Consent

I acknowledge that I have been informed of the nature and purpose of this experiment by Adelma Caram. I also acknowledge that I have read and understand the information presented above, and that I have received a copy of this form for my records. I give my voluntary consent to participate in this experiment.

_____ _____

Signature of Participant Date

_____ _____

Signature of Investigator Date

Appendix B

TRAIT META-MOOD SCALE

Please read each statement and decide whether or not you agree with it. Place a number in the blank line next to each statement using the following scale:

1 = strongly disagree
2 = somewhat disagree
3 = neither agree nor disagree
4 = somewhat agree
5 = strongly agree

_____ 1 I try to think good thoughts no matter how badly I feel.

_____ 2 People would be better off if they felt less and thought more.

_____ 3 I don't think it's worth paying attention to your emotions or moods

_____ 4 I don't usually care much about what I'm feeling.

_____ 5 Sometimes I can't tell what my feelings are.

_____ 6 I am rarely confused about how I feel.

_____ 7 Feelings give direction to life

_____ 8 Although I am sometimes sad, I have a mostly optimistic outlook

_____ 9 When I am upset I realize that the "good things in life" are illusions.

_____ 10 I believe in acting from the heart.

_____ 11 I can never tell how I feel.

_____ 12 The best way for me to handle my feelings is to experience them to the fullest.

_____ 13 When I become upset I remind myself of all the pleasures in life.

_____ 14 My belief and options always seem to change depending on how I feel.

_____ 15 I am often aware of my feelings on a matter.

_____ 16 I am usually confused about how I feel.

Appendix B

TRAIT META-MOOD SCALE

_____ 17 One should never be guided by emotions.

_____ 18 I never give into my emotions

_____ 19 Although I am sometimes happy, I have mostly pessimistic outlook,

_____ 20 I feel at ease about my emotions.

_____ 21 I pay a lot of attention to how feel.

_____ 22 I can't make sense out of my feelings.

_____ 23 I don't pay attention to my feelings.

_____ 24 I often think about my feelings

_____ 25 I am usually very clear about my feelings.

_____ 26 No matter how badly I feel, I try to think about pleasant things.

_____ 27 Feelings are weakness humans have.

_____ 28 I usually know my feelings about a matter.

_____ 29 It is usually a waste of time to think about your emotions.

_____ 30 I almost always know exactly how I am feeling.

Appendix C

AFFECT INTENSITY MEASURE

DIRECTIONS: The following questions refer to the emotional reactions to typical life-events. Please indicate how YOU react to these events by placing a number from the following scale in the blank space preceding each item. Please base your answers on how YOU react, not on how you think others react or how you think a person should react.

Never	Almost Never	Occasionally	Usually	Almost Always	Always
1	2	3	4	5	6

_____ 1. When I accomplish something difficult I feel delighted or elated.

_____ 2. When I feel happy it is a strong type of exuberance.

_____ 3. I enjoy being with other people very much.

_____ 4. I feel pretty bad when I tell a lie.

_____ 5. When I solve a small personal problem, I feel euphoric.

_____ 6. My emotions tend to be more intense than those of most people,

_____ 7. My happy moods are so strong that I feel like I'm "in heaven."

_____ 8. I get overly enthusiastic.

_____ 9. If I complete a task I thought was impossible, I am ecstatic,

_____ 10. My heart races at the anticipation of some exciting event.

_____ 11. Sad movies deeply touch me.

Appendix C

AFFECT INTENSITY MEASURE

_____ 12. When I'm happy it's a feeling of being untroubled and content rather than being zestful and aroused. (-)

_____ 13. When I talk in front of a group for the first time my voice gets shaky and my heart races.

_____ 14. When something good happens, I am usually much more jubilant than others.

_____ 15. My friends might say I'm emotional.

_____ 16. The memories I like the most are of those of times when I felt content and peaceful rather than zestful and enthusiastic. (-)

_____ 17. The sight of someone who is hurt badly affects me strongly.

_____ 18. When I'm feeling well it's easy for me to go from being in a good mood to being really joyful.

_____ 19. "Calm and cool" could easily describe me. (-)

_____ 20. When I'm happy I feel like I'm bursting with joy.

_____ 21. Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.

_____ 22. When I'm happy I feel very energetic.

_____ 23. When I receive an award, I become overjoyed.

_____ 24. When I succeed at something, my reaction is calm contentment. (-)

_____ 25. When I do something wrong I have strong feelings of shame and guilt.

_____ 26. I can remain calm even on the most trying days. (-)

Appendix C

AFFECT INTENSITY MEASURE

_____ 27. When things are going good I feel "on top of the world."

_____ 28. When I get angry it's easy for me to still be rational and not overreact. (-)

_____ 29. When I know I have done something very well, I feel relaxed and content rather than excited and elated. (-)

_____ 30. When I do feel anxiety it is normally very strong.

_____ 31. My negative moods are mild in intensity. (-)

_____ 32. When I am excited over something I want to share my feelings with everyone.

_____ 33. When I feet happiness, it is a quiet type of contentment. (-)

_____ 34. My friends would probably say I'm a tense or "high-strung" person.

_____ 35. When I'm happy I bubble over with energy.

_____ 36. When I feet guilty, this emotion is quite strong.

_____ 37. I would characterize my happy moods as closer to contentment than to joy. (-)

_____ 38. When someone compliments me, I get so happy I could "burst."

_____ 39. When I am nervous I get shaky all over.

_____ 40. When I am happy the feeling is more like contentment and inner calm than one of exhilaration and excitement. (-)

** (-) Indicates reverse scoring.

Appendix D

Mood Induction Procedure

In the social skills test, you will be interviewed for 15 minutes by a team of three experts on social skills and you will be videotaped. The experts will ask you questions about how you would handle various social skill situations. You will be judged in terms of content of your answers and your demeanor while answering these questions. Previous participants have reported that the test situation is very stressful and evaluative. It turns out that the best way to measure people's social skills is to observe them under stressful test conditions.

Appendix E

Mood Scale

1. At this moment how sad do you feel?

Not at all Extremely

---

1 2 3 4 5 6 7

2. At this time how depressed do you feel?

Not at all Extremely

---

1 2 3 4 5 6 7

3. At this time how cheerful do you feel?

Not at all Extremely

---

1 2 3 4 5 6 7

4. At this time how happy do you feel?

Not at all Extremely

---

1 2 3 4 5 6 7

5. At this time how anxious do you feel?

Not at all Extremely

---

1 2 3 4 5 6 7

Appendix E

Mood Scale

6. At this time how apprehensive do you feel?

Not at all Extremely

_____

1 2 3 4 5 6 7

7. At this time how confused do you feel?

Not at all Extremely

_____

1 2 3 4 5 6 7

8. At this time how uncertain do you feel?

Not at all Extremely

_____

1 2 3 4 5 6 7

9. At this time how annoyed do you feel?

Not at all Extremely

_____

1 2 3 4 5 6 7

10. At this time how irritable do you feel?

Not at all Extremely

_____

1 2 3 4 5 6 7

Appendix F

Analysis of Memories

For each event provided by participants, make the necessary assessment of the events

Step 1. First, read each event, then answer the questions below.

1. How positive is this event or experience?

Not at all Very

Positive Positive

1 2 3 4 5 6 7

2. How happy do you feel about this event looking back on it now?

Not at all Very

Happy Happy

1 2 3 4 5 6 7

3. How negative is this event or experience?

Not at all Very

Negative Negative

1 2 3 4 5 6 7

4. How unhappy do you feel about this event looking back on it now?

Not at all Very

Unhappy Unhappy

1 2 3 4 5 6 7

Appendix F

Analysis of Memories

Step 2. For each event or memory: Rate the positivity or negativity of each of the events or memories provided.

Positivity index: Average positive ratings (1 and 2) _____

Negativity Index: Average negative ratings (3 and 4) _____

Subtract negative index from positive index _____

Step 3. For all events or memories. Write the overall rating score.

Average score of memory/event #1. _____

Average score of memory/event #2 _____

Average score of memory/event #3 _____

Average score of memory/event #4_____

Average scores of all memories/events scores_____

_____ If score is greater than "0", then mood incongruent effect.

_____ If score is less than "0", then mood congruent effect.

Appendix G

Sample of Analysis of Reported Events

Part	Mem #	Memory by participant	Rating	Aver-Rating	Overall rating	Congr/ Incongr
1	1	Q1. How positive				
		Q2. Looking back +				
		Q3. How negative				
		Q. 4. Looking back -				
	2	Q1. How positive				
		Q2. Looking back +				
		Q3. How negative				
		Q4. Looking back -				
	3	Q1. How positive				
		Q2. Looking back +				
		Q3. How negative				
		Q4. Looking back -				
	4	Q1. How positive				
		Q2. Looking back +				
		Q3. How negative				
		Q4. Looking back -				