To my wife, Lucia, and that time pass so enjoyably.

To Tae Myung-Sook and C the gift of time and who to allow me to be what I have becoming. I will always become, and love. To my wife time whenever I look into my little princess Olivia D and dear to me each moment let’s keep laughing about days spent eating a blueberry with a sea of Polly Pocket own restaurant with Freddies messaging looking at own restaurant with Freddies dream of building santa 6 Wailea. As long as I exist time at the mere asking.
Remembering and Misremembering Emotions

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"Tell me about your vacation... your accident... your wedding..." When remembering life experiences, individuals often relate not just what happened but also how they remembered feeling at the time. Indeed, the most meaningful and memorable experiences of our lives are typically those that evoked strong emotions such as joy, fear, anger, or shame. Although most research on emotional memories focuses on how well people remember the events that elicited emotion (e.g., Reisberg & Heuer, 2004), this chapter addresses a different question: How well do people remember their own past emotions?

Investigating memory for emotions is of practical, as well as theoretical, importance. Remembering past emotions helps people make decisions about the future. Indeed, people's preferences, goals, and behavior are often shaped by their memories of the emotions elicited by specific situations. We typically seek to repeat circumstances and activities that we remember as resulting in positive emotions, and we try to avoid or change circumstances that we remember as resulting in negative emotions (Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993). Moreover, a person's memory of past emotional reactions plays a vital role in the construction of personal identity (Neimeyer & Metzler, 1994). Generalizing from such memories, people come to view themselves as easygoing or hot-tempered, sentimental or dispassionate. Also, researchers and clinicians often ask people to rate the intensity and frequency with which they have experienced affective states such as depression and anger over the past weeks or months (Christianson & Safer, 1996; Thomas & Diener, 1990).
treatment decisions concerning mental disorders are based partly on self-reports of this type. Thus there are many different reasons to investigate how people remember past emotions.

Interestingly, investigators have taken radically different positions on whether and how people remember past emotions. Some argue that emotion is stored in memory directly, whereas others argue that emotions must first be transformed into cognitive representations. Similarly, there are theoretical debates as to whether emotion is stored in memory indelibly or, like other features of autobiographical memories, is subject to forgetting and reconstruction over time. In this chapter, we discuss different ways that emotions are represented in memory, whether representations of past emotions are accurate, and the sources and direction of bias when they are inaccurate.

How Are Emotions Stored in Memory?

There is a long-standing debate within psychology as to whether emotions perse are stored in memory (for a review, see B. Ross, 1991). Some investigators argue that emotion cannot be stored in memory but must be reconstructed based on knowledge concerning the circumstances in which the emotion was experienced. According to this view, when asked to remember emotions, people retrieve not the fleeting emotional experience but a redescription of it based on memory for relevant details concerning the event (episodic knowledge) or based on beliefs about how one is likely to have felt (semantic knowledge) (Robinson & Clore, 2002a,b). Remembering the circumstances in which an emotion was experienced also may cause people to experience a similar but new emotion in the present (Wyer, Clore, & Isbell, 1999), and it is this new emotion that is then reported. As William James put it, “The revivability in memory of the emotions, like that of all the feelings of the lower senses, is very small... [W]e can produce, not remembrances of the old grief of rapture, but new griefs and raptures, by summing up a lively thought of their exciting cause” (1890/1918, vol. 2, p. 474).

Others argue not only that emotions are stored in memory but also that they are stored permanently and accurately (Fanselow & Gale, 2003; LeDoux, 1996; van der Kolk, 1994). This contrasting claim, that emotions can leave indelible memory traces, is based primarily on findings that conditioned fear is remarkably long lasting. Indeed, even after being extinguished, classically conditioned avoidance responses can be reinstated by exposure to a stressful stimulus. Thus extinction modifies behavior, but it does not seem to erase the original emotional memory (e.g., LeDoux, 1992).

The conflict between these claims is more apparent than real. Its resolution lies in noting that emotion can be represented in memory in at least two levels, with each level having unique properties. The distinction between explicit and implicit memory (LeDoux, 1996; Leventhal & Scherer, 1992). Consider the following experience (IJI] leaned against a large porcelain sink. The broken porcelain severed much of my lower arm. I endured three operations, and remarkably the memory of this emotional experience is not very successful and, mercifully, do not reexperience the sensations of pain (Morley, 1993). I simply reexperience the time as a combination of feelings of extreme anger, anxious, but retrieval of this verbal description of the emotion. However, more than 10 years, the slight unsteadiness of a sink, I experience the emotion immediately jumped back.

The pallid verbal descriptors of affective states are evanescent. When people remember past emotions, they reconstruct how they perceived and what they perceived. Emotions are flexible and accessible across situations of the same retrieval cues (Eichenbaum, 1994). Ten years later suggests as emotion and not simply reconstructed from memory. This reaction suggests a level of representational, vivid, and long lasting, but accessible only through specific cues.

Implicit memory for emotions has been demonstrated in animals. Animals retaining representations of the valence and intensity of emotional experiences (Mackintosh, 1975). Sternberg (1984) found that memory for an emotional experience even when an emotion was accessible. Similarly, experimentally induced sights, and organic amnesias show that extinction is not limited to the absence of conscious memory (Christianson & Sauer, 1996; Tobias et al., 1972).

Thus emotions can be represented in memory in at least two levels, with each level having unique properties. The distinction between explicit and implicit memory (LeDoux, 1996; Leventhal & Scherer, 1992). Consider the following experience (IJI] leaned against a large porcelain sink. The broken porcelain severed much of my lower arm. I endured three operations, and remarkably the memory of this emotional experience is not very successful and, mercifully, do not reexperience the sensations of pain (Morley, 1993). I simply reexperience the time as a combination of feelings of extreme anxiety, but retrieval of this verbal description of the emotion. However, more than 10 years later the slight unsteadiness of a sink, I experience the emotion immediately jumped back.

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tional disorders are based partly on self-diagnosis. Different people have different reasons to investigate how they feel. Some have taken radically different positions on the nature of emotions. Some argue that emotion is subjective, while others argue that emotions must first be defined. Similarly, there are theoretical debates about whether memory is indelible or, like other features, subject to forgetting and reconstruction over time. Whether emotions are represented in memory or not is uncertain, and the way they are represented is inaccurate.

Emotions in Memory?

Psychology as to whether emotions per se are memory or not is uncertain. Some investigators investigate how emotion and memory must be reconstructed from the circumstances in which the emotion was experienced, remembering that emotions are based on the event (episodic knowledge) or based on the event (semantic knowledge) (Robinson & Clore, 2002b). These episodic memories are flexible and accessible across situations and do not depend on the presence of specific retrieval cues (Eichenbaum, 1992). In contrast, memories for episodic memories that are based on the event (episodic knowledge) or based on the event (semantic knowledge) are not the same. The memory for episodic memories that are based on the event (episodic knowledge) or based on the event (semantic knowledge) is vivid and long lasting but accessible only in the presence of specific contextual cues.

Implicit memory for emotions has been studied primarily in the context of conditioned behavior in animals. Animals behave in a manner consistent with retaining representations of the valence, intensity, and circumstances of past emotional experiences (Mackintosh, 1983). Indeed, Weinberger, Gold, and Sternberg (1984) found that memory for emotional experiences affected rats’ subsequent behavior even when an emotion-eliciting event and epinephrine injection occurred under deep anesthesia so that no conscious memory for the event was accessible. Similarly, experimental and case studies of humans with traumatic and organic amnesia show that memory for emotion can be demonstrated in the absence of conscious memory for the emotion-eliciting event (Christianson & Safer, 1996; Tobias et al., 1992).

Thus, emotions can be represented in memory in two ways: Explicit representations of emotional experience can be reconstructed based on the retrieval of episodic and semantic knowledge. A more direct, implicit representation also can be stored of emotional valence and intensity (and likely of discrete emotions such as sadness, anger, and fear). Explicit and implicit memories for emotions have different properties. They differ with respect to whether they are

with each level having unique properties. These levels closely parallel the distinction between explicit and implicit memory for cognitive material (e.g., LeDoux, 1996; Leventhal & Scherer, 1987; Tobias, Killstrom, & Schacter, 1992). Consider the following experience: While staying in a hotel in Turkey, I (LJL) leaned against a large porcelain sink that shattered and fell out of the wall. The broken porcelain severed much of my left wrist, resulting in months of severe pain, three operations, and more than a year of physical therapy. How do I remember this emotional experience? Deliberate attempts to remember it are not very successful and, mercifully, do not lead to reexperiencing the physical sensations of pain (Morley, 1993). I simply recall having described the pain at the time as having feelings of extreme heat and pressure. I recall having felt anxious, but retrieval of this verbal descriptor does not constitute retrieval of the emotion. However, more than 10 years after the accident, in response to the slight unsteadiness of a sink, I experienced sudden, intense anxiety and immediately jumped back.

The palpitating verbal descriptors of anxiety and pain fit well with claims that affective states are evanescent. When people make deliberate attempts to recall past emotions, they reconstruct how they must have felt from episodic details or retrieve semantic descriptors (Robinson & Clore, 2002a). These explicit memories are flexible and accessible across situations and do not depend on the presence of specific retrieval cues (Eichenbaum, 1992). In contrast, my reaction to the unsteady sink 10 years later suggests that emotion is also stored in memory as emotion and not simply reconstructed based on cognitive representations. This reaction suggests a level of representation of emotion in memory that is vivid and long lasting but accessible only in the presence of specific contextual cues.
consciously controlled or automatic, with respect to the specificity of the retrieval cues needed to elicit them, and with respect to their effects on ongoing cognition and behavior. Explicit memory for emotion can be retrieved (or reconstructed) at will in a broad range of circumstances. For example, I (J.J.L) have dispassionately related the broken sink incident in different settings over the years. Explicit memories provide information that can be used intentionally to guide decisions to seek out or avoid situations in the future. In contrast, implicit memory for emotion is evoked involuntarily in the presence of relatively specific retrieval cues that bear a close resemblance to the situation in which the emotion was originally experienced. Even in the absence of conscious recollection and appraisal of an experience, stored representations of past emotional experience can elicit an emotional reaction in the present. When implicit memory for emotion becomes accessible, the resulting experience shares many of the properties of the original emotional experience. It is vivid and commandeers attention, thought, and behavior in the service of attaining goals or avoiding goal failure. Thus, even after 10 years, a loose sink evokes a feeling of anxiety and motivates avoidance behavior.

Animal research using lesions or drugs to inactivate specific brain regions, human and animal research on conditioning under anesthesia, and research on amnesia indicates that explicit and implicit memory for emotion are dissociable (Christianson, 1992; Daum, Flor, Brodko, & Birbaumer, 1996; Tobias et al., 1992; Wittlif, 1997) and rely on different neural systems (LeDoux, 1996; Ochsner & Schacter, 2003; Schacter, Chiu, & Ochsner, 1993). Because they can be retrieved independently, it is possible for the two types of information to conflict. For example, a parent’s memory of foreign travel with teens may include conscious recollections of having had a great time, as well as implicit memories of exasperation that come to mind only when taking the next trip.

Bias in Memory for Emotions

The coexistence and possible conflict between explicit and implicit representations of emotion raises the issue of which is accurate: explicit memory, implicit memory, both, or neither. Researchers who have focused on explicit memory for emotion have generally stressed its inaccuracy and have noted that people often overestimate the intensity of past emotions. Researchers who have focused on implicit memory for emotion, particularly fearful memories, have argued that emotional memories are stored permanently and accurately. In this section, we review evidence that both explicit and implicit memory for emotions are subject to forgetting and bias. Moreover, emotions can be recalled as either more or less intense than initially reported. We argue that current goals and appraisals of the emotions current emotional experience.

Bias in Explicit Memory for Emotions

Overestimation of Past Emotions

Most research on explicit memory for emotions between the intensity of emotion called \( r = .50 \) or higher. Relative accuracy does not guarantee fidelity of recall for any explicit memory for emotion have been evidenced (for reviews, see Robinson & Olsson, 2000). In some cases, the direction of bias has been toward overestimation of past emotions (for a review, see Johnson, 1992). For example, overestimation by depressed reportedly depression (Schrader, Davis, and Crocker, 1992). Overestimation of negative affect at the time of trying to quit (Shiffman, Huffman, Hickenrath, and Diener, 2003) (Wirtz, Kruger, Scollon, & Diener, 2003)

Several mechanisms may underlie overestimation of past emotions and relevance to their goals and concerns (Christianson, 1992), the most salient moments when recalling peak intensity. When emotional recollections of an extended emotional experience, more likely to come to mind. As a result, peak affective estimates of overall emotional experience, in particular neutral affect (Fredrickson & Kahneman, 1985; Wilson, Meyers, & Gilbert, 2003). Processes of thinking about and trying to reconstruct the experience as being more intense than it was. There may also be motivational reasons. For example, McFarland and Alvaro (2000) observe that people perceive “growth” or improvement exaggerating pretrauma negative feelings when imagining their past, the better they felt in their past.

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in tense than initially reported. We argue that the direction of bias depends on 
current goals and appraisals of the emotion-eliciting event, as well as recent or 
current emotional experience.

Bias in Explicit Memory for Emotion

Overestimation of Past Emotions

Most research on explicit memory for emotion has shown moderate correla-
tions between the intensity of emotion initially reported and the intensity re-
called (r = .50 or higher). Relative accuracy across individuals, however, does 
guarantee fidelity of recall for any one individual, and, indeed, biases in ex-

clict memory for emotion have been demonstrated for many types of 
periences (for reviews, see robinson & clare, 2002a; Fredrickson, 2000). In many 
cases, the direction of bias has been toward overestimation in recalling the in-
tensity of past emotions (for a review, see safer & keuler, 2002). Examples 
clude the overestimation by depressed patients of the intensity of previous 
reportedly depression (Schrader, davis, Stefanovic, & christie, 1990), overestima-
tion of negative affect at the time of their first relapse by smokers who were 
rying to quit (Shifman, Hufford, Hickcox, Paty, Grins, & Kassel, 1997), overes-
timation by blood donors of their predonation anxiety (breckler, 1994), and 
overestimation of both positive and negative emotion experienced on vacation 
Wirtz, Kruger, Scollon, & diener, 2003).

Several mechanisms may underlie overestimation of emotional intensity. Be-
cause emotional intensity reflects people's appraisals of an event's importance 
and relevance to their goals and concerns (Frija, ortony, Sonnemans, & clare, 
992), the most salient moments when remembering past experiences are often 
the moments of peak intensity. When estimating how they felt over the course 
of an extended emotional experience, moments of peak intensity are most likely 
to come to mind. As a result, peak affect contributes disproportionally to esti-
ates of overall emotional experience, in comparison with moments of lesser or 
neutral affect (Fredrickson & Kahneman, 1993; Hedges, Jandorf, & Stone, 
85; Wilson, Meyers, & Gilbert, 2003; Wirtz et al., 2003). In addition, the pro-
ess of thinking about and trying to remember an experience may lead to re-
porting the experience as being more intense (Knowles, 1988; Tesser, 1978). 
There may also be motivational reasons for overestimating past emotions. For 
example, McFarland and alvaro (2000) found that, following traumatic events, 
people perceive "growth" or improvement in feelings and personal attributes by 
egating pretrauma negative feelings and attributes. The more they der-
ated their past, the better they felt in the present (also see Conway & Ross, 
1984).
The Role of Current Appraisals

The intensity of past emotions is not always overestimated, however. Drawing on appraisal theories of emotion, Levine (1997) argued that the reconstruction of explicit memory for emotions can consist of either over- or underestimation. “Appraisal” refers to a person’s conscious or unconscious evaluation of the relationship between a stimulus and his or her well-being (Arnold, 1960; Lazarus, 1991). According to appraisal theories, people experience emotions primarily when they evaluate circumstances as being relevant to their goals, desires, or values. Specific types of appraisals elicit specific emotional responses (e.g., Frijda, 1987; Levine, 1996; Oatley & Johnson-Laird, 1987; Scherer, Schorr, & Johnstone, 2001; Smith & Lazarus, 1993; Stein & Levine, 1987; Weiner, 1985). Levine (1997) proposed that when gaps exist in people’s memories for past emotions, emotional memories are reconstructed based on recall of the emotion-eliciting circumstances and their appraisals of those circumstances. If people’s appraisals have changed since the occurrence of the emotion-eliciting event, they should show a bias toward recalling emotions that are consistent with their current appraisals. If memories for emotions are reconstructed in this manner, one would not expect to find a general tendency to overestimate or underestimate the intensity of past emotions. Whether emotions are over- or underestimated should depend on how people’s interpretations of the emotion-eliciting event have changed over time (also see Ross, 1989; Eich, Reeves, Jaeger, & Graff-Radford, 1985).

To test these claims, Levine (1997) assessed people’s memory for the emotions evoked by Ross Perot’s abrupt withdrawal from his United States presidential candidacy in July of 1992. Perot’s supporters described their initial emotional reactions and their appraisals of Perot shortly after his withdrawal. After Perot reentered the presidential race and participated in the November 1992 election, supporters again recalled their initial emotions and described their current appraisals of Perot. Systematic changes in memory for emotions were found in the direction of supporters’ current appraisals. For example, loyal supporters who wished that Perot had been elected in November overestimated how hopeful they had felt when Perot first dropped out of the race and underestimated how angry they had felt. In contrast, those who had turned against Perot underestimated how hopeful they had felt and demonstrated stable recall of anger.

Even when the emotions in question are evoked by sudden and devastating losses, people appear to draw on their current appraisals to help them infer how they must have felt. For example, the September 11, 2001, attacks evoked intense distress in people throughout the United States (e.g., Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). Levine, Whalen, Henker, and Jammer (2005) asked parents and adolescents to recall their initial emotional reactions to the attacks 3 months and 8 months later. Appraisals of the impact of the attacks were thus higher than those who viewed the attacks as having less impact. Because these data are correlated with changes in appraisals actually caused by the events, these correlations may reflect the influence of appraisals on memory for past emotions. Levine (1997) assessed college students’ memories for their final exam. Students were randomly assigned to have learned their exam grades before recalling their memories for the exam. Students who had learned they had done well on the exam perceived themselves as more anxious than those who had not yet known their grades, which is consistent with the hypothesis that people’s memories for past emotions are influenced by current appraisals.

Individual Differences

People differ in how they appraise experiences, and these differences may influence how they remember past emotions. For example, Perot’s supporters were more likely than those who did not support him to overestimate their initial feelings of hope and underestimate their feelings of anger. Similarly, those who scored high on the strength of emotion paradigm (Larsen & Buncel, 1996) had participated in the September 11, 2001, attacks for at least 2 weeks. Participants with a repressive coping style showed higher levels of pleasant affect, whereas participants high in emotional expression showed lower levels of pleasant affect (also see Feldman Barrett, 1997). These findings suggest that people’s ongoing emotional states and
but always overestimated, however. Draw-wine (1997) argued that the reconstruc-
tions can consist of either over- or underestimation of a person’s conscious or unconscious appraisal of a stimulus and his or her well-being. According to appraisal theories, people experience circumstances as being relevant to specific types of appraisal processes (Levine, 1996; Oatley & Johnson-Laird, 2001; Smith & Lazarus, 1993; Stein & Tschacher, 1997) proposed that when gaps exist in emotional memories are reconstructed differently when circumstances and their appraisals of emotions have changed since the occurrence would show a bias toward recalling emotions, recollections, or memories of emotions expressed by others. If memories for emotions are not yet known their grades when they recalled their emotions. Whether current beliefs about their grades led to distortions in students’ memories for their past feelings of anxiety.

In general, our studies have shown that the greater the change in people’s goals and beliefs concerning an emotion-eliciting event, the greater the instability in their memories for past emotions. Moreover, as would be predicted by appraisal theories, changes in specific appraisals are associated with instability in memory for specific emotions. For example, change in beliefs about whether an outcome was desirable is associated with bias in memory for happiness, but not for surprise. Change in beliefs about whether an outcome was expected is associated with bias in memory for surprise, but not for happiness (Levine, Prohaska, Burgess, Rice, & Laulhere, 2001).

Individual Differences

People differ in how they appraise emotional experiences, and so it is not surprising that individuals also differ in their tendencies to overestimate or underestimate past emotions. Safer and Keuler (2002) found that among clients terminating psychotherapy, those who reported being high on negative traits such as neuroticism tended to overestimate in recalling their prepsychotherapy emotional distress. Those who scored high on positive traits such as ego strength tended to underestimate their prepsychotherapy distress. Cutler, Larsen, and Bance (1996) had participants rate their moods twice daily for 4 weeks. Participants with a repressive coping style underestimated daily unpleasant affect, whereas participants high in anxiety overestimated unpleasant affect (also see Feldman Barrett, 1997). Individual difference measures reflect people’s ongoing emotional states and appraisals, and these, in turn, affect

to the attacks 3 months and 8 months after the attacks. Their current appraisals of the impact of the attacks were also assessed. The results showed that parents recalled increased distress over time, whereas adolescents recalled decreased distress. These differences between parents and adolescents were predicted by their current appraisals of the terrorist attacks, with those viewing the attacks as more consequential recalling their emotions as more intense than those who viewed the attacks as having less impact.

Because these data are correlational, however, one cannot be certain that changes in appraisals actually cause changes in how emotions are remembered. So Safer, Levine, and Drapalski (2002) conducted an experiment that assessed college students’ memories for how anxious they felt before a midterm exam. Students were randomly assigned to one of two groups. One group learned their exam grades before recalling their pre-exam emotions. The other group did not yet know their grades when they recalled their emotions. In contrast to those who had not yet learned their grades, students who learned that they had done well on the exam underestimated how anxious they had felt before the exam. Students who learned that they had done poorly overestimated how anxious they had felt. Thus current beliefs about their grades led to distortions in students’ memories for their past feelings of anxiety.
what is remembered about past emotions (Safer et al., 2002). Thus enduring personality traits, as well as current appraisals, are associated with bias in explicit memory for emotions.

**Bias in Implicit Memory for Emotion**

Implicit memory for emotion is also subject to fading over time and to biases that can consist of either over- or underestimation. Animal research indicates that conditioned fear responses can be maintained, virtually unchanged, for months. Such findings have led to claims that implicit fear memories are permanent (e.g., Fanselow & Gale, 2003). In most conditioning studies, the animal lives in a benign environment, is placed in a novel context and exposed to an aversive stimulus, and is then returned to its previous, uneventful existence (Henderson, 1985). In real life, though, after a frightening event occurs, other experiences follow that may be better or worse than the initial frightening one. What happens to conditioned fear in cases like that?

Henderson (1985) created a laboratory analogue to such real-life experiences. Rats underwent a series of conditioning trials in which a tone preceded a shock and repeated pairings led to a conditioned fear response to the tone. After either 1 day or 60 days, the rats received a couple of gratuitous shocks (i.e., shocks that were not preceded by the tone) that were either milder or stronger than the level of shock used during conditioning. When reexposed to the tone, those rats that had recently received mild shocks showed less fear than those that had recently received strong shocks. Importantly, the difference in the intensity of the fear response following the mild versus strong gratuitous shocks was much greater at 60 days than at 1 day. Thus, over time, memory for the intensity of fear had become increasingly malleable—increasingly subject to bias in the direction of recent experience.

These findings conflict with claims that implicit memory for emotion is indelible. Interestingly, implicit memory for cognitive material (e.g., neutral words and pictures) was also once thought to be immune to forgetting and bias. Recent studies, however, reveal similar patterns of forgetting and bias for explicit and implicit cognitive representations (e.g., Lustig & Hasher, 2001; McBride & Dosher, 1999).

In summary, emotions can be stored in memory at different levels, but both explicit and implicit memories for emotions become increasingly malleable over time. Both over- and underestimation of past emotions occur, and the link between changing appraisals of events and biases in memory for emotion is now well documented. Bartlett (1932) stated that “the past is continually being remade, reconstructed in the interests of the present” (p. 309). The findings reviewed herein demonstrate that this is true of the emotional past as well. Irrespective of whether the emotions in question were mild or intense, positive or negative, concerned others or the self, goals and interpretations concerning past experiences must have felt (Levine & Safer, 2002), memory and can lead to underestimation of emotions (Henderson, 1985).

**Functions of Remembering and Misremembering Emotions**

In his delightfully titled chapter, “But Who Am I?” (1988) argued that, whenever we come to know who we are, we should place a high priority on self-reflection because it plays such a key role in normal human activity. So why do memories for emotions fade over time? Consider: How do memories for emotions fade over time? Reconstructed in directions consistent with current appraisals of events?

**Why Remember Emotions?**

The utility of remembering emotion is obvious. Negative emotions play an important role in cognition about the relation between environment and behavior. For instance, signals that circumstances are difficult often guide behavior in ways that are adaptive. Emotions are often associated with goals and must be achieved or avoided. They also guide concurrent, goal-directed behavior. Memory for emotion also guides perceptions of events (e.g., Henderson, 1985; Levine, 1986; Schori, 1969; Schore, 1979; Robinson, 1980). Different experiences based on emotion can make people feel. For example, a person who has been a roller coaster feeling terrified, shaky, and excitable in the future. An inability to draw on emotion in certain situations, with frontal lobe lesions, and decisions (Damasio, 1994). Remembering, or the recall of emotions, indicates that emotions thus alleviates the need to store information while letting people know whether to seek help or take action in the future.
Emotion

Subject to fading over time and to biases in estimation. Animal research indicates that implicit fear memories are permanently stored in the animal's brain, and that these memories can be triggered by a novel context and exposed to an animal's previous, uneventful existence. After a frightening event occurs, other memories may be enhanced or become more vivid than the initial frightening one. Does this happen in humans as well?

An analogy to such real-life experiences might be the use of a conditioned fear response to the tone. If a tone precedes a mild or strong shock, the tone alone may elicit fear responses that were either milder or stronger than those received previously. Similarly, the intensity of the fear response following the tone was much greater at 60 days than at 1 day, indicating that fear had become increased in intensity.

Does this mean that implicit memory for emotion is immune to forgetting? No. After receiving such experiences, people may become more sensitive to the presence of the fear memory at different levels, but both positive and negative emotions can be reactivated over time. The link between positive emotions and the memory of the past may be that “the past is continually being reenacted.” (p. 309). The findings suggest that the emotional past as well as the present is true of the emotional past as well. When the question was mild or intense, positive or negative, concerned others or the self, people drew on current (or habitual) goals and interpretations concerning prior events to help them infer how they must have felt (Levine & Safer, 2002). Recent experience also biases implicit memory and can lead to underestimation, as well as overestimation, of past emotions (Henderson, 1985).

Functions of Remembering and Misremembering Emotions

In his delightfully titled chapter, “But What the Hell Is It For?” Alan Baddeley (1988) argued that, whenever we come across a clear and replicable phenomenon, we should place a high priority on figuring out what role that phenomenon plays in normal human activity. So, why are emotions stored in memory? Why do memories for emotions fade over time? Why are these memories reconstructed in directions consistent with current experience, goals, and interpretations of events?

Why Remember Emotions?

The utility of remembering emotion is obvious. According to appraisal theory (e.g., Scherer, Schorr, & Johnstone, 2001), emotions provide essential information about the relation between environmental events and people’s goals. Happiness signals that circumstances are consistent with goals and values and should be maintained. Negative emotions signal that circumstances threaten goals and must be avoided or changed. Thus emotion provides information that guides concurrent, goal-directed behavior.

Memory for emotion also guides people’s preferences, intentions, and behavior (e.g., Henderson, 1985; Levine, 1997; Levine et al., 2001; Loewenstein & Schkade, 1999; Robinson, 1980). People choose to seek out or avoid particular experiences based in part on their memories for how experiences made them feel. For example, a person who remembers leaving the Nemesis roller coaster feeling terrified, shaky, and nauseated is likely to forgo that ride in the future. An inability to draw on emotion memories, which can occur in certain patients with frontal lobe lesions, leads to markedly poor judgments and decisions (Damasio, 1994). Remembering emotions is also efficient. Zajonc (1980) argued that emotions can be remembered long after details concerning the events that elicited them have been forgotten. Recalling past emotions thus alleviates the need to store detailed descriptions of events, while letting people know whether to seek out or avoid similar situations in the future.

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Why Forget Emotions?

If emotions are so important for guiding goal-directed action, why forget them? It has been argued that forgetting aspects of emotional experience hinders people’s ability to both learn from the past and make informed choices for the future (Wilson et al., 2003). There are risks, however, in remembering too much. As William James put it, “Selection is the very keel on which our mental ship is built. And in this case of memory its utility is obvious. If we remembered everything, we should on most occasions be as ill off as if we remembered nothing” (1890/1950, vol. 1, p. 680).

From infancy through adolescence and into adulthood, people experience emotional ups and downs on a daily, even an hourly, basis. Intense emotional experiences are also far from rare (Kochanska, Coy, Tierkes, & Husarek, 1998; Larson & Richards, 1994). A memory system that preserved each of these experiences indelibly would be too unwieldy to serve the functions of guiding preference, intention, and behavior. Moreover, memories for emotions may no longer be useful guides if circumstances have changed or if a person’s goals and beliefs have changed. The more time passes, the more likely it is that both circumstances and individuals will have changed. As a result, recent memories generally serve as more useful guides to goal-directed behavior than distant memories. Thus, it is at least efficient, and at most a product of evolutionary design, that emotional memories fade over time (Hendersen, 1985; also see Schacter, 2001).

Why Reconstruct Memories for Emotion?

As memory for emotion fades over time, it becomes more subject to modification based on subsequent experience, goals, and beliefs. Why reconstruct memory for emotions? One could argue that reconstructing emotional memories not only makes them more useful but also makes them more accurate. To determine whether a given representation is accurate, one first has to know what it is supposed to be representing. If emotional memories are records of actual past internal states, then certainly, reconstruction leads to inaccuracy. But the fundamental contribution of appraisal theory is that emotions are not simply internal states of arousal and valence. Emotions signal the perceived relationship between circumstances and an individual’s goals and values. If memories for emotions are records of the ongoing relationship between past events and an individual’s goals, then updating these records based on current goals and beliefs makes them more accurate. In the same way, updating a map when new roads are built makes it more accurate. In short, the primary function of memory may be to guide future behavior rather than to keep an exact record of the past. Because emotional memories are informed by current appraisals of the emotion-eliciting situation, rather than memories of past events, they may serve as a more relevant guide for future action.

Future Consequences of Misremembering Emotions

We have described different ways in which memory and different factors that influence how we remember emotions; we have also examined how memory for emotion influences future behavior. A widely believed truism is that we remember experiences and events that are most salient, that is, most memorable for us. There is, however, another important aspect to misremembering emotion: the way we reconstruct memories of emotions and the effect of our memory reconstruction on future behavior. The researchers found that students who remembered emotional events with the most detail tended to repeat those events and that those who remembered emotional events with the least detail were likely to repeat those events as well. Thus, in emphasizing misremembered emotion, we are highlighting the importance of accurately remembering and reconstructing emotional experiences, including the importance of accurately remembering emotional experiences.

Misremembering Emotion Can Affect Future Choice

Wirtz et al. (2003) compared students’ predictions over their spring-break vacations. Students were asked to predict their emotional experiences seven times a day at random intervals. The researchers found that students who remembered emotional experiences with the most detail were more likely to repeat those events and that those who remembered emotional experiences with the least detail were less likely to repeat those events. Similarly, studies have shown that memory of pain affects future behavior. Pain experience. Redelmeier, Katz, and Kahneman have shown that the pain caused by colonoscopy. They compared patients who were given the colonoscopy in place of a standard procedure. Consistent with findings that emotion...
Although goal-directed action, why forget them? Aspects of emotional experience hinder the past and make informed choices for the are risks, however, in remembering too emotion is the very keel on which our mental utility is obvious. If we remembered nothing be as ill off as if we remembered noth-

good and into adulthood, people experience on an hourly basis. Intense emotional experience, Coy, Tietbkes, & Husarek, 1998; system that preserved each of these experiences to serve the functions of guiding preferences, memories for emotions may no longer be changed or if a person’s goals and beliefs change, the more likely it is that both circumstances. As a result, recent memories generate goal-directed behavior than distant, and at most a product of evolutionary development (Henderson, 1985; also see emotion-eliciting situation, rather than being perfectly faithful to the past, they may serve as a more relevant guide for future behavior (Levine & Safer, 2002).

**Future Consequences of Misremembering Emotions**

We have described different ways in which memories for emotions can be stored and different factors that influence how emotions are remembered. Next, we examine how memory for emotion influences future feelings, cognitions, and behaviors. A widely believed truism is that people seek to repeat pleasant experiences and to avoid unpleasant experiences. Kahneman et al. (1993) have argued that people prefer to repeat, not necessarily the experiences that actually gave them the most pleasure, but the experiences that have left them with the most favorable memories. Similarly, people prefer to avoid experiences that left them with the least favorable memories. Just as perceptual illusions can illuminate the mechanisms underlying ordinary perception, the effect of memory for emotion on future choice and behavior is particularly apparent when people’s remembered feelings differ from their concurrent ratings of an experience. Thus, in emphasizing misremembered emotions, our aim is not to downplay the importance of accurately remembered emotions but to highlight the ways in which memory for emotion guides future thoughts, feelings, and behaviors.

**Misremembering Emotion Can Influence Future Choice**

Wirtz et al. (2003) compared students’ predicted, actual, and remembered emotions over their spring-break vacations. Students rated their actual (or current) emotions seven times a day at random intervals, every day during the vacation. The researchers found that students later overestimated in recalling the intensity of both positive and negative emotion. Nevertheless, it was their remembered emotional reactions, rather than their predicted or actual emotions, that best predicted intentions to repeat that vacation in the future. Thus students were not particularly accurate in remembering how they had felt, but remembered emotion was the map they used to guide their future choices.

Similarly, studies have shown that memory of pain, not just the actual experience of pain, affects future behavior. Pain includes both sensory and affective experiences. Redelmeier, Katz, and Kahneman (2003) investigated memory for the pain caused by colonoscopy. They compared control patients with those for whom the colonoscope remained in place for an additional 1 to 3 minutes, resulting in a period of relatively mild pain at the end of a moderately painful procedure. Consistent with findings that ending states are particularly salient in
retrospective evaluations of emotional experience (Fredrickson, 2000; Kahaneman et al., 1993), patients with this additional mild pain actually remembered the overall experience as less painful than the controls. These patients were also more likely than controls to repeat the procedure within 6 years, after controlling for prior colonoscopy, abnormal findings, and procedural indications. Thus the pain remembered, rather than the pain actually experienced, affected the decision to repeat the procedure in the future.

**Misremembering Emotion Can Promote Goal-Directed Behavior**

Memory distortions are typically viewed as problematic. In the case of emotion, memory distortions have been described as interfering with people’s ability to learn from past emotional experiences (e.g., Wilson et al., 2001, 2003). Misremembering emotion, though, can also promote goal achievement. Fredrickson (2000) argued that people’s tendency to focus on the peaks and lows of affective experiences may be best understood in terms of promoting goal-directed behavior and coping. Peaks and lows may dominate memories of affective experiences not because of perceptual salience but because of the personal meaning captured by those points in time. When people are engaged in goal-directed behavior, end affect is of particular importance because it symbolizes the outcome of the activity (e.g., success or failure) and whether or not it was worthwhile. Peak affect is important because it defines the personal capacity that would be needed to face the experience again.

Loewenstein’s (1999) discussion of the emotions and goals of mountaineers is consistent with the view that the salience of emotions at the end of an experience serves to promote goal achievement. He describes mountaineers’ accounts of forgetting the boredom, discomfort, and fear they endured throughout much of an expedition after achieving their goal of reaching the summit. One mountaineer, for instance, described conditions during a climb in the Alps as “harshly uncomfortable, miserable, and exhausting.” After achieving the summit however, he reported that, “my memory edited out the anxiety and tension and led me happy recollections of superb climbing, the spectacular positions we had been in, feeling confident and safe, knowing we were going to succeed” (Simpson, 1993, as cited in Loewenstein, 1999, p. 319). Arguably, accurate and detailed recall of the moment-to-moment struggles en route to goal achievement would result in fewer mountains climbed, children born and raised, research projects conducted, and articles written.

Exaggerating negative emotions can also promote goal-directed behavior. For example, Safer et al. (2002) found that students who did poorly on their midterm exams recalled more pre-exam anxiety than they had actually re-

reported. Exaggerating pre-exam anxiety may be more for the final exam, even after control.

The overestimation of past emotion can have negative, as well as positive, effects. Distortion promotes short-term goals (e.g., the expense of long-term goals (such as reducing advantageous to minimize exaggeration) in the same way that Chen et al. (2001) exaggerate in recalling the negative aspects of punctures in the treatment of leukemia when the children prepared to undergo more than trying the children new memory reframing procedure to try to press as more extreme than their actual experience.

Specifically, a therapist interviewed patients following the first puncture and found that they rated their pain as higher than their actual experience. When patients were asked to rate the pain of the next puncture, they reported a lower pain rating than the actual experience. The effects of memory reframing were even more pronounced in patients with chronic pain. Patients who were taught to focus on the positive aspects of the puncture reported significantly lower pain ratings than those who were taught to focus on the negative aspects.

**Misremembering Emotion Can Facilitate Coping**

Misremembering past emotion may also have ongoing challenges. For example, Safer et al. (2002) found that patients who remembered their pretherapy distress, the subjective improvement in therapy was positively correlated with patients who remembered their pretherapy distress. In contrast, patients who remembered their pretherapy distress did not show a positive correlation with the subjective improvement in therapy. Thus, clients who overestimate past distress may underestimate past distress. Good current the perspective reappraisal of past negative events. Bonanno, and Field (2001) found similar results in widows who were coping with the loss of a spouse.
problematic. In the case of emotion, episodic memory can interfere with people’s ability to remember events (e.g., Wilson et al., 2001, 2003). Misremembering goal achievement. Fredrickson (2000) focuses on the peaks and ends of affective episodes in terms of promoting goal-directed behavior. Unfortunately, memories of affective episodes may dominate memories of affective episodes because of the personal importance they carry. When people are engaged in goal-directed behavior, these memories are particularly salient (or failure) and whether or not it was a success or a failure defines the personal capacity for another experience.

Emotions and goals of mountaineers. Fredrickson describes mountaineers’ accounts of emotions at the end of an expedition. He notes the fear they endured throughout much of the journey of reaching the summit. One mountaineer, during a climb in the Alps, describes emotions as “harshly harshly” (p. 319). Arguably, accurate and deliberate memory construes the route to goal achievement. Therefore, children born and raised, research suggests, not only promote goal-directed behavior. Misremembering past emotion may also facilitate people’s ability to cope with ongoing challenges. For example, Safer and Keuler (2002) found that approximately two thirds of clients who terminated psychotherapy overestimated in remembering their pretherapy distress, thereby apparently perceiving a greater positive change with therapy than was warranted. Clients who did not show objective improvement in therapy were particularly likely to underestimate in remembering their pretherapy distress. In contrast, after people have successfully coped with past emotion-eliciting events, overestimation of previous emotions seems to diminish. Thus clients who improved the most in therapy tended to underestimate past distress. Good current functioning was associated with the retrospective reappraisal that past negative experiences were “not so bad.” Safer, Bonanno, and Field (2001) found similar memory biases in a sample of widows and widowers who were coping with the midlife death of a spouse.
A vital ongoing challenge is that of maintaining positive long-term relationships. Research shows that misremembering the emotional past of an ongoing relationship can contribute to its future quality. In a longitudinal study, Karney and Coombs (2000) had wives rate their satisfaction with their marriages at 10-year intervals. At the 10-year and 20-year follow-ups, wives were also asked to remember their satisfaction ratings from 10 years earlier. They found that, across the first 20 years of marriage, wives' satisfaction tended to decline linearly. After 10 years, however, wives remembered the past more negatively than they actually reported, possibly in keeping with the common belief that good relationships improve and deepen over time. Importantly, the degree of memory bias at 10 years predicted satisfaction over the next 10 years of marriage. Karney and Coombs (2000) concluded that memory bias may be a mechanism that serves to maintain satisfaction in long-term relationships (also see Sprecher, 1999).

The study just described concerned explicit memory for relationship satisfaction. A study that examined a more implicit measure of memory for emotion found that such memories could predict future relationship commitment. Buehman, Gottman, and Katz (1992) asked married couples to reminisce about the history of their relationship. Observer ratings of the emotions elicited while couples were reminiscing predicted divorce over the next 3 years with 94% accuracy. This oral history interview predicted divorce better than the couples' self-reports of their current marital satisfaction (which may be based on explicit episodic and semantic memory) and better than an observational measure of how couples solved relationship problems. The emotions expressed while reminiscing may result from implicit memories and may reveal a level of distress that couples do not want to acknowledge.

Future Directions and Conclusions

An understudied issue concerns individual differences in remembered and forecasted emotions. Kihlstrom noted that, "what a person can and cannot remember, and the way in which personal experiences are reconstructed, may be more revealing of the individual's personality than the most sophisticated trait measure" (1981, p.137). Systematic patterns of memory distortion for emotion may help to define personality and may be a basis for self-ratings of personality (Safer & Keuler, 2002; Safer et al., 2002). For example, people who self-report as high on neuroticism are likely to overestimate in recalling the intensity of negative emotions and underestimate in recalling the intensity of positive emotions (Feldman Barrett, 1997). In turn, people who consistently overestimate past negative feelings and underestimate past positive feelings are likely to develop an autobiographical memory "database" that will lead them to self-report as high on neuroticism. In current studies, between traits such as neuroticism and experience and recalled responses to emotional events, the potentially cyclical relationship between emotion in memory for emotions, and preferences.

Another fascinating issue for future research is the question of explicit memory for emotion. We know that changes in goals and appraisal, but can they also bias implicit memory for social interactions? For example, some types of stress disorder assume that implicit emotional memories of a traumatic experience may be re-experiencing them, changing how they are dealt with (Kolk, 1989). Thus empirical research into the possibility and accuracy of implicit memory for events of clinical practice (also some potentially important area for research) may help to resolve discrepancies between implicit and explicit experience (Fazio & Olson, 2003).

In conclusion, emotions provide critical events to people's goals. It is essential that we study and just as essential that these memories. We have reviewed evidence that emotion is experienced in memory: explicit and implicit, semantic and episodic knowledge and can be different circumstances. Typically, these emotions are the result of people's preferences, intentions, and actions come to mind in the presence of the emotional event occurred. Remembering emotions is experienced as current emotion, within individual differences in state. When accessible, these thoughts, thinking, and behavior toward avoiding emotional events. Thus emotions come to mind in the presence of different properties.

One property that they share, though subject to bias and can represent past events better than originally experienced. It is well described in emotion may be biased by current emotional events. Much less is known about emotion, but research suggests that it, to
maintaining positive long-term relationship-patterns to the emotional past of an ongoing quality. In a longitudinal study, Karney and his wife's satisfaction with their relationship at 5-year follow-ups, wives were also asked from 10 years earlier. They found that, wives' satisfaction tended to decline in their remembered the past more negatively than men with the common belief that good relationships. Importantly, the degree of memory over the next 10 years of marriage. Karney memory bias may be a mechanism that 5-term relationships (also see Sprecher.

explicit memory for relationship satisfaction-implicit measure of memory for emotion predict future relationship commitment. (2) asked married couples to reminisce Observer ratings of the emotions elicited predicted divorce over the next 3 years with low predicted divorce better than the cou- 3-term satisfaction (which may be based on tally satisfaction (which may be based on ) and better than an observational mea- ship problems. The emotions expressed sionary basis). The emotions expressed in explicit memories and may reveal a level of knowledge.

Conclusions

Individual differences in remembered and fore- less, what a person can and cannot remem- berences are reconstructed, may be more brated, may be more than the most sophisticated trait mea- ters of memory distortion for emotion be a basis for self-ratings of personality (2). For example, people who self-report as estimate in recalling the intensity of nega- cally overestimate past positive feelings are likely to develop use” that will lead them to self-report as high on neuroticism. In current studies, we are assessing the relationship between traits such as neuroticism and optimism and people's predicted, actual, and recalled responses to emotional events. We hope to use this data to explore the potentially cyclical relationship between personality characteristics, distortion in memory for emotions, and predictions concerning future affective experiences.

Another fascinating issue for future research concerns the interaction of appraisals, explicit memory for emotion, and implicit memory for emotion. We know that changes in goals and appraisals can bias explicit memories of emotion, but can they also bias implicit memories of emotion, including memories other than fear? For example, some therapeutic treatments for posttraumatic stress disorder assume that implicit emotional memories, particularly intrusive, disturbing memories from a traumatic experience, can be neutralized by reexperiencing them, changing how they are interpreted, and framing them within a flexible narrative that fits into a person's life story (van der Hart, Brown, & van der Kolk, 1989). Thus empirical research on processes that influence the accessibility and accuracy of implicit memory for emotion would have important implications for clinical practice (also see Metcalfe & Jacobs, 1998). Another potentially important area for research is how individuals experience and resolve discrepancies between implicit and explicit memories for an emotional experience (Fazio & Olson, 2003).

In conclusion, emotions provide critical information about the relevance of events to people's goals. It is essential that this information be stored in memory and just as essential that these memories be informed by subsequent learning. We have reviewed evidence that emotions are represented in at least two different forms in memory: explicit and implicit. Explicit memories are based on semantic and episodic knowledge and can be retrieved in a flexible manner in different circumstances. Typically, these memories inform but do not overpower people's preferences, intentions, and actions. In contrast, implicit memories of emotion come to mind in the presence of cues that resemble the context in which the emotional event occurred. Retrieval of implicit memory for emotion is experienced as current emotion, with many of the properties of the initial emotional state. When accessible, these memories can strongly direct attention, thinking, and behavior toward avoiding dangerous or aversive states and toward attaining desired states. Thus explicit and implicit memories have very different properties.

One property that they share, though, is that both types of memories are subject to bias and can represent past emotion as either more or less intense than originally experienced. It is well documented that explicit recall of past emotions may be biased by current goals and appraisals concerning the emotion-eliciting event. Much less is known about biases in implicit memory for emotion, but research suggests that it, too, may be biased by current or recent
experience. Both types of biasing can be viewed as updating memories of emotions so that they can more precisely guide future thoughts, intentions, and behaviors.

References

Feldman Barrett, L. (1997). The relationship among momentary emotion experi-
Levine, L. J., Prohaska, V., & Burgess, S. L.,
viewed as updating memories of emotion, providing future thoughts, intentions, and behaviors.


Loewenstein, G. (1999). Because it is there: The challenge of mountaineering...for utility theory. Kyklos, 52, 315–344.


Robinson, M. J., & Clore, G. L. (2002b). Episodic and semantic knowledge in emo-


If you are the challenge of mountaineering . . . 44.


Memory is not immune to interference. Psychology and associative learning. New York: Oxford University Press.

Forgetting rates are comparable in conscious and unconscious dissociation study. Journal of Experimental Psychology. 25, 583–607.


Toward a cognitive theory of emotions.


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**Future as Epilogue**

*Some Conclusions on Judgments Over Time*

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EDWARD C. CHANG

Study the past if you would define the future. (Confucius)

The chapters in this volume consider the variety of consequences people make judgments over time. Our lives are continually changing over time, and thus are potentially relevant to almost every aspect of human behavior. This suggests that temporal variables are important in understanding judgments and decisions. The authors of the individual chapters illustrated this point well.

As the various chapter authors have shown, people are normally associated mainly with a future perspective (rumination, counterfactuals, autobiographical memory, and reminiscence). In this future, people experience events that influence their past, and the present. Conversely, variances in temporal variable become the present and the future, and our chosen past, is it important to reemphasize the importance of forming relationships among thoughts, feelings, and...