

The Emerging Field of Emotion Regulation: An Integrative Review

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The emerging field of emotion regulation studies how individuals influence which emotions they have, when they have them, and how they experience and express them. This review takes an evolutionary perspective and characterizes emotion in terms of response tendencies. Emotion regulation is defined and distinguished from coping, mood regulation, defense, and affect regulation. In the increasingly specialized discipline of psychology, the field of emotion regulation cuts across traditional boundaries and provides common ground. According to a process model of emotion regulation, emotion may be regulated at five points in the emotion generative process: (a) selection of the situation, (b) modification of the situation, (c) deployment of attention, (d) change of cognitions, and (e) modulation of responses. The field of emotion regulation promises new insights into age-old questions about how people manage their emotions.

Conquer your passions and you conquer the world.

—Hindu proverb

To yield to man's emotions will assuredly lead to strife and disorderliness. . . . It is only under the influence of teachers and laws . . . that courtesy will be observed, etiquette respected, and order restored.

—Hsun Tzu (3rd C., B.C.E., DeBary, Chan, & Watson, 1960, p. 118)

The principal use of prudence or self-control is that it teaches us to be masters of our passions.

—Descartes (1649/1955, p. 427)

How should we manage our emotions? Should we attend to them or disregard them? Esteem them or revile them? Encourage them or suppress them? Each culture answers these questions differently, but there is a common theme: we need to exert some measure of control over our emotions. Nowhere, perhaps, is this interventionist sentiment stronger than in the West. One of the central tenets of Western philosophy is “the wisdom of reason against the treachery and temptations of the passions” (Solomon, 1976, p. 11).

Even within the Western tradition, however, opinions differ as to just how much emotions should be controlled. Some philosophers, such

as Seneca (trans., 1963) and Ryle (1949), have seen emotions as troublesome deviations from proper functioning, and thus in need of severe correction. Others, such as Aristotle (trans., 1941) and Hume (1739/1969), have seen emotions in a more positive light, and thus less in need of strict regulation. This ambivalent Western legacy is reflected in conflicting sayings such as “He who keeps a cool head prevails” and “Let your feelings be your guide.”

In the past 2 decades, an exciting new chapter has opened in the age-old discussion of how we should manage emotions: psychological research has begun to focus explicitly on emotion regulation. Research on emotion regulation originated in developmental psychology (Gaensbauer, 1982) and now is flourishing in the child and adult literatures alike (e.g., Campos, Campos, & Barrett, 1989; Gross, 1998). In this article, I review the emerging field of emotion regulation. First, I orient the reader to an evolutionary perspective that views emotions as response tendencies. Second, I define emotion regulation and distinguish it from related constructs. Third, I show how emotion regulation cuts across traditional disciplinary boundaries within psychology. Fourth, I propose a process model of emotion regulation that facilitates analysis of the potentially overwhelming number of kinds of emotion regulation. Fifth, I consider several important challenges that the field still needs to address. I conclude that we do not yet have complete answers to

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most of the questions about how emotions are regulated. Nonetheless, I argue that psychological research on emotion regulation shows every promise of providing the theoretical models and the empirical findings needed to answer fundamental questions about how we can and should manage our emotions.

What Is Emotion?

Any discussion of emotion regulation presupposes an understanding of what emotion is. And not just any definition will do. For example, Carver and Scheier (1990) view emotion as the readout of a system that monitors the rate at which the discrepancy between a goal and reality is being decreased (also see Hsee & Abelson, 1991, for a similar position). Positive emotion signals a rate of discrepancy reduction that is faster than expected; negative emotion signals a rate that is slower than expected. Although the individual may take actions that lead to a decrease in negative emotion (e.g., allocating more resources to the task; Carver, Lawrence, & Scheier, 1996), emotion regulation is viewed as an accidental by-product of such action, rather than an end in itself. For this reason, Carver and Scheier's (1990) conception of emotion provides relatively inhospitable ground for the study of emotion regulation.

Emotions as Response Tendencies

Other perspectives fairly cry out for an analysis of emotion regulation. William James (1884, 1894), for example, regarded emotions as adaptive behavioral and physiological response tendencies that are called forth directly by evolutionarily significant situations. Although individuals often express these emotional response tendencies, they do not always do so. James's view of emotions as response tendencies allows that individuals may modulate their emotional response tendencies, such as when they whistle instead of running away in fear. Discrepancies between emotional response tendencies and manifest behavior prompt questions about how, why, and when individuals might try to regulate their emotional response tendencies.

Researchers today continue to draw on James's response-tendency perspective. As shown in Figure 1, many contemporary researchers conceive of emotions as flexible response sequences (Buck, 1994; Frijda, 1986; Scherer, 1984) that are called forth whenever an individual evaluates a situation as offering important challenges or opportunities (Tooby & Cosmides, 1990). Emotional response tendencies are relatively short lived and involve changes in the behavioral, experiential, autonomic, and neuroendocrine systems (Lang, 1995). Importantly, emotional response tenden-

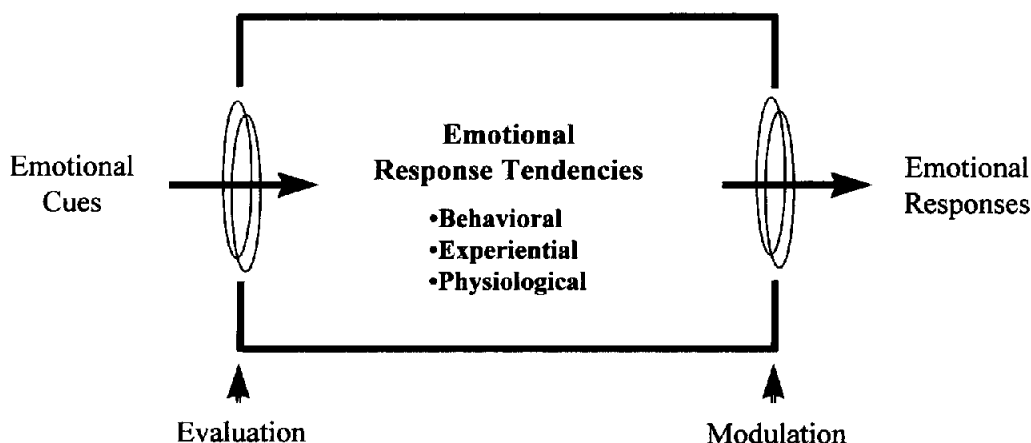


Figure 1. A consensual process model of emotion generation. Adapted from "Antecedent- and Response-Focused Emotion Regulation," by J. J. Gross, 1998, *Journal of Personality and Social Psychology*, 74, p. 226. Copyright 1998 by the American Psychological Association. Adapted with permission.

cies may be modulated, and it is this modulation that determines the final shape of the emotional response (Gross, 1998).¹

Historically, emotions were seen as nonspecific, disruptive activation states (Hebb, 1949; Young, 1943). More recent analyses emphasize the functions emotions serve (Keltner & Gross, in press). Although emotions address different adaptive problems (Ekman, 1992), they generally facilitate decision making (Oatley & Johnson-Laird, 1987), prepare the individual for rapid motor responses (Frijda, 1986), and provide information regarding the ongoing match between organism and environment (Schwarz & Clore, 1983). In addition to their intraorganismic functions, emotions also serve social functions. They inform us about others' behavioral intentions (Fridlund, 1994), give us clues as to whether something is good or bad (Walden, 1991), and script our social behavior (Averill, 1980; Keltner & Buswell, 1997).

Enthusiasm for functional analyses of emotion should not blind us to James's observation that emotional response tendencies often need to be modulated. Indeed, inherent in the notion of a response *tendency* is the idea that a response tendency is only one of many determinants of behavior. In the discussion of emotion regulation that follows, I draw on James's response-tendency perspective on emotion. First, however, I clarify several important distinctions among terms that often are used interchangeably.

Relations With Related Constructs

All manner of distinctions have been made in an attempt to bring order to the "conceptual and definitional chaos" that characterizes emotion research (Buck, 1990, p. 330). Many of these distinctions are idiosyncratic. However, a few distinctions have broader currency, including those made among affect, emotion, emotion episodes, and mood.

In some contexts, *affect* and *emotion* are used interchangeably. In others, *affect* is used to refer to the experiential (Buck, 1993; MacLean, 1990) or behavioral (American Psychiatric Association [APA], 1994; Kaplan & Sadock, 1991) components of emotion. Following Scherer (1984), I use *affect* as the superordinate category for valenced states, including emotions such as anger and sadness, emotion episodes such as a barroom brawl and delivering bad

news to a close friend, moods such as depression and euphoria, dispositional states such as liking and hating, and traits such as cheerfulness and irascibility (Chaplin, John, & Goldberg, 1988).

The most important distinctions among members of the affect family are those among emotion, emotion episodes, and mood. Whereas emotions unfold over a relatively short time period, *emotion episodes* are more extended in both time and space (Frijda, 1993; Stein, Trabasso, & Liwag, 1993). Emotion episodes, also referred to as *plots* (Ekman, 1984), *scripts* (Tomkins, 1984), and *adaptational encounters* (Lazarus, 1991a), include each of the protagonists and all of the events in a given emotional scene (Forgas, 1982). For example, the emotion of anger involves acute changes in posture, facial movements, tone of voice, verbal expression, experience, and autonomic responding. The emotion episode of anger includes all of these things as well as the instigator, the social context, and the whole sequence of responses and recriminations as they emerge in the ongoing interaction (see Averill, 1982).

Emotions also may be distinguished from moods (Parkinson, Totterdell, Briner, & Reynolds, 1996). One distinguishing feature is duration (Nowlis & Nowlis, 1956); mood is the "pervasive and sustained 'emotional climate,'" and emotions are "fluctuating changes in emotional 'weather'" (APA, 1994, p. 763). A second distinguishing feature is that emotions typically have specific objects and give rise to behavioral response tendencies relevant to these objects (Frijda, 1993; Isen, 1984; Lazarus, 1991a). By contrast, moods are more diffuse (Morris, 1989), and although they may give rise to broad action tendencies such as approach or withdrawal (Lang, 1995), moods bias cognition more than they bias action (Davidson, 1994; Fiedler, 1988). Recently, several investigators have formulated a hierarchical view that integrates emotions and moods (Diener, Smith, & Fujita, 1995; Watson & Clark, 1992). This view holds that specific emotions are lower order elements within higher order valenced mood categories. In the context of emotion regulation,

¹ The process model of emotion generation presented in Figure 1 is a distillation of major points of convergence across emotion researchers including Arnold (1960), Ekman (1972), Izard (1977), Lazarus (1991a), Levenson (1994), Leventhal (1984), Plutchik (1980), Scherer (1984), and Tomkins (1962).

however, differences in the response tendencies that are associated with moods and emotions suggest the need for maintaining this distinction. I therefore focus primarily on the regulation of emotion rather than affect, emotion episodes, or mood.²

What Is Emotion Regulation?

From time immemorial, people have wondered how to manage their emotions. Only in the past 2 decades, however, has the field of emotion regulation begun to emerge as a relatively independent research domain. Now that we have a working definition of *emotion*, we can address the topic of emotion regulation. In the following sections, I consider two precursors to the contemporary study of emotion regulation. I then use a response-tendency perspective to define emotion regulation.

Precursors to the Contemporary Study of Emotion Regulation

The psychoanalytic tradition is one important precursor to the contemporary study of emotion regulation. This tradition emphasizes two types of anxiety regulation (S. Freud, 1926/1959). The first concerns reality-based anxiety, which arises when situational demands overwhelm the ego. Here, anxiety regulation consists of avoiding such situations in the future, even to the point of excessive behavioral constriction. The second type of anxiety regulation concerns id- and superego-based anxiety, which arises when strong impulses press for expression. Here, anxiety regulation consists of curtailing the expression of impulses that the ego judges will create high levels of future anxiety. *Ego defense* is the general term given to processes that regulate these two types of anxiety as well as other painful negative affects (Paulhus, Fridhandler, & Hayes, 1997). Typically, ego defenses operate outside of awareness (Erdelyi, 1993). Individuals have characteristic defensive styles that differ in reality distortion, impairment, energy consumption, and unnecessary nongratification of impulses (Fenichel, 1945; A. Freud, 1946; Haan, 1977; Vaillant, 1977). Emotion regulation researchers remain concerned with reducing negative emotion experience through behavioral or mental control. However, the focus has expanded to include conscious and

unconscious processes that increase or decrease the experience or expression of negative or positive emotions (Mayer & Salovey, 1995; Parrott, 1993). Methodologically, correlational and experimental approaches have taken the place of the clinical method. Researchers still view difficulties with emotion regulation as being central to psychopathology (Cicchetti, Ackerman, & Izard, 1995; Gross & Munoz, 1995); however, they now pay greater attention to normative emotion regulatory processes.

The stress and coping tradition is a second important precursor to contemporary emotion-regulation research. The organizing principle in this tradition is that organisms produce similar psychophysiological responses to diverse challenges (Selye, 1956; see also Sapolsky, 1994). Early researchers focused on responses to physical challenges such as cold or crowding. Later researchers expanded their focus to include responses to psychological challenges such as public speaking or exams. Although psychological stress and coping research has its roots in the psychoanalytic tradition, it is distinguished by a concern with adaptive, conscious coping processes, and by a focus on situational rather than person variables (Parker & Endler, 1996). *Coping* is defined as "cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Researchers have distinguished between *problem-focused coping*, which aims to solve the problem, and *emotion-focused coping*, which aims to decrease negative emotion experience. Emotion regulation researchers have borrowed heavily from the stress and coping tradition. However, by examining specific emotions, they have sought to make finer grained distinctions among environment-organism interactions than is possible using the broader rubric of stress. Emotion regulation researchers also have emphasized that both positive and negative emotions may be regulated, and that both emotion expression and experience may be targeted. Although traditional definitions of

² Mayer, Salovey, Gomberg-Kaufman, and Blainey (1991) have proposed a conception of mood that subsumes mood regulation. This substantially enlarges the traditional conception of mood. I believe it may be more useful to distinguish regulatory processes from the targets of regulation.

coping overlap with contemporary conceptions of emotion regulation, coping and emotion regulation are by no means redundant. Coping includes nonemotional actions taken to achieve nonemotional goals (Scheier, Weintraub, & Carver, 1986) as well as actions taken to regulate emotions. Emotion regulation includes processes that may or may not tax the individual's resources, as well as processes not traditionally considered in the coping literature, such as sustaining or augmenting positive emotions (but see Folkman, 1997).

Defining Emotion Regulation

What, then, is emotion regulation? *Emotion regulation* refers to the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions. Emotion regulatory processes may be automatic or controlled, conscious or unconscious, and may have their effects at one or more points in the emotion generative process (which I describe in a later section). Because emotions are multicomponential processes that unfold over time, emotion regulation involves changes in "emotion dynamics" (Thompson, 1990), or the latency, rise time, magnitude, duration, and offset of responses in behavioral, experiential, or physiological domains. Emotion regulation also involves changes in how response components are interrelated as the emotion unfolds, such as when large increases in physiological responding occur in the absence of overt behavior.

This perspective on emotion regulation treats the nervous system as multiple, partially independent information processing subsystems (e.g., Fodor, 1983; Gazzaniga, 1985; LeDoux, 1989; Maclean, 1975; Malmö, 1975; Panksepp, 1982). Subsystems work with differing inputs, and often provide different outputs, even given the same input. Imagining a provocation can produce anger, even when we know that there is no threat (Lang, 1979). Similarly, seeing a roach in our soup can produce feelings of disgust and fear of disease, even when we know the roach has been sterilized (Rozin & Fallon, 1987). Interconnected neural subsystems monitor one another to varying degrees and are in continuous bidirectional excitatory or inhibitory interaction. The notion that there are bidirectional links between limbic centers that generate emotion

and cortical centers that regulate emotion is important. It forces us to move beyond simple models of top-down control (Head, 1921; Jackson, 1884) to models that emphasize emotional tuning of higher brain centers (Derryberry & Tucker, 1992) as well as more traditional top-down control.

I focus on five aspects of this definition of emotion regulation. First, individuals increase, maintain, and decrease negative and positive emotions (Parrott, 1993). All of these processes are included in my definition of emotion regulation. Second, neural emotion circuits do not appear to overlap completely (LeDoux, 1994; Panksepp, 1982; 1998). This suggests that circuits involved in regulating these emotions also may not overlap completely, and that there may be important differences in emotion regulatory processes across emotions. Third, this definition of emotion regulation emphasizes regulation in self. Other definitions include attempts to influence others' emotions (e.g., Gross & Levenson, 1993; Masters, 1991; Thompson, 1994). I now believe this double usage is unfortunate, as it mixes two potentially quite different sets of motives, goals, and processes. Fourth, prototypic examples of emotion regulation are conscious, such as deciding to change an upsetting conversational topic or squelching laughter at a child's inappropriate antics. One can imagine, however, emotion regulatory activity that occurs without conscious awareness, such as hiding one's disappointment at an unattractive present (Cole, 1986) or turning one's attention away from potentially upsetting material (Boden & Baumeister, 1997). Previous discussions have distinguished categorically between conscious and unconscious processes (Masters, 1991; Mayer & Salovey, 1995). I prefer to think of a continuum from conscious, effortful, and controlled regulation to unconscious, effortless, and automatic regulation (Shiffrin & Schneider, 1977). Fifth, I make no a priori assumptions as to whether emotion regulation is good or bad (Thompson & Calkins, 1996). This circumvents the confusion that was created in the stress and coping literature by predefining *defenses* as maladaptive and *coping* as adaptive (Parker & Endler, 1996). Thus, cognitive strategies that dampen negative emotions may permit medical professionals to operate successfully (Lief & Fox, 1963; Smith & Kleinman, 1989). The same

strategies, however, may be used to dehumanize an enemy and neutralize empathic distress that could interfere with state-sanctioned killing (Bandura, 1977).

Relations With Related Constructs

Constructs related to emotion regulation include coping, mood regulation, mood repair, defense, and affect regulation. Coping is distinguished from emotion regulation by its primary focus on decreasing negative emotion experience and by its use of the protracted organism-situation interaction—or emotion episode—as the preferred unit of analysis. Moods are distinguished from emotions by their less well defined behavioral response tendencies. Thus in comparison with emotion regulation, mood regulation and mood repair are more concerned with altering emotion experience than emotion behavior (Forgas, 1995; Parkinson et al., 1996; Thayer, 1996). Like coping, defenses typically have as their focus the regulation of negative emotion experience, particularly anxiety. Defenses usually are unconscious (Bond, Gardner, Christian, & Sigal, 1983) and are studied as stable individual differences rather than as processes. The construct of affect regulation has been used in a variety of ways (e.g., Taylor, Bagby, & Parker, 1997; Westen, 1994). In keeping with the broad conception of affect described above, Figure 2 depicts affect regulation as superordinate to coping, emotion regulation, mood regulation, and traditional ego-defensive processes. These closely related constructs have permeable boundaries, but I conceptualize emotion regulation as one of several major forms of affect regulation.

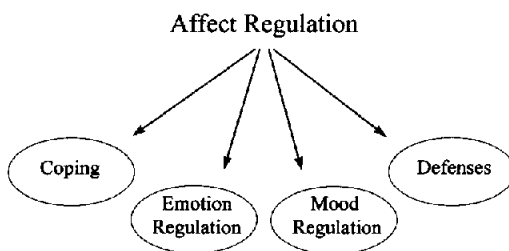


Figure 2. A hierarchical conception of affect regulation.

Emotion Regulation Across Psychological Subdisciplines

Emotion regulation cuts across traditional subdisciplinary boundaries.³ As shown in Figure 3, each of the major subfields of psychology contributes to an understanding of emotion regulation. The field of emotion regulation therefore provides important common ground in an age of fractionation and specialization. In the following sections, I consider emotion regulation from the perspective of biological, cognitive, developmental, social, personality, clinical, and health psychology. Recognizing that each section could grow into a full-length review, I illustrate, rather than fully review, the contributions these seven subfields have made or could make to the study of emotion regulation.

Biological Psychology

One challenge that faces biological psychology in general, and the allied discipline of affective neuroscience in particular (Davidson & Sutton, 1995; Panksepp, 1991; 1998), is to elucidate the neural substrate of emotion regulation. Researchers now think that bidirectional pathways (Mega & Cummings, 1994) between prefrontal cortex and subcortical emotion-generative structures modulate subcortical activity (LeDoux, 1987; MacLean, 1990; Ploog, 1992) and suffuse cortical information processing with emotional meaning (Damasio, 1994). Evidence implicating the prefrontal cortex in emotion regulation comes both from lesion and developmental studies. Individuals who have lesions involving the prefrontal region tend to be emotionally impulsive and poorly affectively regulated (e.g., Kolb & Taylor, 1990; Rolls, Hornak, Wade, & McGrath, 1994; Stuss & Benson, 1986; Tucker, Luu, & Pribram, 1995). Developmentally, too, a correlation has been reported between structural changes in the prefrontal cortex that take place toward the end of the first year and the emergence of rudimentary forms of emotion regulation (Dawson,

³ I focus on psychological research, although other disciplines also have made important contributions to the study of emotion regulation, including philosophy (e.g., Solomon, 1976), sociology (e.g., Hochschild, 1979), anthropology (e.g., White, 1993), and economics (e.g., Loewenstein, 1996).

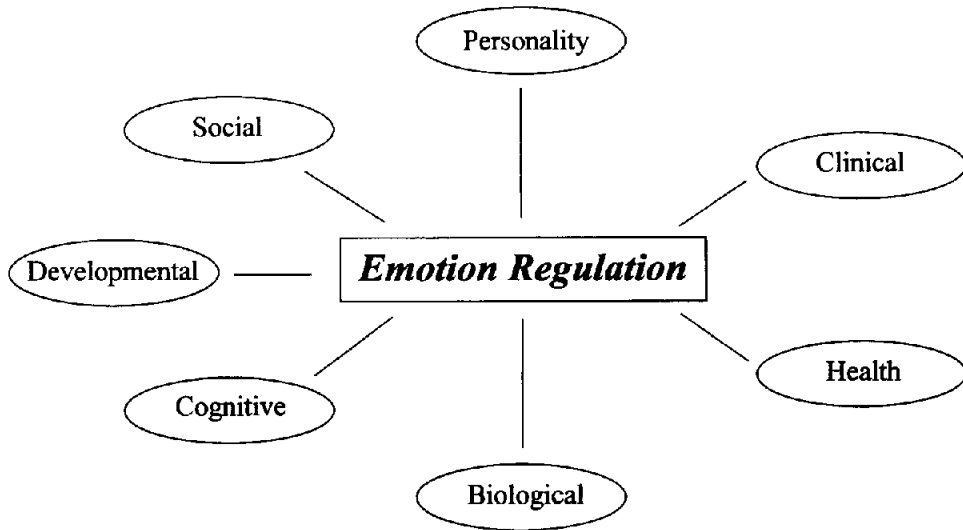


Figure 3. Emotion regulation and seven subfields of psychology.

Panagiotides, Klinger, & Hill, 1992; Diamond, 1991).

There is much to learn, however, about the precise nature of central (e.g., Diamond, 1991) and peripheral (e.g., Fabes & Eisenberg, 1997; Porges, 1995) mechanisms that mediate emotion regulation. Are emotional impulses regulated by the same mechanisms that provide control over other prepotent impulses (APA, 1994; Lion, 1992)? Or are regulatory structures specific not only to various classes of impulses (e.g., emotional, appetitive, aversive) but even to the individual emotions themselves? Hints of specificity have emerged, but researchers have yet to agree about even such basic issues as whether the left or right prefrontal cortex is preferentially charged with the regulation of negative versus positive emotion (e.g., Dawson et al., 1992; Fox, 1994b; Tucker et al., 1995). Effective regulation requires feedback from the monitored system, and there are multiple internal and external sources of information about emotional responding (Pennebaker & Roberts, 1992). However, little is known about how emotional response tendencies are represented at various levels of the neuroaxis. How might these representations influence emotion regulation? Is the capacity to verbally label emotional response tendencies necessary for certain forms of emotion regulation (Feldman Barrett, in press; Lane, Ahern, Schwartz, & Kaszniak, 1997; Taylor et al.,

1997)? Answers to questions regarding the neural bases of emotion regulation will provide a much needed biological foundation for future theoretical and empirical analyses.

Cognitive Psychology

Long cool to emotion, cognitive psychology has begun to show an appreciation of the rich interdigitation of cognitive and affective processes or, as Lewis and colleagues put it, the "cognitive-emotional fugue" (Lewis, Sullivan, & Michalson, 1984). Researchers have demonstrated complex dependencies between affective processes and cognitive processes such as problem solving (e.g., Clore, 1994; Isen, Daubman, & Nowicki, 1987), learning (e.g., Mineka, Davidson, Cook, & Keir, 1984; Ohman, 1986), and memory (e.g., Blaney, 1986; Cahill, Prins, Weber, & McGaugh, 1994; Christianson, 1992).

Research directly relevant to emotion regulation has been limited. However, Wegner and colleagues recently have begun to clarify the cognitive underpinnings of one form of emotion regulation (Wegner, Erber, & Zanakos, 1993). They have shown that attempts to regulate negative emotions via thought suppression yield paradoxical increases in negative mood if cognitive load is high. Wegner (1994) hypothesizes that when cognitive resources are limited, the conscious operating system that seeks out

desired mental contents is out-performed by a less cognitively costly monitoring system that flags undesirable mental contents. Several recent studies have assessed the cognitive consequences of emotion regulation more directly. In two studies, Richards and Gross (in press) found that emotion suppression impaired memory for auditory information that had been presented during an emotion-eliciting slide-viewing task. In a complementary study, Baumeister (in press) found that both emotion suppression and exaggeration impaired performance on subsequent cognitive tasks such as anagram solving. Because emotion regulation involves both attention allocation and cognitive processing, cognitive psychology is uniquely equipped to probe these processes.

Developmental Psychology

Recognizing that self-regulation is the foundation of organized behavior (Maccoby, 1980), developmental psychologists have paid considerable attention to emotion regulation (e.g., Bridges & Grolnick, 1995; Eisenberg & Fabes, 1992a; Fox, 1994a; Garber & Dodge, 1991). One key discovery is temperamental differences in emotion and emotion regulation (Derryberry & Rothbart, 1997). Some children have lower thresholds for negative or positive affect than do others (e.g., Davidson, 1992; Derryberry & Rothbart, 1984; Fox, 1989). Likewise, some children have better emotion regulatory capacities, such as self-soothing, than others (Rothbart & Derryberry, 1981). Under the rubric of social referencing, researchers have considered how adult emotion-expressive behavior alters children's ongoing behavior (Bandura, 1992; Campos & Stenberg, 1981), and Block (1971) has described the importance of parental investment in ego control. From an early age, nonverbal guidance is richly supplemented by emotion talk (Dunn & Brown, 1991; Hooven, Gottman, & Katz, 1995). One important question is how others' emotion regulatory suggestions interact with temperamental factors to shape what children say to themselves when they are on their own (Kopp, 1982; Luria, 1961).

The interaction between response tendencies and regulatory capacities has been explored in the context of attachment (e.g., Belsky & Rovine, 1987; Dozier & Kobak, 1992; Thompson, 1990) and social competence (Eisenberg et

al., 1995; Rubin, Coplan, Fox, & Calkins, 1995). Developmental psychologists also have explored children's developing conceptions of and capacities for emotion regulation (e.g., Meerum Terwogt & Stegge, 1995). This literature has focused on children's emerging understanding that they can—and often should—control their emotions (e.g., Cole, Zahn-Waxler, & Smith, 1994; Harris, 1989; Kopp, 1989; Saarni, 1990). Developmental psychologists have focused primarily on infancy and early childhood. Recently, life-span theorists also have begun to study emotion regulatory processes. For example, Carstensen and colleagues have found that the salience of emotion regulatory goals increases with age (Carstensen, 1995) and that emotional control may actually increase with age (Gross et al., 1997). One important challenge is to chart the developmental course of emotion regulation across the life span.

Social Psychology

Social psychology might seem irrelevant to a conception of emotion that prioritizes internal action tendencies. However, response tendencies are inextricably linked to social context (Buck, 1984, 1994); classic investigations of authority (Milgram, 1974) and deindividuation (Zimbardo, 1969) have revealed just how far emotional responses can be shaped by social context. More recently, social psychologists have explored the social foundations of emotional processes in studies of independent versus interdependent cultures (e.g., Markus & Kitayama, 1991; Weisz, Rothbaum, & Blackburn, 1984). By considering social context, researchers will transcend inner or "push" models of emotion, and develop more sophisticated models that emphasize both "push" and "pull" factors (Ekman, 1972; Kappas, 1996).

Such models are clearly necessary to understand the emotion regulatory bases of important social processes such as helping behavior, self-handicapping, marital interaction, and dissonance reduction. For example, Cialdini and colleagues' negative-state relief model (Cialdini, Darby, & Vincent, 1973) holds that helping behavior is motivated by the desire to decrease one's own sadness (see Batson & Shaw, 1991; Cialdini & Fulz, 1990). But when does an individual alter a situation in order to decrease

another person's negative emotion-expressive behavior that is upsetting (Hoffman, 1981) rather than deflecting attention (Shaw, Batson, & Todd, 1994)? Social handicapping, or actions taken to excuse failure or magnify credit for success (Berglas & Jones, 1978), may be framed as a trade-off between optimally effective action and anticipatory emotion regulation (Baumeister & Scher, 1988). In order to feel proud, or to avoid feeling shame, individuals may introduce obstacles or withdraw effort, thereby diminishing the objective probability of success. Emotion regulatory processes also figure prominently in marital interaction: Gottman (1993) suggested that marital interaction styles are crafted so as to achieve a certain ratio of positive to negative emotion. The motivating power of negative-emotion reduction also is relevant to cognitive dissonance processes, originally described as efforts undertaken to reconcile two logically inconsistent cognitions (Festinger, 1957). Although typically framed in cognitive terms, dissonance reduction can be conceptualized in terms of individuals' attempts to diminish negative emotions engendered by self-relevant discrepancies (see Abselson, 1983; J. Cooper & Fazio, 1984; Steele, 1988; Swann, 1987; Tesser & Cornell, 1991). Because emotion regulation is almost always a social affair, social psychology will play a vital role in emotion regulation research.

Personality Psychology

Personality psychology is centrally concerned with agency (Bandura, 1982). An agentic perspective acknowledges the role of social factors, such as those described in the previous section, but emphasizes the active role that individuals play in shaping their own behavior and the world around them. Much of the research inspired by this perspective has focused on perceptions of environmental control (Rothbaum et al., 1982; Seligman, 1975); perceived coping efficacy now is known to affect a wide range of outcomes, including anxiety and depression (for a review, see Bandura, 1997). Recently, analyses of control over external events have been complemented by analyses of control over internal psychological processes such as thoughts and emotions (Bandura, 1997; Logan & Cowan, 1984; Wegner & Pennebaker,

1993). The study of emotion regulatory processes forms a natural part of this inquiry.

But personality psychology is more than the study of basic personality processes. It also is concerned with individual differences. Understanding emotion regulatory processes requires a working conception of what is being regulated in a particular person at a particular time. Research on individual differences in emotion has focused on emotional expression (e.g., Gross & John, 1997, 1998; Kring, Smith, & Neale, 1994), experience (e.g., Feldman, 1995; Lane & Schwartz, 1987; Larsen & Ketelaar, 1991), and physiological responding (e.g., Fox, 1989; Goldsmith, 1993; Porges, 1995), as well as on the interrelations among response systems (e.g., Cacioppo et al., 1992). Unfortunately, a consideration of individual differences in emotion regulation is complicated by the large number of terms that have been used (John, 1990). These include emotional control (Roger & Najarian, 1989), negative-mood regulation (Catanzaro & Mearns, 1990), repression (Weinberger, 1990), and rumination–distraction (Nolen-Hoeksema, 1993). Related constructs include monitoring–blunting (Miller, 1987), sensation seeking (Zuckerman, 1979), constructive thinking (Epstein & Meier, 1989), optimism (Scheier & Carver, 1985), impulsivity (Eysenck & Eysenck, 1969), behavioral inhibition (Kagan, Reznick, & Snidman, 1988), constraint (Tellegen, 1985), ambivalence over emotional expressivity (King & Emmons, 1990), delay of gratification (Mischel, 1974), alexithymia (G. J. Taylor et al., 1997), levels of emotional awareness (Lane, Quinlan, Schwartz, Walker, & Zeitlin, 1990), coping style (Carver, Scheier, & Weintraub, 1989), ego control (Block & Block, 1980), and emotional intelligence (Salovey, Hsee, & Mayer, 1993). Some constructs, such as rumination, focus on specific regulatory processes. Other constructs, such as emotional intelligence, include diverse processes such as “the verbal and nonverbal appraisal and expression of emotion, the regulation of emotion in the self and others, and the utilization of emotional context in problem solving” (Mayer & Salovey, 1993, p. 433). This wealth of constructs testifies to the importance of individual differences in emotion regulation. However, one important contribution will be to further specify the emotion regulatory processes that underlie each of these individual-difference constructs.

Clinical Psychology

Emotion regulatory processes are central to mental health; they can either support or disrupt the capacity to work, relate to others, and enjoy oneself (Gross & Munoz, 1995). Indeed, emotion dysregulation is implicated in over half of the *DSM-IV* Axis I disorders and in all of the Axis II disorders (APA, 1994; Gross & Levenson, 1997; Thoits, 1985). In adults, emotion dysregulation is associated with clinical problems including binge eating (e.g., Lingswiler, Crowther, & Stephens, 1989), alcohol abuse (e.g., M. L. Cooper, Frone, Russell, & Mudar, 1995; Marlatt, 1985; Sayette, 1993), and of course anxiety and the mood disorders (e.g., Barlow, 1986; Beck, Rush, Shaw, & Emory, 1979). In children, difficulties regulating depression and anxiety are related to internalizing disorders, whereas difficulties regulating anger are related to externalizing disorders (e.g., Caspi, Henry, McGee, Moffitt, & Silva, 1995; Rubin et al., 1995). Within the normal range of functioning, poor emotion regulation in conjunction with high levels of negative emotion predicts lesser social competence and decreased peer acceptance and liking (Eisenberg & Fabes, 1992b). A shared focus on emotion regulation unites developmental and clinical psychology in the study of attention-deficit/hyperactivity disorder (Barkley, 1997; Hinshaw, Simmer, & Heller, 1995), Down's syndrome (Thompson, 1991), and child maltreatment (Cicchetti et al., 1991).

Emotion dysregulation—particularly high levels of poorly regulated hostility—has effects that extend beyond the dysregulated individual. Vulnerable family members, such as those recently hospitalized for schizophrenia (Kavanagh, 1992) or depression (Coiro & Gottesman, 1996), are at elevated risk for relapse if their family environment is characterized by high levels of negative-emotion expression. Interventions to help individuals, couples, and families modify ineffective patterns of emotion regulation are the staple of psychotherapy. Such interventions target emotion regulatory patterns ranging from those that influence the situation (e.g., Lewinsohn, Munoz, Youngren, & Zeiss, 1986) or the way the situation is construed (e.g., Dodge, 1991; Ellis, 1962) to those that alter the emotional response itself (e.g., Deffenbacher, 1994; Novaco, 1975). Many schools of therapy teach that difficulties with emotion regulation

must be re-experienced in therapy (Cicchetti et al., 1991; Greenberg & Safran, 1987) where the therapist can help the patient develop the capacity to regulate emotions in new ways (Averill & Nunley, 1992; Folkman & Lazarus, 1988). Establishing what constitutes “appropriate” emotion regulation is an important challenge for clinicians who must help patients examine what their implicit emotion regulatory goals are, what they would like them to be, and how they may best achieve these goals.

Health Psychology

Health psychologists long have maintained that mismanaging negative emotions can cause illness (Alexander & French, 1946; Dunbar, 1954; Friedman, 1990). Some evidence now supports this claim. Chronic hostility and anger inhibition are associated with hypertension and coronary heart disease (e.g., Dembroski, MacDougall, Williams, Haney, & Blumenthal, 1985; Jorgensen, Johnson, Kolodziej, & Schreer, 1996; Julkunen, Salonen, Kaplan, Chesney, & Salonen, 1994; T. W. Smith, 1992; but see Suls, Wan, & Costa, 1995). Emotion inhibition also may exacerbate minor ailments (Pennebaker, 1990; Pennebaker, Kiecolt-Glaser, & Glaser, 1988) and may even accelerate cancer progression (Fawzy et al., 1993; Gross, 1989; Spiegel, Bloom, Kraemer, & Gottheil, 1989). The theme that unites these findings is that tight control of negative emotions may adversely affect physical health.

How might emotional control affect physical health? One possible mechanism is sustained physiological responding that exceeds metabolic demands (Folkow, 1987; Steptoe, 1981; R. B. Williams, 1986). Relative to natural emotional expression, suppression leads to increased sympathetic activation despite a concomitant decrease in somatic activity (Gross & Levenson, 1993; 1997). However, there is an immense difference between acute changes in sympathetic tone and clinically significant pathology. This gap needs to be bridged by studies that link the short- and long-term consequences of emotion regulation. A second possible mechanism is immune suppression. Increased sympathetic nervous system activation appears to selectively inhibit certain aspects of the immune response (e.g., Maier, Watkins, & Fleshner, 1994). In principle, selective down-

regulation of immune parameters might, over the longer term, lead to greater incidence of illness. Here, too, however, much more needs to be done before researchers can draw any firm conclusions. Given the myriad forms of emotion regulation, the important role of incompletely defined individual differences in emotion generation and regulation, and the multiple pathways to good or poor health, documenting the long-term health consequences of various forms of emotion regulation is a task as daunting as it is important.

Emotion Regulatory Processes

Emotions encode situation-response dependencies that have proven valuable over the sweep of millennia (Tooby & Cosmides, 1990). As the preceding review amply demonstrates, however, emotional response tendencies aren't always appropriate to the situations we now face. Contemporary physical and social environments differ dramatically from those that shaped our emotions. Responses that served our ancestors well often are suited poorly to modern exigencies. For example, technological advances have magnified the consequences that our emotional responses have for ourselves and others: an angry impulse that once would have bruised now kills, thanks to the ready availability of handguns. These considerations suggest the importance of emotion regulation. But how should we conceptualize the potentially overwhelming number of processes involved in regulating emotional response tendencies?

One approach is to spell out exactly what people do when they try to regulate a particular emotion or mood. For example, Rippere (1977) asked participants what they thought a person should do if that person felt depressed. Thayer and colleagues (Thayer, Newman, & McClain, 1994) asked participants in more general terms what they do to change their moods. In a similar vein, Parkinson and colleagues (Parkinson et al., 1996) identified over 200 mood regulatory strategies using both interview and questionnaire methods. The descriptive approach used by these researchers elicits reports of behaviors ranging from exercise to drinking to seeking social support. It has the advantage of staying close to the phenomenon of interest. However, when the focus is broad—on affective processes including mood and emotion—there is an

infinite number of behavioral acts that might qualify as affect regulatory. Although description of behavior is an important first step, it eventually may prove to be too low a level of analysis.

A second approach is to categorize emotion regulatory efforts on the basis of the emotion component targeted for regulation, such as experience, expression, or physiology (e.g., Walden & Smith, 1997). This approach has the advantage of parsimony. However, it has the disadvantage of lumping diverse ways of achieving change in each domain. For example, inhibiting emotion-expressive behavior may be accomplished by changing the way one thinks about a situation or by relaxing one's facial muscles (Gross, 1998). Grouping these processes together obscures important differences in causes, consequences, and underlying mechanisms of action. This approach also has the liability that individuals often try to change multiple aspects of the emotion at once rather than just one aspect as, for example, when they want to make the emotion go away altogether. Although specification of the target system is important, it too may not be quite the right level of analysis.

A third approach is to undertake a conceptual analysis of the processes underlying diverse emotion regulatory acts (see Frijda, 1986, for a more detailed discussion along these lines). In the response-tendency conception of emotion depicted in Figure 1, emotional response tendencies are generated once stimuli have been evaluated as important. Then, once emotional response tendencies have been generated, they may be modulated in various ways. Within this framework, emotion regulatory acts may be seen as having their primary impact at different points in the emotion generative process. Of course, what individuals do to regulate their emotions—such as going out to a bar with friends in order to get their mind off an upsetting fight with a coworker—often involves multiple regulatory processes. However, a process-oriented approach may bring us closer to understanding the causes, consequences, and underlying mechanisms than the other two approaches.

I distinguish five sets of emotion regulatory processes: situation selection, situation modification, attention deployment, cognitive change, and response modulation. This is an elaboration of the two-way distinction I have offered previ-

ously between antecedent-focused emotion regulation, which occurs before the emotion is generated, and response-focused emotion regulation, which occurs after the emotion is generated (Gross, 1998; Gross & Munoz, 1995). To orient the reader, I briefly describe these five forms of emotion regulation before going into more detail below.

The first is *situation selection*, shown in Figure 4 by the solid line toward Situation 2 (S2) rather than Situation 1 (S1). Once selected, a situation may be tailored so as to modify its emotional impact. This constitutes *situation modification*. Importantly, situations differ in terms of how much they may be modified, ranging from a hypothetical limiting case of a situation with no room for change (denoted by S1x) to a situation with modest potential for change (S2x, S2y, S2z). Situations also vary in complexity, ranging from a hypothetical limiting case of a situation with one aspect (a1) to a situation with multiple aspects (a1, a2, a3, a4, a5). *Attentional deployment* may be used to select which aspect of a situation a person focuses on. Even after a situation has been selected, modified, and selectively attended to, it still is possible to alter its emotional impact. *Cognitive change* refers to selecting which of

the many possible meanings (m1, m2, m3) will be attached to a situation. It is this meaning (m2) that gives rise to emotional response tendencies, including behavioral, experiential, and physiological tendencies. *Response modulation* refers to influencing these response tendencies once they have been elicited, illustrated in Figure 4 by decreased behavioral response tendencies (B- rather than B).

The process model of emotion regulation shown in Figure 4 has clear limitations. First, situations, aspects, and meanings are terms that have proven notoriously resistant to definition. What is offered is a set of working distinctions among regulatory processes that I have found useful in navigating the tangled literatures relevant to emotion regulation. Second, response tendencies may be modulated in more subtle ways than increasing and decreasing them; Figure 4 illustrates rather than exhausts the possibilities. Third, there may be important asymmetries in control across response domains. For example, it may be easier to directly modulate emotion-expressive behavior than emotion experience. Fourth, this scheme calls to mind external situations. However, I mean to include internal "situations" also, in which case attentional deployment may be used to select

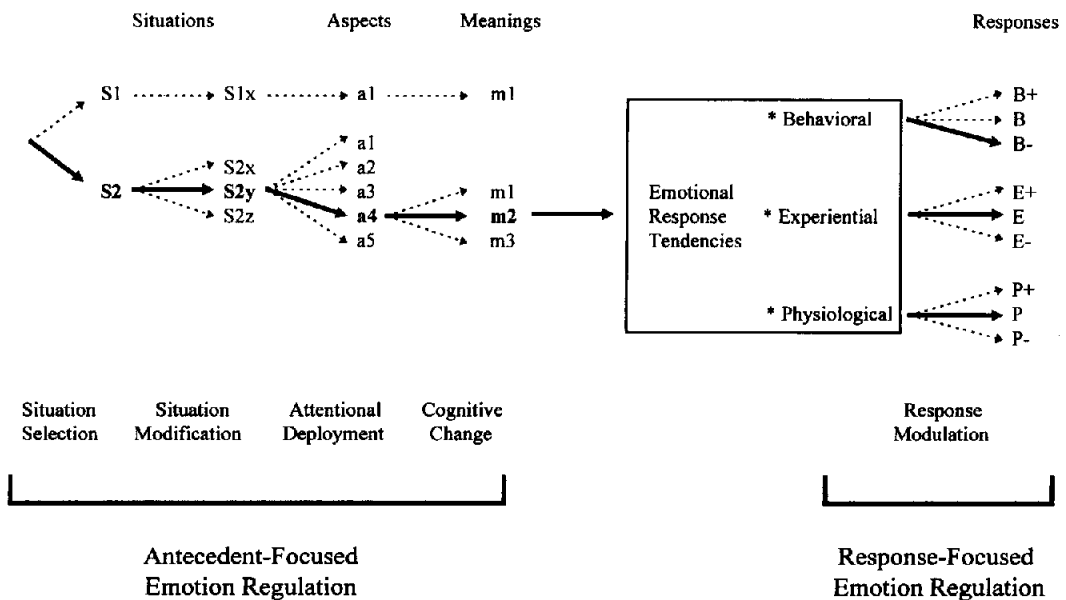


Figure 4. A process model of emotion regulation. (See text above for explanation of abbreviations.)

and modify imagined situations. Fifth, emotional responses often modify situations, particularly interpersonal situations. Emotions also may give rise to attentional and cognitive changes. Emotional responses thus may be seen as the starting point for the next iteration of the S-O-R sequence depicted in Figure 4. Feedback pathways certainly could be introduced. Sixth, emotion regulation can occur in parallel at multiple points in the emotion generative process, and regulatory processes are likely to be adjusted dynamically. Seventh, reflecting current limitations in our knowledge, this scheme is silent regarding important topics such as (a) the mechanisms subserving different emotion regulatory processes, (b) the relations among emotion regulatory processes, (c) the relative efficacy of different forms of emotion regulation, and (d) the interdependencies among behavioral, experiential, and physiological response tendencies. With these provisos on the table, I turn to a discussion of the five forms of emotion regulation shown in Figure 4.

Situation Selection

Situation selection refers to approaching or avoiding certain people, places, or objects in order to regulate emotions. Examples include taking a different route to the store to avoid a neighbor who tells offensive jokes or seeking out a friend with whom one can have a good cry (see Aspinwall & Taylor, 1997). To understand situation selection, one must appreciate the features of situations that typically make people emotional (Scherer, Wallbott, & Summerfield, 1986). One also must appreciate individuals' preferences regarding entertainment (Zillmann, 1988), self-gift-giving (Luomala & Laaksonen, 1997), and various aggregations of good and bad news (Linville & Fischer, 1991). Situation selection assumes knowledge of likely features of remote situations and of expectable emotional responses to these features. However, situations are complex, and often have multiple layers of emotional meaning. Self-knowledge is required to make sound decisions about which situations to seek out and which to avoid, particularly when short-term benefits of emotion regulation are pitted against longer term costs. A shy person's efforts to decrease anxiety by avoiding social situations may provide short-term relief at the cost of longer term social isolation (Leary,

1986). Likewise, a sensation seeker's thrill seeking may lead to injury (Zuckerman, 1979). Because of the complexity of these tradeoffs, effective situation selection may require the help of caring others, ranging from parents to partners to therapists. Indeed, one potent class of cognitive-behavioral interventions involves coaching regarding the situations to seek out or avoid, such as when a therapist helps a depressed patient plan pleasant activities (Lewinsohn et al., 1986). Another important class of cognitive-behavioral interventions involves helping with stimulus control, which refers to the regulation of behavior by anticipatory stimulus selection (Kanfer & Gaelick, 1986), such as when an individual avoids food cues in order not to eat unwanted items (Schachter, 1968).

Situation Modification

A potentially emotion-eliciting situation—whether a flat tire on the way to an important appointment or loud music next door at 3:00 a.m.—does not ineluctably call forth emotion. One may convert a meeting into a phone conference, or convince a neighbor to tone down a raucous party. Active efforts to directly modify the situation so as to alter its emotional impact constitute an important form of emotion regulation. Such efforts have been referred to in the stress and coping literature as *problem-focused coping* (Lazarus & Folkman, 1984) and by Rothbaum et al. (1982) as *primary control*. Boundaries with situation selection are not always clear, as robust efforts to modify a situation may effectively call a new situation into being. Another interesting boundary issue is distinguishing the direct consequences of emotion expression from those of emotion regulation. Emotional expressions have important social consequences and can dramatically alter ongoing interactions (Keltner & Kring, 1998). If one's partner suddenly looks sad, this can shift the trajectory of an angry interaction as one pauses to express concern or even backpeddle. Thus emotion expressions are a potent means of changing ongoing social interaction, and emotion regulatory efforts that target situation modification must be distinguished from the direct consequences of unregulated emotion expression (see Gross, in press).

Attentional Deployment

Attentional deployment is one of the first emotion regulatory processes to appear (Rothbart, Ziaie, & O'Boyle, 1992). Strategies for changing attentional focus may be grouped loosely under the headings of *distraction*, *concentration*, and *rumination*. *Distraction* focuses attention on nonemotional aspects of the situation (Nix, Watson, Pyszczynski, & Greenberg, 1995) or moves attention away from the immediate situation altogether (Derryberry & Rothbart, 1988), such as when an infant shifts its gaze from the emotion-eliciting stimulus to decrease stimulation (Stern, 1977; Stifter & Moyer, 1991). Distraction also may involve changing internal focus, such as when individuals disengage from elusive goals by shifting attention to more tractable ones (McIntosh, 1996). Undesirable associative trains may be disrupted by saying "stop!" (Meichenbaum, 1985) or by invoking thoughts (Fraley & Shaver, 1997) or memories (Josephson, Singer, & Salovey, 1996) that are inconsistent with the undesirable emotional state. For example, repressive coping may involve quickly deflecting attention away from potentially threatening stimuli (Boden & Baumeister, 1997; Krohne, 1996). In such cases, attentional deployment may effectively be used to select new (internal) situations, illustrating the permeable boundaries among emotion regulation strategies. *Concentration*—whether on work, gardening, rock climbing, or art—has the capacity to absorb cognitive resources (Erber & Tesser, 1992); a well-chosen task can create a self-sustaining transcendent state that Csikszentmihalyi (1975) calls *flow*. Concentration also may be used to draw attention to emotion triggers. This is the heart of method acting, in which an actor calls to mind an emotional incident in order to portray that emotion convincingly (Stanislavski, 1965). Wegner and Bargh (1998) have termed this *controlled starting* of emotion. Like the distraction examples above, this use of concentration might be considered an internal version of situation selection. *Rumination* also involves directed attention, but here attention is directed to feelings and their consequences. Ruminating on the negative emotions characteristic of depression leads to longer and more severe depressive symptoms (Just & Alloy, 1997; Nolen-Hoeksema, 1993). Similarly, Borkovec and colleagues (Borkovec, Roemer, & Kinyon, 1995) have shown that worrying—or focusing attention on possible future threats—leads to long-lasting anxi-

ety.⁴ One intriguing issue is how best to represent the complex tradeoffs between short-term and long-term costs and benefits of various attentional forms of emotion regulation.

Cognitive Change

Even after emotion-eliciting features of the situation have been attended to, an emotional response is by no means a foregone conclusion. Emotion requires that percepts be imbued with meaning and that individuals evaluate their capacity to manage the situation. Cognitively oriented emotion researchers have described the cognitive steps needed to transform a percept into something that elicits emotion (e.g., Scherer, 1988; C. A. Smith & Ellsworth, 1985). Personality psychologists have described the evaluations individuals make regarding their capacity to manage the perceived situation (e.g., Bandura, 1997; Folkman & Lazarus, 1988). *Cognitive change* consists of modifying these cognitive steps or evaluations (Frijda, 1986). Classical psychological defenses such as denial, isolation, and intellectualization fall under this broad heading. The tendency to interpret events more positively than warranted also may be included (S. E. Taylor & Armor, 1996; S. E. Taylor & Brown, 1988). Another form of cognitive change that has received attention is downward social comparison, which involves comparing one's situation with that of a less fortunate person, thereby altering one's construal and decreasing negative emotion (Taylor & Lobel, 1989; Wills, 1981). Cognitive reframing may be a particularly potent form of cognitive change, such as when one experiences failure with respect to one goal but reframes this as a success—or at least a nonevent—with respect to another goal (see Carver et al., 1996). One form of cognitive change that has received particular attention is reappraisal. This involves cognitively transforming the situation so as to alter its emotional impact. Leading participants to reappraise negatively valenced films has been

⁴ Worry directs attention toward threatening material, leading to chronic low-grade anxiety. However, worry also has a re-evaluative aspect, in that it limits how elaborately emotional information is processed (Lang, 1979). This cognitive re-evaluation negatively reinforces worry by detoxifying negative situations. Worry also may serve to distract from other, more troubling concerns (Borkovec et al., 1995).

shown to result in decreased negative emotion experience (Cantor & Wilson, 1984; Dandoy & Goldstein, 1990; Gross, 1998; Langer, Janis, & Wolfer, 1975; Lazarus & Alfert, 1964). However, in the context of extremely disgusting films, decreases in physiological responding are not always evident (Gross, 1998; Steptoe & Vogele, 1986), perhaps because so little cognitive processing is needed in order to translate these images into emotional responses (Lang, 1979; LeDoux, 1994). This explanation leads to the prediction that in more complex situations, reappraisals should have a greater impact on the emotional response. And so they do: Stemmler (1997) has shown that reappraisal decreases physiological responding in an interpersonal situation in which participants are verbally harassed by an experimenter. These studies suggest the potential for manipulating cognitive-change strategies in order to probe the emotion generative process.

Response Modulation

Response modulation refers to directly influencing physiological, experiential, or behavioral responding. In contrast with the emotion regulatory processes described above, response modulation occurs late in the emotion generative process, after response tendencies have been initiated. Attempts at regulating the physiological and experiential aspects of emotion are common. Drugs may be used to target physiological responses such as muscle tension (anti-anxiolytics) or sympathetic hyperreactivity (beta blockers). Exercise (Thayer et al., 1994), biofeedback (Schwartz, 1975), and relaxation (Suinn & Richardson, 1971; Wolpe, 1958) also can be used to decrease physiological and experiential aspects of negative emotions such as anxiety, and Jacobsen's (1938) progressive relaxation therapy is now an integral component of cognitive-behavioral therapies (Barlow, 1986). As is widely appreciated, alcohol (e.g., Hull & Bond, 1986), cigarettes (e.g., Brandon, 1994; Gilbert, 1979), cocaine (e.g., Khantzian, 1985), and even food (e.g., Lingswiler et al., 1989) also may be used to modify emotion experience.⁵ The most common form of emotion regulation, however, may be regulating emotion-expressive behavior (Gross, Feldman Barrett, & Richards, 1998). By and large, studies have shown that initiating emotion-expressive behav-

ior slightly increases the feeling of that emotion (Izard, 1990; Matsumoto, 1987). Fewer studies have examined the suppression of ongoing emotional behavior. However, results to date suggest that inhibiting expressive behavior decreases self-reported experience of some emotions (e.g., pride, amusement) but not others (e.g., disgust, sadness) while increasing sympathetic nervous system responding (for a review, see Gross & Levenson, 1997). By seeing what happens as response tendencies are disrupted, researchers will obtain a better understanding of basic emotional processes (Rinn, 1984). Research on response modulation thus provides an important tool for better understanding the response coherence presumed by the response-tendency perspective.

Remaining Challenges

This review demonstrates the integrative power of the construct of emotion regulation. Apparently disparate concerns are brought under one conceptual framework, sharpening questions about points of convergence and divergence among seemingly unrelated processes. This review also demonstrates the generative power of the construct of emotion regulation. In the preceding sections, I touched on a number of empirical questions. In the following, I consider three challenges that the field still needs to address. Can emotion regulation really be distinguished from emotion generation? What are individuals' emotion regulatory goals? How does emotion regulation relate to other forms of self-regulation?

Emotion and Emotion Regulation

As is shown in Figure 4, emotion regulatory processes are tightly intertwined with emotion generative processes. Indeed, some theorists

⁵ Alcohol has both direct and indirect emotion regulatory effects. I have pointed to its direct effects on somatic tension. Alcohol also may have indirect emotion regulatory effects via attentional deployment (Hull, 1981). For example, Steele and Josephs (1990) have argued that alcohol restricts attention to immediate, salient cues, thereby decreasing negative emotions if one is engaged by stimuli unrelated to one's troubles, but increasing negative emotions if one has little else to focus on other than one's misery.

argue that emotion regulation is best seen as part and parcel of emotion (Frijda, 1986). After all, adult emotions are almost always regulated (Tomkins, 1984), and emotion-generative brain centers appear to be tonically restrained by the prefrontal cortex (Stuss & Benson, 1986). On the other hand, both common sense and the response-tendency conception of emotion suggest the necessity of distinguishing between emotion and emotion regulation.

Disentangling emotion generative and emotion regulatory processes represents a tremendous challenge (Mayer & Salovey, 1995). Emotion regulation must be inferred when an emotional response would have proceeded in one fashion but instead is observed to proceed in another. Inferences such as these are fraught with difficulty. For example, an expressionless face in someone who typically expresses and gesticulates wildly at the slightest excuse may be rich with meaning, but the same lack of expression in someone who rarely shows any sign of emotion is less strongly suggestive of emotion regulation. Emotion regulation thus requires a formidable level of certainty about emotion in its unregulated state. Without this, discussions of emotion regulation devolve into postdictions that can explain any pattern of findings (Kappas, 1996). This is particularly true when emotion regulation is invoked to explain a lack of emotion where emotion might be expected—that is, when two hidden processes, emotion and emotion regulation, are invoked to explain a nonresponse (Frijda, 1986). Because certainty about when and how emotions have been regulated is low, thresholds for inferring emotion regulation should be high.

Emotion Regulatory Goals

Like other goals, emotion regulatory goals can be framed at varying levels of abstraction.⁶ Goals can range from the specific, such as not letting friends see one's amusement at their bawdy jokes, to the general, such as behaving in a loving way toward others. These goals may be conscious and highly salient, such as not showing nervousness when meeting one's fiancée's parents for the first time. These goals also may be less focal, such as when they are embedded in the higher level goal of succeeding at a job that requires compliance with specific feeling rules (Hochschild, 1979) or display rules

(Ekman, 1972). Importantly, emotion regulatory goals often are context specific, such as matching the emotional state of an anticipated interaction partner (Erber, Wegner, & Theriault, 1996). Goals also may vary by emotion. As a culture, Americans have a long history of concern with the management of anger (Stearns & Stearns, 1986; Tavris, 1982), but other emotions such as surprise are less highly regulated. One additional complexity is that the relative standing of emotion regulatory goals versus other important goals changes over the life span. Carstensen (1995) has argued, for example, that emotion regulatory goals increase in importance relative to other social goals as individuals perceive time limitations (e.g., as they approach death).

What are typical emotion regulatory goals? Individuals often seek to decrease negative emotions and increase positive emotions. For example, flight attendants limit hostile feelings toward unpleasant passengers (Hochschild, 1983), and college students enhance positive feelings by social sharing (Clark & Isen, 1982; Langston, 1994). These goals are readily understood in hedonistic terms: people are motivated to avoid pain and seek pleasure. But emotion regulation is broader than a simple hedonistic account suggests. Emotion regulation also involves increasing or initiating negative emotions and decreasing or stopping positive emotions (Masters, 1991; Parrott, 1993; Wegner & Bargh, 1998). For example, bill collectors may increase their anger to help collect delinquent accounts (Sutton, 1991), and the bearers of bad news may limit positive emotions as they deliver their unwelcome news (Tesser, Rosen, & Waranch, 1973). An empirical account of individuals' emotion regulatory goals is sorely needed. Such an account would permit a more complete analysis of the costs and benefits of different forms of emotion regulation as they are used in the service of various goals. This analysis also would help shed light on how factors such as fatigue (Baumeister & Heatherington, 1996) and mental load (Wegner, 1994) differentially compromise an individual's ability to achieve specific regulatory goals.

⁶ As noted by Carver et al. (1996), the notion of goals has enjoyed increased prominence in psychology recently. Related terms include *current concerns* (Klinger, 1977) and *personal strivings* (Emmons, 1986). I do not mean to distinguish among these here.

Emotion Regulation and Other Forms of Self-Regulation

Emotional impulses are by no means the only impulses with which we must contend. How does emotion regulation relate to the regulation of moods (Carver & Scheier, 1990; Morris & Reilly, 1987; Thayer, 1996), appetitive impulses (Mischel, 1974; Polivy, 1990), and other prepotent responses (Baumeister & Heatherton, 1996)? Are impulses to respond—and the processes by which they are modulated—crucially similar, as suggested by Block and Block's (1980) conception of ego control and by recent discussions of impulsivity (Newman et al., 1993)? Or must distinctions among various forms of self-regulation be maintained?

In the domain of affect, models of emotion regulation and mood regulation eventually may take their place in superordinate models of affect regulation. However, given that all behavior is arguably affect regulatory in some broad sense, I believe it may prove useful to retain a somewhat narrower focus, such as that provided by emotion regulation. Distinctions also may be necessary between processes that regulate emotion and those that regulate learned responses such as keypresses (Logan, Schachar, & Tan-nock, 1997), reading (J.M.G. Williams, Mathews, & MacLeod, 1996), or stereotypes (Devine, 1989). Presumably, the coordinated set of response tendencies postulated in emotion is absent, or present in a simplified form, in the context of these learned responses. It is less clear, however, whether processes that regulate emotional impulses should be distinguished from those that regulate impulses associated with hunger, thirst, aggression, and sexual arousal (Buck, 1985; Loewenstein, 1996). Mischel's (1996) famous "marshmallow studies" of young children's ability to delay gratification highlight the role of attentional processes such as distraction and reframing that also are relevant to emotion regulation. Similarly, Shiffman (1984) described cognitive strategies used for smoking abstinence that could just as well be used in emotion regulation. What are the differences among regulatory processes across families of impulses, ranging from appetitive to aggressive to emotional? This issue is certain to attract continued interest as researchers from a variety of domains (e.g., weight loss, substance abuse, aggression, emotion regulation) fashion

stronger empirical links across diverse forms of self-regulation.

Conclusions

Wisdom has been defined as "the harmony of reason and the passions" (Solomon, 1976, p. 412). But what is this elusive harmony, and how can it be achieved? Over the centuries, some have argued that wisdom is only possible when the emotions are silenced and when reason does all the talking (e.g., Seneca, 40–50/1963). Others have taken the opposite view, as did Hume, who asserted that "reason is, and ought only to be, the slave of the passions" (1739/1969, p. 462). In the past few decades, emotion researchers using William James's (1884) response-tendency conception of emotion generally have favored the view that emotions not only served our ancestors well but serve us well too. Emotions thus are said to represent the accumulated "wisdom of the ages" (Lazarus, 1991b, p. 820), preparing us to respond to challenges and opportunities (Frijda, 1986) and providing us with information about what is important and how we are faring with respect to our goals (Clore, 1994; Damasio, 1994).

But the events that grip us emotionally are not always the ones that we should focus our energies on, and the behavioral responses that are primed by emotions are not always the ones that are needed to achieve longer term goals (Gross, *in press*). In the past few decades, an exciting new chapter has opened in the ongoing debate as to how to achieve just the right sort of harmony between reason and the emotions. Psychological science has begun to offer empirical insights into individuals' attempts to influence which emotions they have, when they have them, and how they experience and express these emotions. To date, researchers typically have examined emotion regulatory strategies in isolation from one another, often without offering an explicit definition of emotion. In this review, I have outlined an evolutionary perspective that views emotions as response tendencies and suggested several points in the emotion generative process at which emotion might be regulated. This perspective suggests that well-being may be most likely when we (a) regulate emotion antecedents so that we are emotionally engaged by those pursuits that have enduring value, (b) attend to and to experience our

emotions in a richly differentiated fashion so that we notice subtle changes in response tendencies, and (c) cultivate the capacity to modulate emotional response components in a variety of ways with a full appreciation of the immediate and longer term consequences (Frijda, 1988).

This opens a middle course between silencing the emotions and listening to them and to them alone. Cooperation between reason and emotion brings our actions into line with our enduring concerns, motivating and sustaining action directed toward longer-term projects in the face of temporary setbacks, helping us decide which battles are worth taking up and which to avoid (Batson, Shaw, & Oleson, 1992). At this early stage, our theoretical and empirical grasp of emotion regulation is still quite uncertain, and the details of how such an integration of reason and emotion might be achieved remain obscure. Nonetheless, this review of the emerging field of emotion regulation suggests that an investment in this domain will be repaid amply as we develop the theoretical models and the empirical findings needed to provide better answers than have ever before been possible to age-old questions about how emotions can—and should—be managed in order to optimize human functioning.

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