Emotion and Evolving Treatments for Adult Psychopathology

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Clinical psychology has historically underplayed the importance of emotions in conceptualizing and treating adult psychopathology. However, there has been a recent convergence among numerous theoretical orientations in drawing from investigations of emotions within basic affective sciences, which highlight the survival and societal functions of emotions, the involvement of multiple biological systems in emotion generation, and a dynamic model for regulatory aspects of emotions. These characterizations of emotion suggest a number of ways that current treatments may benefit from explicit incorporation of interventions targeting emotions, particularly for resistant forms of adult psychopathology. Specifically, emotion-related skills training and broadening the role of emotions in meaning change may be important areas for expansion within the treatment of adult psychopathology.

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Whether it is the sense of dread as a heart beats furiously and unexpectedly, the vivid memory of a painful event that occurred long ago but is not easily forgotten, or the sharp experience of craving a substance that seems so certain to quickly take away pain or ensure pleasure, the experiences of adults suffering with psychopathology are replete with emotions. Despite this centrality, emotions have historically been a source of disagreement and misunderstanding in clinical psychology (Greenberg, 2002; Samoilov & Goldfried, 2000). Indeed, the major orientations to psychotherapy have assigned vastly different roles to emotions within frameworks that differentially emphasize these entities among other aspects of human experience, including cognition, overt behavior, and interpersonal processes. Much of the confusion and disagreement has come from a lack of conceptual clarity in the definition of emotion, awareness of the purposes it serves, and an understanding of how these purposes can become corrupted to form psychopathology.

In contrast to the clinical psychology subfield, interest in emotions within the basic psychological sciences has flourished within the past 10 years. This interest is reflected in the recent creation of a new flagship journal of the American Psychological Association, fittingly entitled *Emotion*, which is fully devoted to the study of emotions. Much of this interest comes directly from a greater understanding of the neurobiology of emotions (e.g., LeDoux, 1996), the functional role of emotions in development (e.g., Campos, Mumme, Kermoian, & Campos, 1994; Cole, Martin, & Dennis, 2004), the importance of emotions in achievement and social success (e.g., Lopes et al., 2004; Mayer & Salovey, 1997), and the role of emotions in seemingly incompatible processes such as cognition (e.g., Gray, 2004). In these investigations, emotions are essential to survival, integrally involved with how we function and thrive within society, and fundamentally defined by a multicomponent architecture.

Over a 20-year period, there have been a number of persuasive arguments to expand the role of emotions within clinical psychology (e.g., Barlow, 2002; Greenberg

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& Safran, 1987; Samoilov & Goldfried, 2000; Whelton, 2004). Despite these calls for action, only relatively recently has the field of clinical psychology begun to, as a whole, systematically incorporate the basic science of emotions into its various frameworks for psychotherapeutic intervention. Indeed, this may be a unique time given the nexus of advances within basic affective sciences and clinical psychology (Rottenberg & Johnson, 2007). Divergent therapeutic approaches are drawing from this basic science movement in complementary ways that move each area beyond its historical bounds and that provide a unique opportunity for the field to expand its interventions, which may help address difficulty in treating some of the more complex and challenging conditions (see Ruscio & Holohan, 2006). Cognitive-behavioral, psychodynamic, and experiential traditions have traditionally held different views on the role of emotion in psychological functioning and the therapeutic process. However, current trends in all three of the major orientations suggest a convergence toward viewing emotions as functional, regulatory, and inherently involved with other processes (e.g., cognition), and toward modifying treatments to incorporate advances in emotion science (Mennin, 2006).

BEHAVIORAL AND COGNITIVE THERAPIES

Cognitive-behavioral conceptualizations have historically underplayed the importance of emotion variables (e.g., Beck, Emery, & Greenberg, 1985; Skinner, 1953). Despite this history, emotion in cognitive-behavioral theory has increasingly been brought to the forefront (Barlow, 2002). A number of recent cognitive and behavioral interventions have begun to emphasize emotional phenomena. Dialectical behavior therapy (DBT) is a widely tested treatment for borderline personality disorder that incorporates a dialectic approach involving both acceptance elements that illustrate the adaptive importance of emotions and change elements that highlight the importance of emotion management (Linehan, 1993). Approaches such as mindfulness-based cognitive therapy (Segal, Williams, & Teasdale, 2002) also encourage attention to internal experiences, including emotions, by helping clients to be *mindful*, which involves a purposeful, flexible, nonjudgmental awareness of the present moment (Kabat-Zinn, 1990). Cognitive and behavioral treatments that have incorporated mindfulness approaches have demonstrated efficacy for anxiety (Roemer & Orsillo, in press), depression (Segal et al., 2002), substance use (Marlatt, 1994), and borderline personality disorder (as a component of DBT; Linehan, 1993). Another popular acceptance-based approach is acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999), which targets *experiential avoidance*, the unwillingness to allow internal experiences including emotions, in interventions that facilitate the process of *acceptance*, which involves allowance of one's internal experiences without trying to alter or change them (Hayes et al., 1999). However, in ACT, engagement of experience is not an end in itself but, rather, a means to attain greater flexibility to both internal and external possibilities and to promote behavioral action in accordance with one's values (Hayes et al., 1999). ACT has demonstrated efficacy in treating a myriad of psychopathologies, including anxiety, depression, and substance usage (see Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004).

PSYCHODYNAMIC THERAPIES

In contrast to the de-emphasis of emotion in cognitive-behavioral approaches, psychodynamic theories have traditionally focused prominently on affective variables but often have viewed emotion experience and expression as deterministic. From a classical viewpoint, emotions, rather than being consistent aspects of experience, were seen as episodic releases of energy resulting from nonconscious, instinctual impulses, insensitive to external occurrences (e.g., relationships) or the person's perceptions of those occurrences. However, over the past 50 years, contemporary psychodynamic theory developed conceptualizations of emotions beyond the confines of classical Freudian drive theory by highlighting the role of social and relational contexts (see Greenberg & Mitchell, 1983). A number of recently developed treatments that draw from this modern theoretical movement are briefer and more explicitly focused on emotional experience both in the context of interpersonal dyadic regulation (e.g., Fosha, 2000) and through an intrapersonal focus on defenses against feared emotional experiences or "affect phobias" (McCullough & Andrews, 2001; McCullough et al., 2003).

EXPERIENTIAL THERAPIES

Experiential therapies draw from client-centered, humanistic, gestalt, and existential traditions, which have historically

viewed emotions in dynamic, interrelated terms and as essential to adaptive functioning (Greenberg, 2002). Using these historical approaches as a base, modern experiential therapies argue that dysfunction arises from an unwillingness to remain aware of aspects of experience that have growth potential, an inability to engage the constant unfolding of experience and create meaning from it, and attempts to ignore, suppress, or control anxiety that accompanies the awareness of death, isolation, freedom, and meaninglessness. Although emotion-focused therapy, a modern *process*-experiential approach, draws heavily from the empathic tone of client-centered therapy and the experiential exercises of gestalt therapy, it has increasingly drawn from basic research on emotion and affective neuroscience (Greenberg, 2002). The goal of this therapy is to bring emotions and their associated motivational elements into active awareness. Using modified gestalt procedures, emotions are enacted within session to address concerns related to unexpressed relational conflicts and conflicts between aspects of self or experience. These investigators have shown through a number of studies that depth of experiencing emotions in session is related to positive therapeutic outcome (see Whelton, 2004), and they have developed efficacious process-experiential interventions tailored to specific populations, such as patients with depression (see Greenberg & Watson, 2005; Pos, Greenberg, Goldman, & Korman, 2003) and posttraumatic stress disorder (PTSD; Paivio & Nieuwenhuis, 2001).

This convergent movement stresses the importance of translating basic sciences to clinical application in a manner that places emotions within broader frameworks that also encompass cognition, behavior, and interpersonal process. In the remainder of the article, we argue (a) that this convergence is rooted in the basic theory and science of emotions, including their multiple functions, systemic structure, and regulatory properties, and (b) that advances in conceptualization of emotions and convergence of clinical approaches can inform new interventions that target both skills development and emotion processing elements within meaning making.

EMOTIONS

The converging viewpoints of emotion within clinical psychology draw considerably from basic theory in the "affective sciences" (see Ekman & Davidson, 1994, for an introduction). There are numerous definitions of emotions (e.g., Cole et al., 2004; Frijda, 1986; Keltner & Gross, 1999; Kring & Werner, 2004), but a number of themes emerge from these contemporary theoretical approaches. First, emotions serve important functions (e.g., Campos et al., 1994; Frijda, 1986; but can take detrimental forms when characterized by contextually invariant excess, deficit, or lability, Kring & Werner, 2004). Second, they have a multisystemic structure containing various components (e.g., Lang, Cuthbert, & Bradley, 1998), each of which is not always necessary for an emotional episode and, given loose coupling among response systems, can each generate different pathways to emotional activation (LeDoux, 1996). Finally, these systems of emotion activation are mutually responsive and, thus, regulate each other dynamically, consistently, and, when most effective, flexibly (e.g., Bonanno, 2001; Cole et al., 2004; Ochsner & Barrett, 2001).

Emotions Serve Functions

Given that emotion dysfunction characterizes the majority of our diagnostic disorders (Kring & Werner, 2004), it is not surprising that clinical psychology has often pejoratively defined emotions. Barlow (2002) discusses how emotions such as anxiety can be at the core of dysfunction yet be essential to our survival. Without fear and anxiety, we would not know to protect ourselves from danger when a threat is imminent (as in fear) or possible (as in anxiety); without sadness, we would not value how losses shape the direction of our goals; without anger, we would not know the importance of a slight; and without elation, we would not experience the joys of accomplishment. It is precisely because these experiences are so essential to our lives that their perturbations matter so much and, inevitably, characterize dysfunction and disorder (Berenbaum, Raghavan, Le, Vernon, & Gomez, 2003; Kring & Werner, 2004). Emotions prepare organisms for action through processes that cue readiness or *action tendencies* (Frijda, 1986; Greenberg & Safran, 1987) and have an *aboutness* to them by serving an information function, notifying individuals of the relevance of their concerns, needs, or goals in a given moment (Schwarz & Clore, 2003). Due to their information value, emotions can aid in making decisions regarding particular actions or plans. For instance, negative emotions such as fear can help constrain our attention to

a possible threat, which may be useful as a cue to pull us in a particular direction to solve a problem or clarify our goals (Parrott, 2001). When we feel positive emotions such as joy or interest, they help widen the array of thoughts and actions that come to mind and build new approaches through the generation of enduring personal resources in a number of domains (Fredrickson, 2001).

Emotions are integrally tied to our motivations toward desired outcomes and away from noxious threats (Lang, 1995). Evolutionary views argue that emotions are comprised of an innate architecture of motivation that was naturally selected for its adaptive value in dealing with fundamental life tasks (Cosmides & Tooby, 2000). One motivational function of emotions is protection, which has been defined as the behavioral inhibition system (Gray & McNaughton, 2000) and involves avoidance of aversive or potentially punishing stimuli. For instance, disgust reactions protect us by rejecting being too close to an indigestible object or idea. Another motivational function is promotion in the face of rewards, including appetitive stimuli or relief from punishment, which characterize the behavioral activation system (Gray & McNaughton, 2000). Emotions also involve a separate system meant to respond rapidly with a "fight or flight" response to either defend or escape (i.e., anger or fear in response to a novel stimulus). Some theorists (e.g., Panksepp, 1998) also argue that, in addition to the above systems, we have an innate motivational system for navigating our needs to be affiliated, nurtured, and affectionate with others.

Although emotions serve evolutionarily preordained survival functions, humans are endowed with the unique ability to grow from learning and categorization in memory. This provides humans with the advantage to learn on the basis of the environmental contingencies to which they are exposed, to represent and predict events in their environment, to manipulate and plan on the basis of representations, and to exert some control over their attentional and cognitive resources (Berntson, Cacioppo, & Sarter, 2003). This suggests that emotions can serve not only rapid motivations to survive but also reflective goals to thrive within a highly developed societal context. Although emotions have evolved to serve purposes of survival and still often are utilized for this purpose, response sets associated with these innate motivations can be recruited in service of higher order goals involving the need to navigate within society and culture and, thus, serve functions beyond those for which they were originally selected. For instance, a disgust response originally may have been selected to protect one from noxious food elements. However, given that modern living imposes less threat from harmful food intake, disgust has been applied to a variety of new uses and is largely experienced in response to the socially mediated emotional experience of a debasement of social order or personal code (Keltner & Haidt, 1999). Thus, emotions may serve multiple purposes, including those that are central to our sense of survival and those that are integral to thriving within a complex social structure.

Emotions Involve Multiple Systems and Pathways to Activation

In addition to serving functions, emotions are also characterized by a reliable structure. Although no single brain area or body part is dedicated solely to emotions, a series of components may be engaged during emotional responding (for a comprehensive review of these systems, see Lang et al., 1998), including (a) *physiological responses* such as somatovisceral responses in the peripheral nervous system (e.g., heart rate, musculature responses, body temperature, and blood pressure) and also their coordination in subcortical and brain stem areas (Damasio, 2000); (b) *behavioral responses* including expressive elements (e.g., facial displays) and motor actions (e.g., physical escape or avoidance); and (c) *subjective responses* including verbally mediated thought. Some theorists also define the subjective component as involving "feelings," which may not be easily described through language but involve a directing of attention to the other components such as changes in heart rate (LeDoux, 1996). This multisystemic structure serves an important purpose as it allows for the rapid, simultaneous coordination of many response systems in preparation for action. For instance, in fear, physiological changes are enacted to prepare the body for mobilization, subjective awareness directs attention toward threatening stimuli for appraisal of danger value, and behavioral patterns are enacted to thwart or escape possible harm (Cosmides & Tooby, 2000). In such instances, these multiple systems increase odds for survival through their synchronized responses. However, most emotionally eliciting events in our modern age do not require this level of mobilization. Indeed, a number of studies show loose coordination of these response

components in various instances of induced emotional experience (e.g., Bradley & Lang, 2000; Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005). For instance, many emotions experienced are not expressed or do not involve overt behavioral action such as sadness and grief, which are largely characterized by subjective elements. In addition, some emotional experiences do not reach full awareness and are largely experienced through physiological changes such as certain disgust reactions (e.g., rapid olfactory response to a noxious smell or one's "stomach turning" at the sight of a decaying animal).

The loose coordination of components in emotion has historically generated some disagreement about what are the core aspects of emotion. Most notably, there has been a struggle over whether emotions should be defined essentially by their physiological or subjective elements. On one side of this classic debate were those who argued that emotions are represented by physiological processes and that subjective elements represented our feelings or awareness of these processes (e.g., James, 1884; Lange, 1885/1912; Zajonc, 1980). In contrast, others have argued that physiological processes reflect generalized arousal and that subjective components are necessary to appraise events and to determine how physiological arousal represents emotion (e.g., Bard, 1928; Cannon, 1939; Lazarus, 1999). Modern affective science approaches largely support appraisal processes in all types of emotions (Clore & Ortony, 2000), but these appraisals need not be conscious evaluations. Indeed, it has also been found that many emotions often do occur and instigate a host of further responses without subjective awareness. A likely scenario is that there are multiple pathways to emotion generation, including those derived from automated, "hard-wired" or *lower order* systems (largely involving physiological responses and their subcortical control) and those derived from more controlled, *higher order* systems (largely involving subjective, cortical responses), both separate but interacting and mutually essential for differing aspects of emotional experience (Izard, 1993).

LeDoux provides neurobiological support for these two pathways of emotion generation (e.g., LeDoux, 1996). In a higher order route, sensory information is passed from the thalamus to the neocortex where contextualized meaning is assigned to the information in order to help determine the best course of action. A number of neuroimaging studies (for a review, see Davidson, Pizzagalli, Nitschke, & Putnam, 2002) have demonstrated that prefrontal areas of the neocortex, particularly the ventromedial region, are activated during emotion elicitation including the processing of positive emotions through activation of the left prefrontal cortex and processing of negative emotions through activation in the right prefrontal cortex. Indeed, depression is characterized by an asymmetrical pattern of left frontal hypoactivation and right frontal hyperactivation (Davidson et al., 2002). In contrast, within a lower order route, sensory information also passes through the thalamus but innervates the amygdala directly, bypassing cortical centers. This pathway provides early processing to signal emotional response, allowing a "quicker and dirtier" method to help organisms increase survival chances by providing a rapid detection of threat. This detection can then provide the peripheral nervous system with command to rapidly mobilize resources to emotionally relevant environmental stimuli. Evidence for emotional processing in this lower order pathway has been demonstrated in cortically ablated rodents (LeDoux, 1996), amygdala-damaged humans (e.g., Bechara et al., 1995), and neuroimaging and psychophysiological studies, which demonstrate emotional reactivity and learning without conscious awareness (e.g., Öhman, Flykt, & Lundqvist, 2000). In addition, positive or appetitive emotions such as interest may also be processed through automated, associational emotion pathways, although research implicates the basal ganglia more than the amygdala for rapid reward-related processing (Ochsner & Barrett, 2001).

Particularly in humans, these routes to emotional activation do not occur in isolation. A majority of emotionally eliciting stimuli (including both external and internal events) activate both pathways (Bechara, 2004). Indeed, there is a great deal of feedback between these systems (LeDoux, 1996). The amygdala has pathways to the neocortex, where emotional responses can be further elaborated and modulated. In addition, the neocortex also has fibers leading back to the amygdala, conveying relevant contextual information and meaning representation and providing feedback as to how emotional responses should be further processed in the amygdala, brain stem, and peripheral nervous system. For example, a loud noise may be enough to alert the amygdala to possible danger, but defensive reactions may

not be fully mobilized until the neocortex analyzes the location, frequency, and intensity of the noise to determine the nature and extent of the noxious noise. This feedback between systems is essential to the regulatory functions of emotions, which are reviewed in greater detail in the next section.

Emotions Are Both Regulated and Regulators

Regulating emotions to conform adaptively to a given context appears important to well-being (Salovey, Rothman, Detweiler, & Steward, 2000) and to the promotion of mental health (Kring & Werner, 2004). A number of definitions have been offered for the purpose and structure of emotion regulation (see Kopp & Neufeld, 2003, for a discussion of various definitions). Although focus has largely been on how emotions are regulated by other processes (Gross, 2002), there is growing recognition that emotions can also regulate other processes (Cole et al., 2004) and may be an integral part of how dynamic systems maintain stability through changing contexts (Bonanno, 2001; McEwen, 2003).

Regulation as Modulation of Emotion. A significant aspect of emotional experience is the manner in which we attempt to influence the experience and expression of emotions (Gross, 2002). This type of strategic, effortful control of one's emotions is probably the most common understanding of the term *emotion regulation*. Although emotions serve adaptive functions, their presence is not always functional. Indeed, emotions often occur because one has misattributed a situation or because one's responses are insensitive or inappropriate to a particular context (Gross, 2002). In these cases, emotions are not likely to lead to functional behavior, and managing emotional responses may be important in regulating and reorienting an individual to optimal functioning. Gross's (2002) process model of emotion regulatory strategies distinguishes between strategies that modulate emotion before (i.e., antecedent-focused strategies) versus after (i.e., response-focused strategies) an emotional response. Antecedent-focused strategies include, for example, selecting a situation, modifying an ongoing situation, directing one's attention toward or away from emotional stimuli, and changing the conditions of the situation itself (e.g., reappraising one's beliefs regarding a situation). Adaptive forms of response-focused strategies might include self-soothing (e.g., relaxation; see Borkovec, Alcaine, & Behar, 2004), emotional expression (Bonanno, 2001; Pennebaker, 1997), and laughter (Bonanno, 2001). However, the empirical research of Gross (2002) and Muraven and Baumeister (2000) has demonstrated that some response-focused strategies such as suppression (the active inhibition of ongoing emotion expressive behavior) tax cognitive resources and, paradoxically, increase physiological arousal, making suppression a potentially costly form of regulation.

Emotion regulation research has largely focused on the reduction of negative emotion, but accentuating negative emotions can be functional in certain situations (see Parrott, 2001, for a discussion). For example, a person may engage in "exploratory" emotion regulation wherein negative emotions are focused on to increase new skills or gain knowledge related to motivation and goal pursuit (Bonanno, 2001), as commonly occurs through journal writing and psychotherapy, which are both linked to greater mental and physical well-being (Pennebaker, 1997). Conversely, positive emotions, although often constructive, may need to be diminished in certain situations, such as when a person wants to reserve excitement about a possible new job until the offer is confirmed (Gross, 2002). Regulation may also involve negotiating a balance between positive and negative emotions such as in the coordination of promotion and prevention goals (Carver & Scheier, 1981; Higgins, 2006). For instance, this occurs when a person is excited about a new relationship but wants to "take things slowly" in order to manage the risk elements that are inherent in a novel, but highly valued situation.

Regulation as Facilitation by Emotion. Although much evidence describes how emotions negatively bias cognitive processes (for a review, see Mineka, Rafaeli, & Yovel, 2003), few studies have examined the conditions under which individuals benefit from emotional information. The ability of emotions to navigate cognitive processes reflects the architecture of survival (Cosmides & Tooby, 2000). For instance, shifting attention toward a threat, directing memory toward retrieval of past offenses, activating conceptual frames toward rapid activation of threatening meanings, and altering motivational systems from promotion of goals to protection of organism are all part of an adaptive fear system that can be enacted

rapidly. Although intense or inappropriate activation in these responses may indeed characterize maladaptive cognitive functioning (Barlow, 2002), there is growing recognition that emotions activated at low or moderate levels can be regulatory by facilitating cognitive activities in a number of situations beyond those that invoke survival needs (Bechara, 2004; Cacioppo, Gardner, & Bernston, 1999; Damasio, 1994).

Recent evidence supports the role of emotion as a regulator of cognitive processes such as facilitative directing of attention and perception, strengthening memory, and, particularly, guiding decision-making (Damasio, 1994). Through motivation, emotions can direct attention toward goal-relevant features in the environment and can facilitate their perceptual processing to increase the probability of goal attainment (e.g., Anderson & Phelps, 2001). For example, an athlete may draw from her motivation to win a sporting event to increase her ability to "eye the ball" or increase rapid awareness of her teammates' actions. In addition, a series of studies by Gray (2004) demonstrate that, whereas approach motivations elicited by positive emotions enhanced verbal working memory but impaired nonverbal or spatial working memory, the reverse pattern was found for aversive motivations elicited by negative emotions. Finally, the strongest evidence for the regulatory functions of emotions comes from research on judgment and decision-making (see Loewenstein, Weber, Hsee, & Welch, 2001, for a review). Initial affective responses to an object, a person, or an event can shape subsequent interpretations regarding the stimulus (e.g., using past emotional reactions in similar experiences to make rapid decisions in an uncertain situation; see Bargh & Williams, 2007). Several researchers have also provided neuroimaging, psychophysiological, and behavioral evidence suggesting that bodily responses (or their associational representations in memory) guide advantageous decision-making and behavior when information is ambiguous or risky (Bechara, 2004; Damasio, 1994). Associational learning initiated in these areas provides motivational and preferential information even without conscious influence or even when cognitive evaluations diverge.

Dynamic Systems Perspective. The regulatory functions of emotions do not derive from separate brain areas from those that generate emotions (Davidson, 1998). Rather, the neural connections that mediate communication between higher and lower order systems of emotion may function as feedback loops that regulate emotional response. Indeed, a growing body of research demonstrates that higher order and lower order systems interact during regulatory acts (e.g., Gray, 2004; Ochsner & Barrett, 2001; Phelps, 2006). For instance, reappraisal is associated with activation in higher order systems such as the lateral and orbital prefrontal cortices *and* with reciprocal inhibition of lower order systems such as the amygdala (Ochsner & Barrett, 2001). Also, somatovisceral feedback has been shown to activate ventromedial prefrontal cortices (Bechara, 2004). In addition, brain areas such as the anterior cingulate cortices may be involved in balancing emotional responses, including responding to conflicts that may occur between higher and lower order systems (Ochsner & Barrett, 2001). This evidence for bidirectional feedback between higher and lower order emotional systems may warrant a broader conceptualization of emotion regulation. Theorists have begun to view regulatory functions of emotion through the lens of homeostatic mechanisms (e.g., Bonanno, 2001) in which the overarching goal of self-regulation is maintenance of organismic equilibrium across environmental change. Thompson (1994) explains:

> Ideally, well-regulated emotional experiences are sufficiently intense to motivate a suitable, organized behavioral response (and to convey meaningful signals to others), occur promptly enough to affect elicitors of emotion, persist until the individual's goals are achieved, flexibly change in response to changing conditions, and rise and fall in intensity in a manner that permits a productive accommodation to changing situational demands. (p. 373)

The challenge of an emotional landscape, however, is that it is ever changing (Cole et al., 2004). In order for an emotional system to be effective, it needs to be flexible and responsive to changing environmental needs. Barrett and Gross (2001) suggest that functioning is a product of the ability to balance the need for behavioral stability and behavioral flexibility. Thus, an emotional system is most efficient and optimally regulated when it can maintain balance while being responsive to change (i.e., maintaining *allostasis*; McEwen, 2003). Such concepts

have been invoked to describe mental health in the clinical literature as well (e.g., "wise mind"; Linehan, 1993). If optimal emotion functioning involves a flexible regulatory system, disorder and dysfunction may represent perturbations to the ability to maintain balanced response systems in the face of changing contexts. Indeed, a number of investigators have begun to characterize emotional disturbances in adult psychopathology as rigid, contextually insensitive applications of regulatory processes, deficits in the ability to enact emotion regulation when contextually necessary, or a combination of both maladaptive strategies (e.g., Berenbaum et al., 2003; Cicchetti, Ackerman, & Izard, 1995; Kring & Werner, 2004; Mennin, Holaway, Fresco, Moore, & Heimberg, 2007).

EMOTIONS AND ADULT PSYCHOPATHOLOGY TREATMENTS

Over the past 20 years, a number of psychotherapeutic interventions have demonstrated considerable efficacy for treating adult psychopathology (Roth & Fonagy, 2004). Despite these significant advances, it has become increasingly clear that for complex, chronic, and refractory disorders, such as borderline personality disorder, complex PTSD, generalized anxiety disorder, and eating disorders, further intervention may be required to instill a lasting sense of change, functionality, and life satisfaction (Newman, 2000; Ruscio & Holohan, 2006). One avenue for addressing this complexity may be greater delineation of the role of emotions in adult psychopathology and its treatment. Emotions (both negative and positive) have emerged as superordinate factors to all the disorders, particularly anxiety and mood conditions (Brown, Chorpita, & Barlow, 1998; Watson et al., 1988). Furthermore, emotion deficits and dysregulation have been found to characterize a number of disorders (see Kring & Werner, 2004; Mennin et al., 2007). Understanding the role of emotions in functioning may aid in generating new targets for intervention, particularly for more treatment-resistant cases. Indeed, treatments have been developed which draw from basic affective sciences in order to improve existing approaches for personality disorders (e.g., Linehan, 1993), anxiety disorders (e.g., Huppert & Alley, 2004; Mennin, 2006; Moses & Barlow, 2006; Newman, Castonguay, Borkovec, & Molnar, 2004; Roemer & Orsillo, 2005), depression (e.g., Greenberg & Watson, 2005; Hayes & Feldman, 2004), and PTSD (e.g., Cloitre, Koenen, Cohen, & Han, 2002; Foa, Huppert, & Cahill, 2006; Paivio & Nieuwenhuis, 2001).

Developments within converging approaches suggest at least two ways affective science viewpoints could be integrated into treatment. First, skills training efforts, including both existing and newly developed approaches, can be seen within a framework that promotes "emotional intelligence" (e.g., Mayer & Salovey, 1997). Second, a functional emotions perspective can also be incorporated into broadened approaches to emotional processing and exposure. Both of these areas of integration are addressed herein through a discussion of how existing and newly developed interventions might be framed within a functional emotion perspective. Given the speculative nature of these suggestions and the infancy of the field of study, it is important to recognize that a great deal of research is necessary before any firm recommendations regarding the utility of these approaches can be offered.

Emotion-Related Skills Training

A number of interventions, particularly those from the behavioral and cognitive orientations, have highlighted the importance of strengthening skills related to coping with emotional responses in various adult psychopathologies, including PTSD (e.g., Cloitre et al., 2002), eating disorders (e.g., Fairburn, Cooper, & Shafran, 2003), and depression (Beck, Rush, Shaw, & Emery, 1979). Although not every skill component in cognitive and behavioral treatments is targeted directly at emotions (e.g., social skills training), many of the traditional skills offered by these therapies could be viewed as tools to encourage more effective experiencing and regulation of emotions. For instance, relaxation training and diaphragmatic breathing, common in treatments for generalized anxiety disorder (e.g., Borkovec et al., 2004) and panic disorder (e.g., Craske & Barlow, 2000), may be seen as tools to increase flexibility in muscular and somatovisceral responses and to regulate high levels of arousal enacted by contextually inappropriate emotions (see Roemer & Orsillo, 2005). Furthermore, acceptance- and mindfulness-based approaches both explicitly (e.g., Linehan, 1993; Roemer & Orsillo, 2005) and implicitly (e.g., Hayes et al., 1999; Segal et al., 2002) encourage skill building in patients' responses to their emotions by increasing flexibility in balancing

acceptance of strong emotional impulses with utilization of strategies that restore emotional quiescence. Process-experiential and brief affect-focused psychodynamic therapies do not explicitly focus on skill building. However, a number of the techniques used to increase emotional awareness, emotion identification, and emotional acceptance can be seen as encouraging the building of emotion-related skills through the therapeutic process (Fosha, 2000; Gendlin, 1996; Greenberg, 2002; McCullough et al., 2003).

Emotional characteristics of many forms of adult psychopathology may reflect inherent dispositional differences in the tendency to generate emotions, often referred to as "emotionality," "neuroticism," or "emotional intensity" (see Barlow, 2002; Clark, 2005; Mennin et al., 2007). However, the manner in which individuals respond to these generated emotions may be malleable. Indeed, emotion-related competencies, independent of the effects of dispositional emotionality, have been shown to be a vehicle through which children learn how to adapt to their changing circumstances (e.g., Eisenberg et al., 2001). Salovey, Mayer, and colleagues argue for the importance of a particular set of these competencies, which they term "emotional intelligence" (e.g., Mayer & Salovey, 1997). Emotional intelligence is represented by four sets of skills: (a) perceptual processing (awareness) of emotions; (b) understanding emotions and their motivational significance; (c) facilitating thought processes through emotions; and (d) reflective regulation of emotions. Accordingly, individuals who are able to be flexibly aware of emotional experiences, understand their meaning, utilize their informational value, and manage their experience in a context-appropriate manner would be expected to respond more effectively to life's demands. Indeed, a growing body of research supports this assertion and has demonstrated the independence of skills from emotionality per se (Brackett & Mayer, 2003). Accordingly, skill implementation within treatments for adult psychopathology may benefit from an emotional intelligence framework. Furthermore, various clinical approaches might also offer interventions that are congruent with this perspective and can be seen as encouraging skill building.

Promoting Intelligent Awareness of Emotions. The first component of the emotional intelligence model (e.g., Mayer & Salovey, 1997) involves the ability to notice emotional experiences in oneself as well as perceive emotional expressions in others. Most individuals are able to recognize emotions in themselves from cognitive representations of emotion, somatovisceral responses, and feedback from facial expression and in others from outward facial expressions, bodily movements, and vocal tone (Ekman & Davidson, 1994). However, a number of disorders are characterized by deficits in the ability to detect one's own emotions or correctly recognize emotions in the displays of others. For instance, depression has been associated with a weakened ability to identify facial features in others (e.g., Gur et al., 1992) and to respond differentially to negatively, positively, and neutrally valenced mood states, with the latter deficit predicting greater symptom severity or poorer functional outcomes six months later in a sample of depressed patients (see Rottenberg, Gross, & Gotlib, 2005). Similarly, individuals with a history of trauma (e.g., Pollak & Sinha, 2002) and borderline personality disorder (e.g., Donnegan et al., 2003) have been shown to misidentify neutral facial features as threatening or angry.

Clinically, a number of existing treatments encourage identification of emotional states and environmental cues. For instance, cognitive and behavioral therapies often ask clients to identify their emotions and associated intensity levels in and out (i.e., self-monitoring) of session. Monitoring of emotions can take a traditional, structured format, which is common in cognitive-behavioral approaches (e.g., Leahy, 2002), or more open-ended writing assignments (e.g., Pennebaker, 1997; Sloan, Marx, & Epstein, 2004). Within session, a number of techniques can be utilized to encourage greater awareness of bodily responses associated with emotions. Gendlin (1996), in his focusing-oriented psychotherapy, has stressed the importance of awareness of the immediate affective experience, especially as it relates to bodily sensations. Gendlin argues that the "felt sense" of bodily sensations provides individuals with an implicit knowledge of reactions to both internal and external events. In this treatment, individuals learn to identify sensations through a process of *focusing* in order to gain a better understanding of implicit meanings associated with often-experienced bodily responses. A similar approach utilized by mindfulness-based practitioners is a *body scan*, wherein individuals are encouraged to slowly

examine each part of their bodies from head to toe including imagining internal organ functioning in order to gain a broadened awareness of bodily responses (Kabat-Zinn, 1990). Awareness of emotions in others is encouraged by skills that dissect current interactions with important others through examination of social needs, how needs were expressed, and how clients negotiated the needs of others with their own within the situation. This type of careful analysis of emotionally guided interpersonal behavior is congruent with chain analysis in DBT (e.g., Linehan, 1993), functional assessment within functional analytic psychotherapy (another form of acceptance-based behavioral therapy; e.g., Kohlenberg et al., 2004), and interpersonally oriented therapies (e.g., Newman et al., 2004).

Increasing Comprehension of Emotions. In addition to noticing the presence of emotions, individuals may also be served by determining what their presence signifies. This skill set includes the ability to label emotional states, differentiate them, and grasp their motivational significance (Mayer & Salovey, 1997), which predicts active coping and positive attributions. For example, firefighter trainees who reported greater clarity of their emotions were more able to effectively manage a series of live-fire exercises (evidenced by clearer thinking and fewer instances of "blanking out") than those with lower levels of clarity (Gohm, Baumann, & Sniezek, 2001). Considerable evidence suggests that the converse of these abilities, including difficulty labeling, differentiating, and clarifying the motivational content of emotions, may also characterize adults with psychopathology, including those with depression (Mennin et al., 2007; Rude & McCarthy, 2003; Salovey et al., 2000), anxiety disorders (Mennin, Heimberg, Turk, & Fresco, 2005; Mennin et al., 2007; Parker, Taylor, Bagby, & Acklin, 1993; Turk, Heimberg, Luterek, Mennin, & Fresco, 2005), and substance use disorders (Haviland et al., 1994).

Comprehending one's emotions involves both labeling and differentiating emotions. Labeling emotions aids in the ability to draw meanings from emotions that elucidate choices for action (Lazarus, 1999). Differentiating emotions may increase one's ability to respond to emotional information in changing contexts. Using an experience sampling paradigm, Barrett, Gross, Conner, and Benvenuto (2001) found that individuals were more likely to regulate their intense emotional experiences effectively when they could label and differentiate their emotions. Clinically, emotion assessment aids in determining the adaptive value of different emotional responses (see Linehan, 1993; Suveg, Goodman, Southam-Gerow, & Kendall, 2007). In emotion-focused therapy, Greenberg (2002) distinguishes among types of emotion to determine core emotional reactions called *primary emotions* (i.e., initial action tendencies and their associated meanings for behavior), *secondary emotions* (i.e., problematic reactions to primary emotions), and *instrumental emotions* (i.e., expressions strategically evoked to gain a desired outcome). Within this approach, clinicians monitor affective reactions carefully to determine whether an emotion is primary and adaptive and, thus, should be facilitated and explored. Furthermore, clients engage in exercises to become more familiar with whether their emotional reactions are primary, secondary, or instrumental. Sadness may be primary when it results from a clear sense of loss such as when one allows her- or himself to feel the pain of a relationship loss. In contrast, secondary sadness may be expressed as hopelessness that results from a sense of anger or frustration at a situation such as the inability to find a romantic partner (Greenberg, 2002). Similarly, acceptance-based behavioral approaches (e.g., Hayes et al., 1999; Roemer & Orsillo, 2005) distinguish between *clean* or *clear* emotions and *dirty* or *muddied* emotions, which correspond closely to primary and secondary distinctions. Finally, affect-focused, brief psychodynamic therapists (Fosha, 2000; McCullough et al., 2003) distinguish between *activating* or *green-signal* (i.e., encourage engagement and approach) and *inhibiting* or *red-signal* (i.e., encourage defense and withdrawal) emotions, either of which can be adaptive or maladaptive depending on context.

Another aspect of emotion comprehension is the ability to use motivational information to elucidate decisions and goal-directed behavior. The ability to bring actions in line with motivations for promotion and prevention in different environmental contexts has been shown to influence judgment, decision-making, and task performance (see Higgins, 2006) and, thus, may be particularly relevant as a focus within treatment (Rodebaugh & Heimberg, in press). An understanding of one's motivational orientation and accompanying hedonic experience and the values that correspond to these

motivational orientations is integral to understanding how best to achieve one's valued goals. Furthermore, the ability to manage internal conflicts (e.g., excitement over a new relationship but fear that it may mean one may then be hurt) between motivational orientations may also be important to effective functioning. Process-experiential therapists have approached the importance of motivational factors by focusing on the inherent action tendencies within different emotional experiences (Greenberg & Watson, 2005). Different emotional experiences associated with personal conflicts are identified and explored to determine the informational value of each of the emotions that are invoked. For instance, the presence of sadness might invoke a sense of loss and motivations to obtain interpersonal connection; the presence of fear might suggest a need to protect oneself. Acceptance-based approaches such as ACT focus on increasing *valued action*, choosing purposeful direction in one's life, as opposed to setting goals, which is seen as counterproductive to realizing one's interests (Roemer & Orsillo, 2005; Wilson & Murrell, 2004). Exercises that target values identification utilize exploration of emotions through writing tasks to ascertain themes of importance (Roemer & Orsillo, 2005). Finally, exploring values and corresponding emotional reactions as they relate to willingness to engage in the process of change in therapy is a central aspect of motivational interviewing, which has been found to be helpful in encouraging chronic substance users to engage treatment (Miller & Rollnick, 2002).

Allowing Emotions to Facilitate Thought. The third skill set described by Mayer and Salovey (1997) involves the ability to use emotions effectively in cognitive processes. As discussed above, emotions may regulate processes such as attention, memory, problem solving, and decision-making. Although the ability for emotions to be facilitative is crucial to functioning, it is not easily harnessed directly through controlled processes. Rather, other skills may indirectly benefit the regulatory function of emotions by reducing possible hindrances such as attempts to control emotions. Increasing one's ability to allow and accept emotional responses may help promote the natural process of emotions to help regulate cognitive operations. However, overly controlled or constrained emotions may not be able to provide this form of adaptive feedback (Greenberg, 2002). For instance, subjective suppression of negative emotions has been associated with paradoxical increases in physiological responses toward less functional levels (see Gross, 2002). In addition, negative beliefs about the acceptability of emotions have been associated with greater emotional suppression and subsequent decreased perceived ability to regulate emotions (Campbell-Sills, Barlow, Brown, & Hofmann, 2006). Rather than allowing emotions to facilitate cognitive processes, some disorders of adulthood may be associated with poor responding to the presence of emotions including the generation of fearful thoughts, behavioral constraint, and cognitive avoidance. For instance, a great deal of evidence has demonstrated that anxiety sensitivity, which refers to beliefs regarding the harmfulness of fear- or anxiety-related sensations, is associated with a number of anxiety disorders, particularly panic disorder (Taylor, Koch, & McNally, 1992). Furthermore, a number of anxiety and mood disorders are characterized by negative beliefs about experiencing emotions (both negative and positive), which may suggest an inability to harness the functional capacities of emotions (e.g., Leahy, 2002; Mennin et al., 2005, 2007; Roemer & Orsillo, 2005; Turk et al., 2005; Williams, Chambless, & Ahrens, 1997).

Acceptance-based behavioral approaches provide a number of interventions that help build skills in emotional allowance and acceptance (e.g., Hayes et al., 1999; Roemer & Orsillo, 2005; Segal et al., 2002). Skills aimed at increasing mindfulness promote the allowance of emotions, which, in turn, facilitate thought processes without overwhelming them or being constrained in response to them (Bishop et al., 2004; Hayes & Feldman, 2004). The key element in these approaches is the allowance of the rise and passage of emotions without attempts to avoid or control this experience (Segal et al., 2002). Enhanced, nonjudgmental awareness of emotional responses may help not only reduce emotional reactivity but also increase receptiveness to information conveyed by emotion (Roemer & Orsillo, 2005). When one is "mindful," one may become able to step back, gain perspective, and permit feelings to emerge that can provide direction. If emotion responses impart motivational information, then increasing allowance of experience through an expanded, present-moment focus may enhance one's ability to detect and use early emotional

cues to guide actions, solve conflicts, and make important decisions. Similar to mindfulness approaches, accepting emotional experiences, rather than explicit facilitation of emotions, is the goal of ACT (Hayes et al., 1999). However, acceptance may indirectly promote more functional experiencing of emotions, which, in turn, can facilitate valued action. For instance, although not an explicit skill, metaphors, commonly used in ACT, can be internalized and become signals for clients to remember to bring awareness to how they are responding to internal events such as emotion. Furthermore, as one chooses not to avoid objects and events, new responses develop and can become cues to practicing an acceptance stance. For instance, whereas a dark street may have previously been associated with fear and uncertainty, one may use this environment as a signal to practice acceptance.

In process-experiential therapies such as emotion-focused therapy, emotions play a greater role in the promotion of acceptance (see Greenberg, 2002). Clients learn through continual engagement of enacted emotional experiences, distressing or otherwise, that emotions are not truths but, rather, are a means to provide information regarding one's values, judgments, and well-being (Greenberg, 2002). In this process, clients identify the motivational significance of different emotional experiences through imagery and focusing (Gendlin, 1996). By accepting and *exploring* emotions, clients gain an ability to be present with emotions and learn how to determine their functional utility in guiding actions. Becoming more comfortable with emotions and the motivational information they impart may also be automated, through repeated exposure, into a greater ability to utilize their felt sense more rapidly in facilitating cognitive processes such as decision-making (Damasio, 1994). In affect-focused, brief psychodynamic therapy (e.g., Fosha, 2000; McCullough & Andrews, 2001; McCullough et al., 2003), the capacity to allow and accept adaptive emotions is encouraged by identifying and decreasing characteristic defensive reactions that function to blunt emotional experience. For instance, in affect phobia treatment, McCullough and colleagues (McCullough & Andrews, 2001; McCullough et al., 2003) utilized an empathic and validating approach to identifying defensive behaviors to the client, such as avoiding eye contact, smiling when talking about a sad event, somatic preoccupations, or intellectualization, and inviting her or him, through systematic desensitization, to begin to engage emotions to help determine intrapersonal and interpersonal needs.

Modulating Emotional States. The fourth skill set in Mayer and Salovey's (1997) model of emotional intelligence is the ability to manage emotions. Effective emotional management has been linked to achievement and social successes in friendships, relationships, and novel situations (e.g., Lopes et al., 2004). In contrast, poor emotional management skills have been observed in individuals with anxiety disorders (Baker, Holloway, Thomas, Thomas, & Owens, 2004; Mennin et al., 2005, 2007; Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006; Turk et al., 2005), child abuse–related PTSD (Cloitre et al., 2002), depression (Flett, Blankstein, & Obertynski, 1996; Mennin et al., 2007), and borderline personality disorder (Yen, Zlotnick, & Costello, 2002; Zittel Conklin, Bradley, & Westen, 2006). Identified management problems have included difficulty in self-soothing, repairing negative moods, engaging in goal-directed behaviors when distressed, displaying impulse control, and ability to access effective regulation strategies. Studies have found poor emotion management to be associated with functional impairment beyond the effects of symptoms (Cloitre, Miranda, Stovall-McClough, & Han, 2005) and to mediate therapeutic alliance effects on successful exposure (Cloitre, Stovall-McClough, Miranda, & Chemtob, 2004).

There has been considerable debate over whether efforts to manage emotions are therapeutic or even possible. Classical cognitive therapy approaches place high value on the ability to control emotional responses, particularly through conscious thought (e.g., Beck et al., 1985). In contrast, acceptance-based behavioral approaches such as ACT do not involve the direct manipulation of emotional states since control efforts are seen as counter-therapeutic and ultimately futile (Hayes et al., 1999). A dynamic systems approach to emotion function and regulation would support the merit of both approaches. Given that many disorders are characterized by excessive emotional intensity (e.g., generalized anxiety disorder; Mennin et al., 2005, 2007) and information-processing biases (e.g., Mogg & Bradley, 2004), and others are characterized by anhedonia and emotional disengagement such as in depression (Watson et al., 1988), changing the course of emotional process may be important to proper

functioning in a context wherein prior responses were not serving the individual well (Moses & Barlow, 2006). However, the key factor may be flexibility. Some environmental contingencies (either external or internal) may be engaged best through allowance and acceptance of emotions (e.g., nervous anticipation of whether a biopsy is positive or negative), while others may call for more immediate efforts to effect change in the emotional process (e.g., focusing away from sad feelings after a breakup while in a board meeting). Indeed, ACT theorists have stated that efforts to manage emotions may not impede an acceptance stance if they are short term and not part of a habitual, experientially avoidant response system (Wilson & Murrell, 2004). Habitual efforts to control emotions are problematic as they do not reflect flexibility in emotional responses wherein one can increase, decrease, or allow emotions based on what is most functional to a given context. This conceptualization is also consistent with Linehan's (1993) dialectical approach to a "wise" mind, wherein mental health involves the optimal balance between accepting some emotional responses and orienting toward changing them when the need arises.

Numerous strategies can be enacted to modulate emotions in therapy. Efforts aimed at decreasing unpleasant emotions and increasing pleasant emotions are most common, but other configurations may have merit for certain situations. For instance, treatment for bipolar disorder may need to involve skills training in decreasing the goal orientation associated with intense positive emotional states (Johnson, 2005). Although further research will be necessary to determine when particular strategies are most effective, some strategies have demonstrated broad effectiveness in modulating emotions. For instance, the process of reappraisal (see Gross, 2002) involves examining the meanings one is attaching to a situation and reframing one's beliefs accordingly and is similar to reframing thoughts in cognitive therapies (e.g., Beck et al., 1985). However, as a strategy for modulating emotionality, reappraisal is considered to be most effective when it is deployed prior to the emotion-inducing situation (Barrett & Gross, 2001; Moses & Barlow, 2006). For example, whereas attempts to suppress one's expression of emotions has been found to decrease positive emotions and to have no effect on negative emotions, reappraisal has been found to decrease both behavioral and subjective elements of negative emotions (see Gross, 2002, for a review). Also important to reappraisal is the ability to evoke emotional elements when reframing thoughts such that the new meaning assigned to the situation occurs in association with activated emotion elements (including physiological responses and imagery; Greenberg, 2002; Samoilov & Goldfried, 2000).

Although interventions in the acceptance-based behavioral approaches chiefly encourage allowance of emotions, these techniques may also promote skills to indirectly modulate intense, reactive, and dysfunctional emotions. Mindfulness approaches may serve to decrease emotional states by promoting metacognitive skills, or cognitive distance from emotional experience, which can broaden attentional processes and counter the action tendencies associated with the narrowed focus inherent in threat-based emotions such as fear and anxiety. The nonjudgmental stance encouraged by mindfulness exercises may also help individuals gain perspective on a situation, which might have inherent negative emotion-reducing properties (Roemer & Orsillo, 2005). Indeed, there is building evidence for mindful self-focused attention, compared to rumination, to produce ameliorative effects in overgeneralized memory, a phenomenon commonly seen in depression (e.g., Watkins & Teasdale, 2004). Although, within ACT, clients are not encouraged to *require* that their emotional experience changes in order to do the things that matter to them, accepting responses toward one's emotions may in fact serve to modulate them (perhaps by minimizing "dirty" emotions; Hayes & Feldman, 2004). A number of studies have demonstrated that, like reappraisal, acceptance of emotions during an emotional challenge leads to greater decreases in anxious responding when compared to suppression (Campbell-Sills et al., 2006; Levitt, Brown, Orsillo, & Barlow, 2004). However, in contrast to reappraisal strategies, which involve changing content of thought, acceptance strategies focus on changing the *process* by which individuals relate to their emotions (i.e., cognitive defusion; Hayes et al., 1999).

Behavioral strategies can also encourage modulation of emotion. Distraction may reduce distress in disorders such as depression in the short term (Morrow & Nolen-Hoeksema, 1990) but may be detrimental over longer-term periods (Hunt, 1998). Behavioral activation

treatment (Jacobson, Martell, & Dimidjian, 2001) encourages greater awareness of environmental contingencies for reward and promotes action to engage in these contingencies. Behavioral exercises such as breathing retraining and progressive muscle relaxation can be used to increase bodily flexibility during intense emotional responses in reaction to automated, rigid somatovisceral responses that a client typically experiences when fearful, anxious, or tense (Roemer & Orsillo, 2005). In addition, aerobic exercise has been shown to increase physiological flexibility and promote the modification of action tendencies in a myriad of disorders (Stathopoulou, Powers, Berry, Smits, & Otto, 2006). DBT utilizes a number of emotion regulation strategies to modulate the labile emotional experiences of individuals with borderline personality disorder (Linehan, 1993). One strategy is to engage in *opposite action*, which involves assessing whether an emotion is functional in a given situation, examining cues that may exacerbate emotional responses, deliberately not engaging behavioral responses associated with context-specific maladaptive emotions, and replacing the responses with behavior that is counter to the action tendencies compelled by the emotion. For instance, positive emotional experiences may be used to widen one's attentional frame after prolonged exposure to negative emotions. A similar approach, *changing emotions with emotion*, is a core element within emotion-focused therapy (Greenberg, 2002; Greenberg & Watson, 2005), wherein clients learn to repeatedly access alternative, healthier emotions and their action tendencies through the experiencing of maladaptive emotions. The notion that emotions can be modulated through the engagement of other emotions is also integral to a recently developed unified behavioral treatment for all anxiety and mood disorders (Moses & Barlow, 2006).

Finally, expression of feelings to others, if the feelings reflect primary rather than instrumental emotion, has also demonstrated effectiveness in reducing dysfunctional levels of emotion (see Kennedy-Moore & Watson, 1999). DBT, as well as other approaches (e.g., Cloitre et al., 2002), utilizes interpersonal skills training to promote more effective emotional expression, as a means to address managing emotional needs. Furthermore, affect-focused, brief psychodynamic therapies (e.g., Fosha, 2000; McCullough et al., 2003) promote emotion modulation through a process of *dyadic affect regulation*, wherein the therapeutic relationship is utilized as a model for adaptive expression of needs. Clients learn to detect the differences between healthy and maladaptive forms of emotional expression, and how the former can be a more effective method for balancing emotional states. From these in-session experiences, clients are encouraged to apply this form of healthy emotional expression in their daily lives. Further study of these and other skills is necessary to determine the conditions under which skills training in flexible emotion modulation is an optimal treatment strategy.

Processing Emotions to Facilitate Meaning Transformation

Meaning transformation has historically been a central focus of change in therapy (e.g., Frankl, 1973; see Brewin & Power, 1999). Because emotion plays important roles in both function and dysfunction, it figures prominently in theories and clinical approaches that target the transformation of meaning (e.g., Greenberg, 2002). The role of emotion in meaning transformation has been accepted in many approaches under the larger term *emotional processing* (e.g., Rachman, 1980). Although different therapeutic orientations prescribe a number of techniques to target this important change process, emotional processing is widely believed to involve emotional activation coupled with integration of alternative emotional meaning (Whelton, 2004). Despite a historically broader focus on various emotions in the experiential tradition (Greenberg & Safran, 1987), the majority of emotion processing treatments have specifically focused on fear and its reduction (e.g., Foa & Kozak, 1986; but see Foa et al., 2006). Recent advances in affect sciences support a broader focus on various emotions and disorders beyond fear, as well as an expansion of the goal of emotional processing from the reduction of emotion to the creation of new personal meanings through facilitated attention to the motivational information conveyed through emotion. A number of frameworks for emotion processing distinguish between different sources of emotional information, which have been suggested to correspond to the higher and lower order emotion generative pathways delineated by affect scientists (Greenberg & Safran, 1987; Leventhal & Scherer, 1987; Teasdale, 1999b). Furthermore, these emotion processing models stress the importance of directing attention

to these different sources of emotional information in order to create meaning change related to various emotion experiences (e.g., Teasdale, 1999a). In addition, a number of interventions arising from different orientations promote wider experiencing of emotions, understanding informational value of evoked emotions, and the importance of emotional experiencing in creating new meanings associated with various forms of psychopathology.

Expanding Emotion Processing Theory. Lang's bioinformational theory (for a review, see Lang et al., 1998) provided an early and influential account of how emotions contribute to meaning formation through the activation of information in memory. Drawing on contemporary cognitive research on information processing, psychophysiology, and emotional memory (e.g., Bower, 1981), Lang viewed the action dispositions inherent in emotions as arising from the activation of information contained in associative memory networks. These networks contain stimulus (e.g., sensory and perceptual) and response (e.g., subjective, behavioral, and physiological) representations that are linked to each other via conceptual meaning representations. According to the theory, which originally was applied to fear and fear imagery, emotional networks differ from nonemotional networks in their representation of bodily response information (e.g., heart pounding) within the network (see Lang et al., 1998). Foa and Kozak's (1986) emotional processing theory extended bioinformational theory to address how emotional activation leads to emotional meaning change within the context of exposure therapy for pathological fear. They proposed that emotional processing involves activation of the fear network and modification of erroneous meaning associations through exposure to corrective information. In this theory, meaning is modified via the reduction of fear that occurs through repeated presentations of fear-eliciting stimuli, which correct erroneous associations in the fear network, turning them into more realistic associations that lead to less excessive fear.

Although emotion processing models and accompanying exposure-based treatments have made enormous strides in targeting pathological fear (see Foa et al., 2006), other emotions and emotional disturbances have received comparatively less attention within an emotional processing framework (but see Greenberg, 2002; Greenberg & Watson, 2005; Pos et al., 2003). In contrast to fear, emotions of greater complexity may be represented by a broader array of stimuli that nonetheless cohere around a theme, with some stimuli or contexts engendering a number of emotion component responses and others only activating one component or another. For instance, cognitive perseveration (e.g., worry) is a typical manner in which individuals with generalized anxiety disorder often engage their anxiety. However, the engagement of only a subjective aspect of their emotion may be problematic for being able to process anxiety and draw meaning from their experience (Borkovec et al., 2004) and has made exposure with these individuals difficult (see Borkovec & Ruscio, 2001). Similarly, Brewin and Power (1999) argue that for depression, which involves emotions such as sadness and grief, the most accessible source of emotional meanings within the therapeutic setting may be subjective elements such as cognitive appraisals and self statements (e.g., "I will always be alone"). In contrast, bodily responses such as the experience of a "pit in one's stomach" are not as easily enacted within session. The failure to activate numerous components of the emotional experience may promote maladaptive processing strategies such as perseveration and rumination within session, making exposure exercises counterproductive. For these emotions, meaning change might need to involve activation of a number of emotion components as they were originally encoded in order to engender lasting change. Despite the challenges inherent in applying emotion processing to a broader range of emotions and disorders, there is a growing body of evidence for targeting emotions beyond fear, such as anger and shame (which have been shown to impede exposure treatment; Foa & Jaycox, 1999), in cognitive-behavioral (Cloitre et al., 2002) and process-experiential (Paivio & Nieuwenhuis, 2001) treatments for complex PTSD, bereavement in treatment for complicated grief (see Shear, 2006), and various primary emotions in process-experiential treatment for depression (see Greenberg & Watson, 2005).

In order to explain the mechanisms involved in broadened emotional processing treatments, the theory supporting these interventions must be able to address greater complexity. Rachman (1995) has raised concerns over stretching the boundaries of the emotion processing construct beyond the point of utility. Indeed, the complex emotional presentations within these disorders may

not fit easily into existing emotion processing models. However, one possibility is that emotion processing models do have relevance in explaining meaning change in these more pervasive and distress-oriented disorders, but that it would involve a broadening of how we conceptualize the conditions in which emotions are typically encoded in both exteroceptive and interoceptive environments, how these experiences are typically represented in memory, and how this information is recalled within the therapeutic context. One approach for addressing the complexity of various emotional experiences is to highlight the importance of multiple pathways to emotion. Specifically, investigators have distinguished between explicit higher order conceptual processing, which involves primarily rule-based learning, and more rapid, associational processing, which involves classically conditioned learning (e.g., Power & Dalgleish, 1997; Teasdale, 1999a). These processing channels correspond closely to the higher and lower routes proposed by LeDoux (1996; see Philippot & Schaefer, 2001; Teasdale, 1999b). Greenberg and Safran (1987), drawing from Leventhal and Scherer's (1987) model, first argued for the importance of addressing multiple pathways to emotion within therapy. Since this time, clinical theorists from various orientations have drawn similar parallels regarding the importance of engaging multiple pathways involved in emotion generation (e.g., Bucci, 1997; Epstein, 1994; for a review, see Samoilov & Goldfried, 2000). Drawing from cognitive science approaches (e.g., Barnard & Teasdale, 1991; Smith & DeCoster, 2000), investigators have expanded on these assertions and have applied these models to a number of disorders, including PTSD (for a thorough review, see Dalgleish, 2004), depression (e.g., Power & Schmidt, 2004; Teasdale, 1999a, 1999b), and substance craving (May, Andrade, Panabokke, & Kavanagh, 2004).

These *multilevel models* of emotion processing stress the qualitative aspects of the information that is typically generated from higher and lower order emotional pathways and the manner in which they are retrieved (for a review, see Teasdale, 1999b). Several multilevel models (e.g., Leventhal & Scherer, 1987; Power & Dalgleish, 1997; Teasdale, 1999a) distinguish between *propositional* information, which is factual, semantic, and easily described through language, and *schematic* information, which conveys meaning that is holistic, abstract, and difficult to describe in words. Processing associated with these different kinds of information in memory is assumed to have different emotional and phenomenal consequences, an assumption that was not explicitly a part of the original emotional processing theory (Foa & Kozak, 1986). Information that is primarily propositional (or that draws attention to the propositional elements of a verbal stream) may evoke propositionally based meaning change (i.e., "cool" cognitive change) but not the schematically based meaning change (i.e., "hot" cognitive change) thought to be necessary for emotional processing (Greenberg & Safran, 1987). Given its dependence on the verbal medium, many kinds of therapy may encourage precisely this kind of dissociation. For example, a client with flight phobia can become utterly convinced, through rational intervention, that the probability of a crash is lower than fatality through a motor vehicle accident, that all airline pilots must log thousands of training hours before being certified to operate commercial flights, and that his or her belief in the opposite of these facts is highly erroneous; yet, that same client may still experience excessive and overwhelming fear upon the slightest bit of turbulence (Brewin & Power, 1999). The relevant database in this scenario—propositional in the former, schematic (set of sensory and propositional cues signaling danger) in the latter—differs across these situations, which may underlie the propositional/schematic dissociation described by multilevel theorists (see Samoilov & Goldfried, 2000).

Clinical Application of Broadened Perspective. Most important for a multilevel perspective view on meaning change in therapy is how one attends to different sources of information as they are retrieved. Teasdale (1999a) has highlighted different ways in which these sources of emotional information can be retrieved. He has outlined three *modes of mind* that are characterized by processing configurations involving differential allocation of attentional resources to propositional and schematic information. According to Teasdale (1999a), the optimal configuration of processing is *mindful experiencing/being*, a configuration in which schematic processing receives greater attentional resources than the propositional subsystem. Individuals in this mode are focally aware of thoughts, internal and external sensations, and potential holistic meanings this may convey. Another important mode of mind is *conceptualizing/*

doing in which propositional processing receives much greater attentional resources than schematic processing, and conscious awareness is predominantly focused on conceptual content and analysis (e.g., writing a paper, planning one's day, or solving a logical problem). Teasdale (1999a) called the third mode of mind *mindless emoting*, which occurs when neither propositional nor schematic processing receives much attentional resources, and which is associated with purely reactive, sensory-driven emoting without focal awareness of conceptual or schematic meanings. One's cognitive resources may correspond to any one of these modes at a given time and many switches among modes may occur throughout the day. However, clinical phenomena, such as excessive worry (as in generalized anxiety disorder) or emotionality (as in borderline personality disorder), may be characterized within this framework as rigid, interlocked processing patterns—particularly conceptualizing/doing or mindless emoting.

From a therapeutic standpoint, in order to effectively evoke numerous emotions as they would naturally occur, one must flexibly be able to attend to emotional information. Just as models of emotion processing of fear advocate exposure to incompatible information as part of fear reduction, an expanded perspective suggests that individuals whose cognitive processing is stuck in a "cold" propositional mode of mind (e.g., *conceptualizing/doing*) may benefit from learning to shift attentional resources to an incompatible processing mode (e.g., *mindful experiencing/being*) through "hot" schematic processing in order to facilitate beneficial meaning change (Greenberg & Safran, 1987; Teasdale, 1999a). Although emotions are often not productive at intense levels (e.g., fear during a panic attack), the ability to become comfortable with these experiences over repeated efforts aids in not only down-regulating these emotional responses to more functional levels but also in the ability to examine these experiences to determine their motivational relevance for one's values. In this regard, new meanings occur from the utilization of emotional information rather than its mere reduction. Indeed, modern learning theory suggests that exposure is effective, not because previously associated emotional meanings are unlearned or erased, but because new emotional meanings are strengthened (Bouton, 2002). The process of repeatedly engaging emotions, gaining knowledge regarding associated motivations, and deciding action based on the acceptance or alterations of the associated action tendencies may be central to meaning change in therapy (Moses & Barlow, 2006; Greenberg, 2002). Fundamental to a client's success in emotion processing interventions may be the ability to integrate one's emotional experiences into a coherent personal narrative (Mahoney, 1991). Indeed, Pennebaker (1997) has demonstrated that repeated confrontation within a narrative structure (e.g., writing about one's experiences) of emotional reactions regarding important personal events leads to meaning change and subsequent amelioration in mental and physical health outcomes.

A number of interventions from different approaches could be utilized to promote awareness of a broad range of emotions in service of meaning change. Mindfulness- and acceptance-based approaches encourage flexibility of emotional responses by promoting a mindful experiencing/being stance wherein a person is able to attend to sensory aspects of his or her emotions and schematic associations while allowing the presence of propositional processing, without being overridden by it. This quality of attention may set the occasion for deeper schematic meaning change and integration of emotion with one's goals and motivations. Imagery work is a central component of emotion processing approaches. In exposure treatment for PTSD, individuals learn to create new, more adaptive meanings associated with previously aversively associated stimuli (Foa & Jaycox, 1999). Similarly, imaginal exposure could be used for broader emotional meaning change. For instance, a woman who expresses concern about her ability to cope if something happened to her husband may need to imagine her life without him vividly to enact not only the propositional aspects of this anxiety but also schematic aspects. This broader application of imaginal exercises is utilized in a number of approaches in the cognitive-behavioral (i.e., *prolonged exposure*; Cloitre et al., 2002; Foa et al., 2006; Linehan, 1993), process-experiential (i.e., *systematic evocative unfolding*; Greenberg, 2002; Greenberg & Watson, 2005), and short term, emotion-focused, psychodynamic approaches (i.e., *portrayals*; Fosha, 2000; i.e., *affect exposure*; McCullough et al., 2003).

Finally, experiential exercises within process-experiential treatments are particularly well suited for exposing clients to various emotions including all corresponding

components (see Greenberg, 2002). These exercises may be helpful for disorders in which individuals have highly habitual patterns of attending only to one source of emotional information (e.g., propositional) through a conceptualizing/doing mode of mind. In these exercises, meaning making is encouraged through a constructive process of attending to emotional information, particularly schematic information, as well as explicitly focusing on associated bodily cues. Within this approach, emotion evocation techniques are utilized, such as "chair dialogues," in which the client actively engages conflicts with representations of significant others (i.e., "empty chair technique") or conflicts between two opposing needs (i.e., "two-chair dialogue"). Experiential exercises may also draw directly from the context of the ongoing therapeutic alliance (see Fosha, 2000; Newman et al., 2004; Safran & Muran, 2000). In this approach, the therapist can use the alliance to monitor his or her own emotional reactions to the client and reflect back these responses to the client in order to increase the client's understanding of how patterns of behavior may be reinforced in a given context.

CONCLUSIONS

Advances in the basic affective sciences have catalyzed clinical approaches to more centrally address emotion factors in the treatment of adult psychopathology. Specifically, an affect science perspective stresses a number of emotion characteristics that are relevant for adult psychopathology and its treatment. First, emotional responses have developed for the purpose of maximal survival adaptation but can also be recruited to serve societal functions. Although not always productive, emotions are signals for both approach and avoidance motivations. Second, emotions are defined by multiple interacting systems that serve different purposes, including "higher order" pathways that process emotional stimuli through reflective processes meant to ascribe contextual meaning to these responses and "lower order" systems that rapidly process stimuli for action based on past response associations. Third, these different systems provide feedback to each other. This feedback involves both regulation of emotion by other processes (such as attention) as well as regulation of these other processes *by* emotion. This perspective on regulation argues that these dynamic systems involved in emotions are most functional when they encourage stability but also allow for flexibility in response to changing environmental contexts (i.e., allostasis). Cognitive-behavioral, psychodynamic, and experiential orientations have advanced beyond their historical constraints with new interventions that draw from these basic affective science theories and investigations. This convergence of approaches may have particular relevance for broadening treatments of adult psychopathology within two domains, including (a) skill building to strengthen emotional abilities, including perceiving emotions in self and others, comprehending emotional information, allowance of emotions to facilitate thought processes, and modulation of emotions according to contextual demands; and (b) an expanded approach to emotion processing in which a number of interventions can be used to encourage flexible processing of emotions, utilization of their informational value, and understanding of the contexts in which they arise for the purpose of promoting lasting meaning change within the psychotherapeutic process.

Although incorporation of an emotion-based perspective into treatments for adult psychopathology may show promise, it is critical to acknowledge the limitations and challenges that this movement will likely face in application. First, it will be important to determine how certain emotions and their inherent functions are more relevant to one disorder versus another. A research focus on the functions of emotion in psychopathology may also suggest common treatment approaches to seemingly disparate disorders (Moses & Barlow, 2006). Second, the construct validity of many of these ideas has not been established, although efforts are already underway (e.g., Bishop et al., 2004; Hayes & Feldman, 2004). Future research in this area must continue to operationalize these constructs as well as examine their convergent and discriminant validity with older constructs already in use. Third, it will be important to determine whether (a) these new treatments have incremental efficacy for refractory disorders compared to existing treatments, and (b) emotion factors are central mechanisms in this change. Finally, given the complexity inherent in integrating approaches, striving for parsimony will be an important challenge to address in future research. Incremental, empirical research and scientific consensus will be the ultimate arbiters of the ideas we have reviewed above, but we are optimistic that clinical researchers and

practitioners will adapt to the challenges and promises posed by examining old and new clinical phenomena through the lens of emotion.

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