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HOW PSYCHIATRIC TREATMENTS CAN ENHANCE PSYCHOLOGICAL DEFENSE MECHANISMS

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Psychological defense mechanisms are a powerful and often unappreciated force safeguarding mental health. Although rarely directed in this way, the most common forms of psychiatric treatment—psychotherapy and antidepressants—can enhance psychological defense mechanisms. Psychotherapy, through both specific and nonspecific factors, induces positive perspective shifts favoring positive cognitive distortions, including adaptive classical defense mechanisms and healthy attribution biases. Antidepressants, by altering very basic emotional information processing, such as facial expression recognition and emotional memories, also foster positive cognitive distortions. By shifting perceptions and thoughts in a positive direction, psychotherapy and antidepressants improve the capacity to dissociate from negative emotional stimuli.

KEY WORDS: defense mechanisms; psychotherapy; antidepressants; dissociation; cognitive distortions.

INTRODUCTION

Major psychiatric treatments, namely, antidepressants and psychotherapy, likely produce results through several pathways, some unique to antidepressants and psychotherapy, and others shared, with a potential shared pathway consisting of enhanced psychological defense mechanisms. Frequently thought of as just protecting conscious system functioning from intolerable unconscious input, defense mechanisms actually play a much greater role in mental health as a moderator of negative emotions (Bowins, 2004; Ross, Joshi, & Currie, 1990; Vaillant, 1977, 1994).

Emotions represent brief responses to external or internal events lasting seconds to minutes, whereas mood states can last hours or days (Lazarus, 1991). Given that valued resources are limited and competition is typically intense, such as for high-paying and safe jobs, we cannot always win and frequently perceive and/or experience threats, losses, and violations.

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Psychological defense mechanisms help us cope and adapt to ongoing emotional challenges by modifying our perception of experiences, so that negative emotions are minimized and/or detached from and positive emotions are maximized (Bowins, 2004; Ross, Joshi, & Currie, 1990; Vaillant, 1977, 1994). Without these defense mechanisms we would be as vulnerable to negative emotional input as a person without an immune system would be to pathogens. Negative emotions would be more likely to coalesce into negative mood states, in turn triggering depression and anxiety disorders.

WHY WE NEED PSYCHOLOGICAL DEFENSE MECHANISMS

Negative emotions frequently represent a major source of psychological stress. Despite this unpleasant aspect, negative emotions motivate generally adaptive responses to particular types of psychological situations (Clore & Ortony, 2000). If we accept that that there is an adaptive value to negative emotions, why is it that they can be so stressful? If negative emotions were to be experienced strictly in response to negative circumstances and those circumstances corrected by actions motivated by the emotion, psychological stress would be minimal. Unfortunately, life is rarely ideal and several factors influence how intensely and frequently emotions such as sadness and anxiety are experienced. While there is debate regarding whether or not this process applies to every instance, research strongly suggests that some form of conscious or unconscious cognitive activating appraisal is involved in the vast majority of, or even all, emotional responses (Clore & Ortony, 2000; Lazarus, 1984, 1991).

Primary emotions are those every person with intact cognitive functioning expresses, typically from a very early age—happiness, sadness, fear, anger, surprise, disgust, interest, and probably shame (Ekman, 1972, 1994; Ekman & Friesen, 1971; Izard, 1977; Tomkins, 1962, 1963). Research in preliterate cultures having limited contact with the larger world, thereby minimizing the possibility of acquisition through learning, demonstrates the universality of several emotions. Focusing on an isolated New Guinea society, Ekman and Friesen (1971) gave male and female adults and children three photographs at once, each containing facial expressions of either happiness, sadness, anger, disgust, surprise, or fear, and told them a story that involved one emotion. Subjects were able to match stories to facial expressions for the six emotions beyond that predicted by chance. The researchers went one step further and had nine New Guineans show how their face would appear if they were the person in the story. The unedited videotapes were shown to college students in the United States. Except for the poses of fear and surprise, which the New Guineans had difficulty with, the students accurately recognized the

displayed emotion (Ekman, 1972). Supporting the work of Ekman and colleagues, Boucher and Carlson (1980) studied Malaysian aboriginals and found that the same six emotions were recognized in facial expressions at an above-average frequency.

In contrast to universal primary emotions, which are largely genetically based, secondary emotions appear to be acquired through cultural and individual learning. There are at least a couple of potential explanations for these secondary emotions including the color mixing perspective (Izard, 1992). This perspective holds that secondary emotions arise from combinations of basic ones. Certainly in the case of some, such as contempt, there does appear to be a combination of emotions playing a role. Research indicates that contempt arises from anger and disgust (Izard, 1994). Another perspective on secondary emotions involves the concept that there are different versions of the one basic emotion representing points on a continuum or modifications of the principle emotion. For example, irritable and annoyed states might be seen as different points on the anger continuum (Izard, 1994).

For at least primary emotions there is a so-called deep structure reflected in the content of the cognitive activating appraisals (Clore & Ortony, 2000). These deep structures do not seem to be influenced by culture, as evidenced by research demonstrating that members of one culture can accurately identify primary emotions from antecedent conditions provided by members of a completely different culture (Boucher & Brandt, 1981). When conscious or unconscious cognitive appraisal processes detect the deep structure characterizing a given emotion, the feeling state pertaining to the emotion arises (Clore & Ortony, 2000). This feeling state provides motivation consistent with the emotion and the psychological situation that contributed to the emotional response. The deep structure to sadness and depression is loss (Beck, 1991; Eley & Stevenson, 2000; Finlay-Jones & Brown, 1981; Konner, 1982; Shrout et al., 1989). For fear and anxiety the deep structure is threat or danger (Eley & Stevenson, 2000; Finlay-Jones & Brown, 1981; Mathews & Klug, 1993; Rapee 1997; Shaver, Schwartz, Kirson, & O'Connor, 1987). For anger the deep structure appears to be violation or damage (Rozin, Lowery, Imada, & Haidt, 1999; Shaver et al., 1987; Vrana, 1993; Whitesell & Harter, 1996). Disgust is indicative of some form of contamination, whether it be physical or moral (Rozin & Fallon, 1987; Rozin, Haidt, & McCauley, 2000; Rozin, Lowery, & Ebert, 1994; Vrana, 1993). The deep structure for shame is likely commission of a significant moral transgression (Keltner & Buswell, 1997). Surprise indicates the sudden presence of an unexpected occurrence, either positive or negative (Izard, 1991; Tomkins, 1972). For happiness the corresponding deep structure is gain or success (Beck,

1991; Shaver et al., 1987). The deep structure for interest is probably the detection of something offering the potential for reward (Izard, 1991).

Evolutionary selection pressures likely established which emotions are primary, based on the adaptive value of detecting and responding to the circumstances characterizing the corresponding deep structures. Selection pressures for the primary emotions include the following (Eley & Stevenson, 2000; Izard, 1991; Keltner & Buswell, 1997; Konner, 1982; Rapee, 1997; Rozin & Fallon, 1987; Rozin et al., 1994; Shaver et al., 1987; Tomkins, 1972; Vrana, 1993).

Sadness:	The ability to notice dwindling key resources, such as food, and act to correct the problem would enhance survival.
Fear and anxiety:	Detecting and reacting to threats with flight, freezing, or attacking was crucial.
Anger:	Violating and damaging actions arising from others depleted resources and had to be opposed.
Disgust:	Inability to rapidly identify and withdraw from contaminated foodstuffs would have resulted in early death.
Shame:	Responding to social transgressions maintained membership in social grouping, essential for survival and reproduction throughout hominoid evolution.
Surprise:	Having the capacity to register any unusual change positive or negative likely influenced success: in the case of positive changes, by being able to take advantage of an opportunity, and in the case of negative changes, by withdrawing.
Happiness:	Occurring with some form of gain, it might well have motivated efforts to build on the success, such as by remaining where shelter and food were plentiful.
Interest:	The capacity to detect and approach a promising resource would have enhanced fitness.

Returning to the question of why negative emotions can be so psychologically stressful when they have an adaptive value, a quick glance at the list above reveals that of the eight possible primary emotions, five are generally negative in feeling tone, one (surprise) is either positive or negative, and only two—happiness and interest—are clearly positive in feeling tone. Based on numbers alone it would seem that we are more likely to

experience negative than positive primary emotions. Given that secondary emotions are based on either combinations of primary emotions or modifications of one, the likelihood of experiencing negative secondary emotions is also greater. When combinations of primary emotions are considered, the five negative ones can combine in configurations of two or three to produce a complex array of secondary negative emotions. Assuming that there are approximately the same number of modifications that can be made to each of the five negative and two primary emotions, this pathway to secondary emotion formation will also yield more negative emotions.

Beyond the sheer quantity of emotions that can arise, we have an innate tendency to perceive the negative over the positive, as demonstrated by what the news media prefers to cover—bad news sells. Evolution has equipped us with the motivation to perceive negative over positive stimuli, for the simple reason that negative circumstances typically have greater survival implications (Ledoux, 1994). For example, failure to detect a lion approaching is much more likely to impact on the survival of yourself or your children than is failure to detect one potential food source. While it is important that we attend to negative emotional stimuli, the real issue is how fast we shift off or dissociate from the negative stimulus once it is assessed to be nonthreatening. Much of the emotional stress we experience results from fixating on negative emotional stimuli and excessive thinking related to this fixation. In the case of actual depression and anxiety disorders there is a tendency to adhere to negative perceptions fostering increasingly negative thinking, exemplified by the distressing ruminations of depression and worry of anxiety. Ruminations and worry highlight a key evolutionary force adding to the psychological stress experienced from negative emotions—intelligence.

The evolution of human intelligence is a double-edged sword. On the one hand, it has made it possible for us to manage and even master the environment through technology such as tool development, evolve into a top predator as more intelligence is required for hunting than grazing, and function well in the social groupings required for survival (Calvin, 1994; Morwood, Sutikna, & Roberts, 2005). On the other hand, intelligence greatly amplifies emotions by making the underlying cognitive activating appraisals more intensive and extensive and, also, by adding a temporal dimension (Bowins, 2004). Intensification is exemplified by thinking about the various consequences of a negative event. For example, your partner ends the romance and you think about how you will miss seeing movies together, taking walks in the park, or sharing your favorite wines. The extensive aspect involves thoughts that extend the impact beyond the matter at hand. For example, I am not worthy of another romance, at least not with anyone I want to be with, and might not even be able to make new friends.

Intelligence adds a temporal dimension via repetitions and elaborations of the cognitive activating appraisals over time. Instead of simply experiencing a negative event in the moment, as most animals likely do, it is common for people to think about it over days, months, and even years, thereby continually reactivating and reconfiguring the cognitive activating appraisals responsible for the given emotion. For example, a stern warning from a supervisor might be processed all the way until the next performance evaluation. Emotional responses arising from such thoughts often facilitate further negative thinking. For example, cognitive activating appraisals identifying losses produce sadness, inducing an emotional climate conducive to further loss-oriented appraisals, these thoughts in turn intensifying sadness, and so on and so forth (Beck, 1991). Likewise, persistent anxiety can generate an emotional climate that is conducive to the perception of threats (Beck & Clark, 1997). This has been termed ex consequentia reasoning, referring to the process by which a person deduces a threat from the fact of feeling anxious (Rachman, 1998).

Ongoing thoughts and emotional responses are often in effect mutually reinforcing. Beck (1976) has described this as a vicious cycle of negative thoughts and negative affective states. Depression and anxiety disorders are frequently maintained by this type of mutually reinforcing interaction, exemplified by the ruminations of depression and worry of anxiety. As the mutually reinforcing interaction grows, cognitions become increasingly distorted in a negative direction. Beck (1991) believes that with depression one's normal and healthy cognitive positivity bias is neutralized and replaced by a negative bias. This negative bias emphasizes loss events pertaining to the self, the world, and the future: the so-called negative cognitive triad (Beck, 1991).

Recovery from depression and anxiety is facilitated by a cessation of mutually reinforcing interactions between negative thoughts and the negative emotions of sadness/depression and fear/anxiety. Cognitive activating appraisals are less focused on potential and actual sources of loss and threat, and are more focused on the positive aspect of any given experience. For example, driving along a country road in winter a person who is both depressed and anxious is likely to focus on the absence of leafs on the trees and the foreboding gray sky, whereas someone who has recovered might take note of how beautiful snow-draped evergreen trees look and the smooth, clean appearance of fields covered in snow. This positive shift in outlook favors emotions such as interest, happiness, and hope inconsistent with sadness/depression and fear/anxiety. It is more comfortable living in the moment due to the positive thoughts and feelings that dominate.

PSYCHOLOGICAL DEFENSE MECHANISMS

Given the amplifying role of intelligence the philosophical axiom ''I think therefore I am'' might be rephrased ''I think therefore I feel'' or even ''I think therefore I feel bad.'' Certainly this is the case when we combine the greater number of negative primary and likely secondary emotions, the tendency to perceive negative over positive emotional stimuli, and the emotion-amplifying effect of human intelligence. Of course, the amplification effect also accentuates positive feelings but for many this is not enough to stem the tide of negative emotions. Fortunately, nature has equipped us with an impressive array of defense mechanisms, designed to attenuate negative emotions in circumstances of varying intensity and form and to protect conscious system functioning (Bowins, 2004; Vaillant, 1977, 1994).

Traditionally, defense mechanisms have been classified according to level of maturity—mature, intermediate/neurotic, and immature—based on the adaptive value of the defense and stage in life when it is most likely to be expressed (Vaillant, 1977). For example, mature defenses are more adaptive and also more likely to be expressed in adults. Recently, I proposed a taxonomy whereby a much broader range of defense mechanisms is grouped into two overlapping templates, cognitive distortions and dissociation, both representing spectra from mild to intense (Bowins, 2004). Mild to moderate versions are highly adaptive and expressed by virtually everyone, while more intense variants are almost exclusively focused on in clinical settings and are usually less adaptive, although in significantly stressful circumstances they can be very adaptive, at least with brief activations.

Cognitive distortions essentially place a positive self-enhancing spin on experience. Extremely common versions take the form of putting a sugar coating on events, seeing the world through rose-colored glasses, and spinning the interpretation of experiences to favor oneself. Whenever the linkage between behavior and outcome is not entirely clear, we naturally tend to cognitively distort experiences in a manner that is positive to the self (Alloy & Abramson, 1979; Beck & Clark, 1997; Lewinsohn, Mischel, Chaplin, & Barten, 1980; Taylor & Brown, 1988; Vaillant, 1994). For most occurrences there are not clear response–outcome links, such as kicking a chair and the chair falling over. Indeed, the vast majority of social scenarios and life choice events are anything but straightforward. For example, you and your partner argued this morning. Many factors can usually be brought into the interpretation, and to defend against negative emotions a self-enhancing spin is common, for example, she is premenstrual; but would she be likely to have the same interpretation?

When people become depressed or anxious this positive self-enhancing spin becomes neutralized and shifts to a negative self-defacing spin (Beck, 1991). While the psychologically more defended individual views the argument with his partner as largely due to her being premenstrual, a depressed person is going to see himself as the cause. For example, I'm such a bad partner. Not surprisingly, those with mild to moderate depression tend to perceive reality more realistically—depressive realism (Alloy & Abramson, 1979; Lewinsohn et al., 1980). Other than for relatively rare straightforward response–outcome contingencies, absolute reality is elusive and the interpretation is subject to many factors including the influence of defense mechanisms. Attribution bias in a positive self-enhancing fashion characterizes good mental health (Alloy & Abramson, 1979). The reason I did poorly on this test was because the professor made the questions too picky; the reason I got an A was because I know the material well. A depressive attribution bias is the opposite—attributing success to external and unstable factors such as luck, and losses to your own deficiencies (Cohen et al., 1989: Luten, Ralph, & Mineka, 1997).

Classical defense mechanisms, such as projection, rationalization, and sublimation, represent a hierarchy from least to most mature instead of discrete categories of immature, intermediate/neurotic, and mature (Trijsburg, Spijker, Van, Hesselink, & Duivenvoorden, 2000). Examining the classical defense mechanisms from a cognitive distortion perspective, there is an inverse relationship between the maturity of a defense and the degree of cognitive distortion (Bowins, 2004). Immature defenses entail extensive cognitive distortions; intermediate defenses, more moderate distortions; and mature defenses, minor cognitive distortions. For example, the immature defense of autistic fantasy is very extreme in the degree of cognitive distortion characterizing it, whereas humor only represents an attenuation of unwelcome reality, as do the other mature defense mechanisms. Psychologically healthier people routinely engage in more minor cognitive distortions, as in using humorous perspectives to ease tension.

Under conditions of moderate stress, moderate cognitive distortions are adaptive. For example, when things are going poorly in life, such as when one is fired and dumped by one's partner at around the same time, rationalizing these events does help. Even the extreme cognitive distortions characterizing immature defense mechanisms can serve an important function during times of intense stress. For example, during phases of severe emotional destabilization there is a definite self-preservation aspect for someone with a personality disorder to project unwanted negative emotions, such as anger, onto other people, seeing them as the disturbed ones. The stress–distortion linkage can be conceptualized as follows: the greater the internally or externally generated stress, the more extensive

the cognitive distortion to compensate. Low stress only requires the milder cognitive distortions inherent in mature defenses, significant stress necessitates the distortions present in intermediate/neurotic type defenses, and extreme stress often requires at least a brief activation of the so-called immature defenses to provide a sufficient compensatory cognitive distortion (Bowins, 2004).

Dissociation, the other major defensive template, also occurs in a spectrum from mild to intense, the latter type virtually the only focus of clinicians, resulting in many concluding that dissociation equals dysfunction. However, mild to moderate forms of dissociation are extremely common and highly adaptive (Kihlstrom, Glisky, & Angiulo, 1994; Ross, Joshi, & Currie, 1990; Ross et al., 1991). For example, feeling emotionally numb or detached during a stressful event, such as treating a serious injury, enables a person to maintain a reasonable level of composure and performance. Absorption, with or without imaginative involvement, is another very common form of dissociation (Ross et al., 1991). Absorption consists of shifting attention away from a disturbing focus to a more pleasing external or internal focus and becoming absorbed in it. With imaginative involvement the pleasing and distracting aspects of the new focus are enhanced. Absorption and imaginative involvement include the common experiences of highway hypnosis, missing part of a conversation, absorption in a television program or some reading material, staring into space, talking to oneself when alone, and not being sure whether one has done something or only thought about it. Well over 50% of people experience each of these forms of absorption and imaginative involvement, and 30% experience them 30% of the time or more! Everyone reading this can recall drifting off during some boring presentation. When bored, tired, or stressed in some other way, tuning out and immersing oneself in a pleasing focus helps protect psychological health.

More intense degrees of dissociation include depersonalization and derealization, both involving a disconnection with some aspect of experience, one's own identity in the former and the surrounding environment with the latter. These experiences include feeling that other objects and people do not seem real, looking at the world through a fog, and not recognizing one's reflection in a mirror. Approximately, a quarter of people report each of these experiences, and 46% of college students have been found to experience depersonalization (Ross et al., 1991; Simeon et al., 1997). Amnesia is yet a more extreme form of dissociation and includes experiences like finding oneself in a place but being unaware of how one got there, finding unfamiliar things in one's belongings, not recognizing friends or family, and experiencing alcohol-induced blackouts. Up to

20% of people experience each of these forms of amnesia (Ross et al., 1991).

The most extensive form of dissociation is identity fragmentation, where personality fragments into different components. Although Dissociative Identity Disorder is quite rare, the substrate appears to be widely distributed in the population, based on 12% of people saying that they have felt almost as if they were two people more than 30% of the time (Ross et al., 1991). In response to severe early life trauma that always seems to be associated with this condition, fragmentation into various alter states takes place. Some of these alter states deal with the abuse and contain the pain, while others are protected from the abuse. Years after the trauma has passed there is usually minimal adaptive value in maintaining such an extensive form of dissociation, but it has become ingrained given its adaptive function earlier in life.

A case example will illustrate how such severe dissociation can be highly adaptive. A middle-aged female patient referred to here as Cathy was diagnosed with Dissociative Identity Disorder. Cathy was neglected by both parents as a child, physically and verbally abused by her mother, and sexually abused by her father later on. The oldest brother was forced into the role of primary caregiver for Cathy and her sisters. He beat them daily and would only forgo the daily beating if the given sister made money for him: a powerful negative reinforcement system. All of the sisters, except Cathy, developed severe alcohol/drug abuse problems and were largely dysfunctional, two of them eventually succumbing to hepatic complications. Cathy was the only one to have developed a dissociative disorder and the only one to avoid alcohol/drug abuse problems. A young girl alter took all the abuse and remained silent, while several other alters fulfilled important roles, such as organizing and cleaning. Cathy functioned well in secretarial jobs, with the specialized alters managing tasks, married, and had a child. From this case example, the adaptive value of severe dissociation is evident, even when later effects are not always so positive. For the most part, defense mechanisms are responses in the moment, and short-term gains win out over long-term problems.

The more extensive forms of dissociation and cognitive distortions defend against severe emotional stress that otherwise would severely disrupt psychological functioning. When briefly activated, immature classical defenses and extensive dissociative experiences such as depersonalization, derealization, amnesia, and even identity fragmentation can safeguard emotional and psychological functioning (Bowins, 2004). Milder variants of these two defensive templates are commonly expressed and indicate good psychological health (Kihlstrom et al., 1994; Ross et al., 1990, 1991; Vaillant, 1977). Given the importance of psychological defense

mechanisms to good mental health, the question arises: Do psychiatric treatments, namely, psychotherapy and antidepressants, produce therapeutic benefits by inadvertently augmenting defense mechanisms? Relatively few therapists actually focus on modifying defences directly, but medication and psychotherapeutic treatments might well have some impact on defense mechanisms, thereby generating a common mode of action.

ANTIDEPRESSANTS AND PSYCHOLOGICAL DEFENSE MECHANISMS

Antidepressants appear to exert a subtle yet profound influence on emotional information processing. In this regard research has shown that a single dose of a noradrenergic antidepressant—reboxetine—facilitates the processing of positive emotional information (Harmer, Hill, Taylor, Cowin, & Goodwin, 2003). These researchers assessed the processing of emotional information in 24 healthy volunteers who were randomly assigned in a double-blind fashion to receive either reboxetine or placebo. Three aspects of emotional information processing were tested—facial expression recognition, emotional categorization, and emotional memory. Facial expression recognition was assessed by having subjects respond to 500-msec presentations of faces showing anger, disgust, fear, happiness, and sadness. The reboxetine group recognized happy facial expressions significantly more often than did the placebo group, particularly at lower intensities of expression. There were no differences in the recognition of the four negative emotions.

Emotional categorization involved subjects assigning 60 personality traits to likable and unlikable categories as quickly and accurately as possible. The reboxetine group showed a greater difference in the times for their responses to positive descriptors versus negative descriptors than did the placebo group, with faster processing of the positive descriptors. Emotional memory was assessed by a surprise test of recall of the personality traits in the emotional categorization test. The placebo group remembered fewer positive descriptors than negative descriptors, in contrast to the reboxetine group, which did not demonstrate this negative bias.

It is conceivable that these results arose from a more general influence of reboxetine on information processing. To evaluate this possibility the researchers had subjects perform a digit sequence recognition task and discovered that the processing of nonemotional information was not affected by reboxetine. Given that changes in emotional information processing occur after a single dose of an antidepressant, the researchers suggest that differences in the processing of external cues such as positive social stimuli and internal cues like positive memories may occur early in

the course of antidepressant treatment, much before the 2 weeks that is frequently said to be required for these medications to induce an improvement (Harmer, Hill, et al., 2003).

Much like with reboxetine, selective serotonin reuptake inhibitors (SSRIs) have been found to favor the recognition of happy facial expressions, indicating that they also promote a positive emotional information processing bias (Harmer, Bhagwagar, et al., 2003). In this study, a single dose of citalopram or saline was administered intravenously to healthy female volunteers and recognition of facial expressions was tested for the emotions of happiness, sadness, fear, anger, and disgust. Happiness and fear were both recognized over the other emotions in the citalopram group, particularly at lower intensities of expression. The authors indicate that the fear result might have occurred due to the route of administration or the single dosing; when citalopram was given orally for 7 days, the recognition of fear in facial expressions was reduced. One possible reason for the differing results is that SSRIs can increase anxiety in the first few days and this might enhance recognition of fear in facial expressions. At 7 days the anxiety is often diminished or absent, removing the increased motivation to recognize fear.

In another study subjects who had never been depressed demonstrated greater recognition of fearful faces after a single infusion of citalopram than did matched subjects receiving placebo (Bhagwagar, Cowen, Goodwin, & Harmer, 2004). Interestingly, subjects with a history of depression but who were in remission displayed more baseline recognition of fearful facial expressions, an effect that normalized after the citalopram infusion. Hence, in those who have never been depressed a single citalopram infusion seems to generate some degree of anxiety, which in turn promotes the recognition of fear in facial expressions. In contrast, in those who have previously been depressed there seems to remain a residual susceptibility to recognizing fear in facial expressions that could serve as a vulnerability marker for depression (Bhagwagar et al., 2004). Complementing this finding is evidence that there might be a general bias in favor of interpreting negative emotions in facial expressions when a person is depressed or anxious (Bouhuys, Geerts, & Gordijn, 1999; Feinberg, Rifkin, Schaffer, & Walker, 1986; Persad & Polivy, 1993; Veljaca & Rapee, 1998). Specifically, Bouhuys et al. (1999) found that subjects interpreted ambiguous facial expressions as negative significantly more often when depressed than when remitted. Interestingly, high perception levels of negative emotion in ambiguous facial expressions also predicted relapse.

Alterations in psychological functioning including emotional information processing are typically thought to be secondary to the symptom improvement rendered by antidepressants. Considering that single doses

of citalopram and reboxetine produced the results that they did in healthy subjects in the studies mentioned, it is difficult to reconcile this interpretation with the results. Providing further evidence consistent with the perspective that alterations in emotional information processing are a primary action of antidepressants, Harmer, Shelley, Cowen, and Goodwin (2004) randomized 42 healthy volunteers to 7 days of double-blind intervention with either 20 mg citalopram, 8 mg reboxetine, or placebo. Facial expression recognition for the emotions of happiness, surprise, sadness, fear, anger, and disgust was tested at noon on the seventh day of intervention.

At the same time emotional categorization, emotional memory, and emotion-potentiated startle response were also tested. For the emotional categorization task 60 personality characteristics selected to be extremely disagreeable (e.g., domineering, untidy, hostile) or agreeable (e.g., cheerful, honest, optimistic) were presented for 500 msec. Subjects were asked to imagine whether they would be pleased or upset if they overheard someone else referring to them as possessing this characteristic, so that the judgment was in part self-referring. Following the emotional categorization task the subjects were asked to recall as many of the personality traits as possible. Emotion-potentiated startle response was assessed by showing positive, negative, and neutral emotion pictures and measuring the eye-blink reflex.

Neither of the antidepressants influenced affect ratings on the Positive and Negative Affect Schedule, depression on the Beck Depression Inventory, trait and state anxiety, or self-evaluation of social adaptation. Recognition of fearful facial expressions was diminished by both antidepressants relative to placebo. Citalopram also decreased recognition of disgust in facial expressions. Those who received citalopram were also more likely than the placebo group to misclassify fear, anger, and disgust as a happy facial expression, indicating a positive bias in facial expression recognition.

Regarding emotional categorization, the reboxetine-treated group was quicker to classify positive versus negative personality characteristics compared to the placebo-treated group. A nonsignificant trend in this direction was also found for the citalopram-treated group. The total number of words recalled did not differ significantly among the three groups. However, the percentage of words recalled that were positive was higher in both antidepressant groups relative to the placebo group. Startle response to negative pictures was abolished in the citalopram group (Harmer et al., 2004).

In the absence of current or past depression or anxiety, and without any change in subjective mood state, 7 days of citalopram or reboxetine increased the relative processing of positive to negative affective information,

opposite to the negative biases characterizing depression. The fact that the positive changes occurred so rapidly, and in subjects who were free of anxiety or depression, strongly suggests that alterations in emotional information processing do not simply represent a secondary phenomenon. It seems more plausible that the rapid overall shift from negative to positive emotional information processing initiates improvements in thoughts, feelings, and functioning.

By modulating basic emotional information processing, antidepressants influence the conscious and unconscious cognitive activating appraisals triggering emotional responses, because the appraisal process utilizes information with emotional content such as facial expression recognition, emotional categorization, and emotional memory. For example, enhanced recognition of happiness in facial expressions will favor cognitive activating appraisals such as ''People want to be with me,'' thereby promoting happier emotional responses. Likewise, recalling pleasant emotional experiences, such as kayaking around a picturesque lake or swimming with your children, favors positive cognitive activating appraisals—e.g., ''Life is beautiful and enjoyable.'' Thoughts such as these favor positive interpretations of various experiences and an overall positive shift in outlook or, in other words, positive cognitive distortions.

Any fixation on negative emotional stimuli becomes incongruent with the new positive perspective shift, thereby motivating a rapid refocusing of attention once the content of a given stimulus is assessed to be nonthreatening. This capacity to quickly shift from a negative stimulus constitutes a form of healthy dissociation. By rapidly disconnecting from nonthreatening negative emotional stimuli, instead of fixating on them, the escalating cycles of negative thoughts and emotional responses maintaining depression and anxiety disorders are weakened. The ruminations of depression and worry of anxiety can then be replaced with positive cognitive activating appraisals and emotional responses.

PSYCHOTHERAPY AND PSYCHOLOGICAL DEFENSE MECHANISMS

Psychotherapy is effective due to both specific and nonspecific (common) factors, although debate still rages as to which factors are most significant (Scott, 1995; Stravynski & Greenberg, 1992; Svartberg, Seltzer, & Stiles, 1998). Specific factors are those focused on by a particular form of psychotherapy, with the four main types consisting of psychodynamic, interpersonal, cognitive, and behavioral therapy. Without getting into a lengthy discourse on the specifics of each—something best left to expert practitioners of these impressive forms of psychotherapy—the key focus of each seems to consist of the following.

Psychodynamic: The therapeutic relationship is the vehicle for exploring and clarifying neurotic conflicts that are the basis of adaptive failure, with the main therapeutic technique consisting of transference interpretations (Scott, 1995).

Interpersonal: Mood symptoms are seen as both arising from and contributing to interpersonal problems, and these symptoms are resolved by addressing role impairment in terms of prolonged grief reactions, role disputes, role transitions, and interpersonal deficits (Klerman & Weissman, 1984; Scott 1995).

Cognitive: According to Beck, negative automatic thoughts about the self, world, and future sustained by faulty information processing result in negative affective states, which in turn intensify negative thinking, setting up a viscous cycle of negative thoughts and negative affective states. Underlying the negative automatic thoughts are dysfunctional unifying beliefs—schemata—that, when activated, drive specific negative automatic thoughts (Beck, 1967, 1976, 1991; Scott, 1995).

Behavioral: Derived from social learning theory, depression is seen as relating to a lack of reinforcement, with social skills deficits contributing to limitations in obtaining available reinforcement or coping with adversity (Scott, 1995).

In a study focusing on psychodynamic psychotherapy, patients with depression, anxiety, and personality disorders were assessed for changes in defense mechanisms over a 3- to 5-year period (Bond & Perry, 2004). Those displaying higher levels of maladaptive and so-called self-sacrificing defenses (e.g., pseudo-altruism) shifted to lower levels of these defenses over the course of treatment. Consistent with the results of Bond and Perry are the findings of Ackerman, Lewin, and Carr (1999), who evaluated patients receiving dynamic psychotherapy and antidepressants for major depression. Mature defenses increased during the first 6 months of treatment and continued to improve to normative levels, while immature defenses declined to lower than normal levels for those remaining in treatment for an additional 18 months. Neurotic/intermediate defenses did not change in either study, indicating that the gain, with at least psychodynamic psychotherapies, occurs at the low (immature) and high (mature) ends of the defense mechanism spectrum.

Beyond changes in classical defense mechanisms per se, psychotherapy is able to facilitate a positive perspective shift, whether it be by resolving intrapsychic conflict via transference interpretations, remedying interpersonal problems by addressing role impairments, improving information processing such that negative automatic thoughts and underlying schemata are challenged and replaced by more positive thoughts, or developing improved ways to obtain available reinforcement. For example, a patient responds with anger to a reasonably benign observation by the therapist and accuses the therapist of being judgmental. Interpreting the transference, the therapist examines how the patient experienced judgmental responses from his father, and how he now sees similar reactions by male authority figures where they might not actually apply, such as with the current observation. The patient will likely respond with a positive shift in perspective regarding the reaction of male authority figures to his words and actions, such that he is open to the possibility that their reactions are supportive and nonjudgmental. Further positive perceptions will likely follow, such as ''My therapist is being supportive.''

Likewise, an interpersonal therapist might examine the angry reaction to the observation as an example of how the patient takes a contrary stance in relationships, due largely to a pattern of similar interactions with his judgmental father. By seeing how this pattern sets up conflict with people, even those who are not judgmental, and how a conciliatory style will foster support, the person experiences a perspective shift such that people can now be seen as potential allies and not always enemies. From this perspective shift will come thoughts such as ''It might be okay if I get closer to this person.''

Cognitive therapy alters thoughts and underlying attitudes such that a positive shift in perspective is to be expected. For example, the perspective ''I am just no good at things and so will fail'' can be shifted to ''With enough focused effort I can do fairly well in school.'' By helping a person see that he or she can be effectual when it comes to securing reinforcement from the environment, behavior therapy produces a positive perspective shift such that greater opportunities for gains, socially and in other ways, might be anticipated.

Nonspecific factors accounting for positive outcomes with psychotherapy include the feeling of being understood, a supportive relationship, the receipt of a rational explanation for emotional suffering and change, the practice of new behaviors, the opportunity to ventilate, feedback concerning progress, empathy, affective attunement, enhanced self-efficacy, and hope (Piper, 2004; Scott, 1995; Stravynski & Greenberg, 1992; Svartberg et al., 1998). Even based on face validity it is reasonable to assume that a positive perspective shift can arise from several of these factors. For

example, psychotherapists help patients change notions about themselves and enact new, more positive ones (Stravynski & Greenberg, 1992). Certainly, when the therapeutic alliance is strong, patients trust enough to accept personal feedback and act on it to produce positive change. Receiving a rational explanation for emotional suffering and change, practicing new behaviors, feedback concerning progress, and enhanced self-efficacy can all help a person adopt a more positive perspective. Even simply naming a problem has been found to produce a sense of mastery and therapeutic benefit, regardless of the therapeutic ideology applied (Tian & Shuttlewood, 1999).

A nonspecific factor almost certainly instrumental in achieving a positive perspective shift is hope (Tian & Shuttlewood, 1999). With regard to depression, Alloy, Abramson, Metalsky, & Hartlage (1988) posit that global and stable attributions for negative events result in a vulnerability to hopelessness in the face of stressful life events. Hopelessness involves the expectations that negative events will occur or that desirable events will not occur, and that the person is hopeless to control these outcomes. Restoration of hope typically produces sweeping improvements in the perception of day-to-day and long-range events.

Some of the nonspecific, as well as specific, factors also improve mood. Highly influential in this regard are empathy and affective tuning. Empathy facilitates what is often referred to as a positive therapeutic alliance, a crucial factor accounting for improvement with psychotherapy (Gaston, 1990; Horvath & Luborsky, 1993; Krupnick, Sotsky, & Simmens, 1996; Svartberg et al., 1998; Tian & Shuttlewood, 1999). A good therapeutic alliance, in turn, is indicative of solid affective attunement (Svartberg et al., 1998). Intersubjectivity theory (Stolorow, Brandshaft, & Atwood, 1987; Svartberg et al., 1998) proposes that attunement of the therapist to the affective experiences of patients plays a crucial role in improving emotional health. According to this theory, specific therapeutic interventions, such as transference interpretation, are beneficial to the extent that they tune into the affect state of the patient (Svartberg et al., 1998). Improved mood is also encouraged by other nonspecific factors, such as feeling understood, a supportive relationship, and an opportunity to ventilate.

Positive perspective shifts, fostered by both the specific and the nonspecific aspects of psychotherapy, favor positive cognitive distortions. For example, a positive shift in perspective, such that male authority figures can now be seen as supportive, allows a person to think, ''He's grumpy because some other patient has irritated him,'' instead of ''I must have done something wrong because he's grumpy.'' Any elevation of mood state attributable to psychotherapy creates a fertile ground for these positive spins on experience.

Psychotherapy-induced positive cognitive distortions can also facilitate dissociation from nonthreatening negative emotional stimuli, in that it is easier to pull away from such stimuli, as opposed to dwelling on the negative focus, when there is a positive outlook. For example, with real hope regarding the prospects for success at university, a student is not likely to dwell on negative input such as overhearing a professor comment on how many students are not completing their degrees. The student will likely note it and shift to more positive stimuli, such as potential romantic partners on campus. A cup half-full perspective then effectively shifts attention toward emotionally enhancing input, whereas a cup half-empty perspective maintains a focus on negative emotional stimuli.

CONCLUSION

The combination of human intelligence amplifying emotions generally and a greater likelihood of experiencing negative over positive primary and perhaps secondary emotions creates a need for psychological defense mechanisms capable of acting on a continual basis to preserve mental health. Without these defense mechanisms, negative emotional input could easily become overwhelming. Given that psychotherapy and antidepressants are the most common forms of psychiatric treatment, it is certainly feasible that one or both enhance defense mechanisms, even if not actually tailored to do so. Antidepressants very early on in treatment alter basic emotional information processing such that positive cognitive activating appraisals are more likely to occur. Positive self-enhancing spins in relation to external and internal events, as opposed to the negative self-defacing and threat-oriented spins characterizing depression and anxiety, follow from these modified cognitive activating appraisals. Psychotherapy induces positive shifts in perspective through factors specific to the form of psychotherapy, such as transference interpretation with psychoanalysis and resolution of role impairments with interpersonal psychotherapy. Nonspecific psychotherapy factors, such as hope and changing of notions about oneself, also result in positive perspective shifts.

Positive self-enhancing spins are essentially positive cognitive distortions. Adopting a more positive and self-enhancing spin, regarding moment-to-moment and day-to-day occurrences, greatly defends against what might otherwise be an overwhelming barrage of negative emotions and subsequent negative mood states. By inducing positive cognitive distortions, antidepressants and psychotherapy also facilitate rapid dissociation from negative emotional stimuli assessed to be nonthreatening, helping counter the vicious cycles of negative thoughts and emotional reactions maintaining depression and anxiety. With psychological

defenses intact, the natural tendency to engage in positive self-enhancing spins and rapidly dissociate from nonthreatening negative emotional input is restored, thereby stimulating mutually reinforcing cycles of positive thoughts and emotional reactions.

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