Adjustment Disorders...

have to modify their techniques for children; for example, they may approach small children through play.

Almost all therapists who work with children and adolescents also see the child's family and encourage its participation. Family therapists go further by bringing the whole family together repeatedly for psychotherapy sessions. According to family systems theory, families have established patterns of feeling and behavior that are disrupted by crises. If the system lacks flexibility and cohesiveness, it does not regain equilibrium. Parents and children influence one another in such complicated ways that a direction of cause and effect is impossible to identify. Instead the therapist concentrates on the function of the child's symptoms and behavior in the balance of intimacy and distance, independence and interdependence, through which the family preserves itself. The assumption is that a solution to the family's problems is also a solution to the child's problems.

Family management training is a type of therapy that seems to be effective in some controlled studies. It can be combined with problem-solving skills training for the child, which is also based on behavioral social learning principles. Parents are taught to reward good behavior and substitute effective discipline for inconsistent harshness. They learn to make clear rules, enforce them consistently, negotiate compromises with older children, and use mild forms of punishment or correction.

For Further Reading

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INSIGHTS

Brain Asymmetry, the Emotions, and Mood Disorders

by Richard J. Davidson, PhD

The biological substrate of emotion is usually thought to be in the lower, more primitive regions of the brain, especially the limbic system and hypothalamus, as well as the autonomic nervous system, which governs such physical responses as heart rate, blood pressure, and respiratory rate. But research has shown that the cerebral cortex is also important in emotional experience — especially the anterior or frontal lobes. It has been known for more than a hundred years that brain injury in the frontal region causes strikingly different symptoms depending on whether the damage is in the left or right hemisphere. Left-sided damage is often associated with catastrophic depression, and right-sided damage with indifference or inappropriate euphoria.

The two frontal hemispheres appear to be specialized for particular emotions, and specific types of psychopathology may be associated with disturbances in the balance of activation. Studies of human beings and animals suggest that the left frontal region serves functions related to approach, and the right frontal region serves functions related to withdrawal. Thus strong positive feelings would be associated with left frontal activation and fear with right frontal activation. Feelings and emotional traits that reflect a deficit in the approach system, such as sadness and depression, should be associated with low activity in the left frontal region. Recent research suggests that there are stable individual differences in the relative activation of frontal lobes in the two hemispheres; these differences may affect a person's vulnerability to depression and other bad feelings. In the past few years my colleagues and I have tested this theory in a variety of ways, confirmed it, and extended it in some exciting new directions.

In most of our studies we have used the technique known as brain electrical activity mapping (BEAM). While the subject or patient rests, we record brain electrical activity with electrodes attached to the scalp, amplify the signals, and computerize the result to produce a map of brain activation. When we map the brain while the subject is at rest, this baseline measure proves to be quite stable: some people consistently show left-sided and others right-

sided frontal activation. Our present mapping technique is imperfect because the skull bone interferes with the signal, but recently we have begun to use methods that give a more accurate and detailed picture.

Some of our earliest subjects were students who scored high twice, at six-week intervals, on a standard clinical rating scale for depression, the Beck Depression Inventory. Some but not all of these students were probably clinically depressed. Our model suggests that even mild depression should affect the brain electrical activity map, and so it does: the depressed students showed less frontal activation than healthy controls. Results are similar in patients suffering from major depression who have no close relatives with bipolar disorder. Other researchers have replicated our results in patients with seasonal mood disorders and in experiments using energy consumption instead of electrical activity as a measure of local brain activation. We believe that the depressive symptoms most closely associated with left frontal underactivation are loss of interest and pleasure in people and things; this inability to become engaged with the physical and social world reflects a deficiency in the approach system.

Possible Trait Marker

For years psychiatrists have unsuccessfully sought a trait marker for depression—a physiological indicator that predicts vulnerability to depression in a person who is not actually depressed. The difference in frontal asymmetry may turn out to be such an indicator. Our early findings suggest that people who have been but are not currently depressed show a pattern of frontal activation similar to the one found in acutely depressed patients, and easily distinguishable from the pattern found in people who have never been depressed.

Other experiments have confirmed that decreased left frontal activation reflects a biological vulnerability to negative feelings in response to stress. Experiments on normal (not depressed) adults reveal that individual differences in frontal asymmetry predict the quality of the response to a film designed to elicit positive or negative emotion. Simply by knowing a person's balance of left- and right-sided frontal activation, we can accurately predict whether he or she will react mildly or intensely to a film clip designed to elicit a certain kind of feeling. People with high right frontal activation responded more strongly to films that elicit bad feelings. People with high left frontal activation respond more strongly to film clips designed to elicit good feelings, as if they have a primed or activated approach system.

We now believe these predispositions exist even in infants. We sampled the brain activity of ten-month-olds while their mothers were present, and then left them alone in a room. At this age some children cry immediately and others show little sign of distress. We found that infants with low levels of left and high levels of right frontal activation were the ones who tended to cry in the first minute of separation. Other researchers have replicated our results. Whether these early differences predict later behavior is unknown.

We are now examining the relationship between frontal lobe function and individual differences in shyness or wariness in response to novelty. Other researchers have found that children of depressed mothers are more likely to be shy and wary, and that parents of shy toddlers have a higher rate of mood and anxiety disorders than parents of outgoing toddlers. We divided children aged two and a half years into three groups on the basis of their behavior in a playroom: extremely wary, extremely outgoing, and intermediate. The pattern of left frontal lobe function was as we predicted: wary children were least activated, outgoing children most activated, and the rest in between. In other words, shy children showed the same pattern as depressed adults. Other investigators have recently reported similar findings. We will follow these children to uncover any relationship to anxiety and depression later in life.

We have also been considering the possible relationship of the immune system to individual differences in frontal brain asymmetry. A number of reports indicate that at least some depressed people have lower than average levels of certain immune functions. Since depression and frontal asymmetry are associated, we thought that there might also be a direct link between immune activity and asymmetrical brain function. Animal studies suggest that injury to the left hemisphere of the brain affects the immune system more than a comparable right-sided injury. To study this question, we performed a simple experiment measuring brain activity in the left and right frontal regions in 90 normal (not clinically depressed or anxious) subjects on two occasions three weeks apart. Comparing those who showed extreme left frontal activation both times with those who showed extreme right frontal activation both times, we found that the latter had less natural killer cell (NK) activity. The differences were statistically reliable, but we do not know whether they are clinically significant. We intend a follow-up study to see whether persons with right frontal activation are more vulnerable to certain diseases.

Can individual differences in patterns of frontal lobe asymmetry be changed? Several studies are now being conducted to address this critical issue. Some are evaluating the effects of drugs on frontal asymmetry; others are examining whether certain psychological treatments, such as cognitive therapy, might alter frontal lobe asymmetry by promoting an "approach" orientation to life. The discovery that a form of psychotherapy has a specific biological effect would go far toward eliminating the artificial separation between mind and brain.

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