

Treating Depression: Can We Talk?

An extensive study of depressed patients, comparing the effectiveness of two forms of brief psychotherapy with drug and placebo treatments, promises to shed some light on a question rarely addressed by such research: Which approach works best for what types of depressed patients? Preliminary results from the study, directed by psychologist Irene Elkin and her colleagues at the National Institute of Mental Health (NIMH) in Rockville, Md., were presented last week in Washington, D.C., at the annual meeting of the American Psychiatric Association.

Overall, says Elkin, the "talk" therapies — cognitive behavior therapy and interpersonal therapy — alleviated depressive symptoms as well as the commonly prescribed antidepressant drug imipramine and markedly better than the pill placebo. These are "averaged" data, however, from 236 moderately to severely depressed patients treated in medical centers at George Washington University in Washington, D.C., the University of Oklahoma in Oklahoma City and the University of Pittsburgh. The success of the psychotherapies varied significantly across the three sites, notes Elkin; further analysis of the data will examine site-specific effects, such as the patient-therapist relationship and therapist skill in carrying out the assigned treatment.

The 18 psychotherapists in the study were experienced clinicians who received special training in the therapy to be performed. Cognitive behavior therapy attempts to correct distorted thinking and overly negative views of oneself, the world and the future. Interpersonal therapy focuses on developing better ways to relate to family members, co-workers and others. In both cases, weekly one-hour sessions were conducted for 12 to 16 weeks.

Imipramine and the pill placebo were dispensed weekly by experienced psychiatrists, who also provided about a half hour of support and encouragement per week.

The patients, 70 percent of whom were women, ranged in age from 21 to 60. Each patient underwent an average of 13 weeks of treatment; 162 patients completed 16 weeks of treatment. Symptom improvement was determined through the reports of patients, therapists and independent clinicians.

More than half of all patients in both the therapy and the drug groups recovered with no serious symptoms after 16 weeks, says Elkin, compared with 29 percent of the pill placebo group. The least depressed patients did surprisingly well in the pill placebo group, she adds,

indicating that this approach may significantly help many moderately depressed individuals.

Severely depressed patients, on the other hand, did not respond well to the placebo condition. Those in the imipramine and interpersonal therapy groups showed the most improvement. Patients given cognitive behavior therapy displayed slightly less improvement, although not to a statistically significant degree.

In addition, says psychiatrist Stuart Sotsky of George Washington University, there are indications that certain types of depressed patients responded best to specific treatments. For example, married patients with longer episodes of moderate depression responded best to cognitive behavior therapy. Interpersonal therapy worked best with men who had relatively high levels of social functioning, he reports, and imipramine was most effective with married patients suffering from severe depression and work difficulties.

Crucial data on the maintenance of improvement during an 18-month follow-up have not yet been analyzed, says Elkin. Future studies, she explains, must also

examine the role in treatment outcome played by patient personality characteristics and patient and therapist expectations and attitudes toward treatment.

"This project will be the standard against which all other psychotherapy research will be compared," says psychiatrist Jerome Frank of Johns Hopkins University in Baltimore, "although I'm somewhat pessimistic about psychotherapy research methods in general." Therapy often resembles a rhetorical attempt to influence another person's attitudes and behavior, he says, rather than a "science" that can be easily evaluated.

Researchers also need to study the outcome of therapy-drug combinations, says psychiatrist David Kupfer of the University of Pittsburgh. This approach has recently been promoted as superior to either treatment alone. A depressed patient's support from friends and family also needs to be considered over the course of recovery, asserts Kupfer.

Despite its shortcomings, psychiatrist Don R. Lipsitt of Harvard University speculates it might provide enough justification for insurance companies to limit payments for depression treatment to cheaper drug approaches. — B. Bower

The biochemistry of the blues

The blues take body and mind on a dance so complex that researchers have had trouble charting the steps. Now there's evidence that a brain hormone may be involved in the debilitating symptoms of both depression and the eating disorder anorexia nervosa. While the work, reported in the May 22 *NEW ENGLAND JOURNAL OF MEDICINE*, has no immediate therapeutic applications, according to a member of the research team it does provide "a clue to follow" in developing treatment strategies.

Since its discovery in 1981, corticotropin-releasing hormone (CRH) has been shown to produce behavioral and physiological changes characteristic of depression when injected into the brains of rats. But according to George Chrousos, who took part in the new study, levels of the hormone are difficult to measure in humans because it is contained in a small, closed circulatory system between the pituitary and the hypothalamus. So Chrousos and his colleagues at the National Institute of Mental Health (NIMH) and the National Institute of Child Health and Human Development (NICHD) in Bethesda, Md., teased apart a convoluted endocrine feedback loop to deduce elevated levels of CRH in depressives and anorexics.

CRH, produced by the hypothalamus in the brain, stimulates the pituitary gland to produce a hormone called adrenocorticotrophic hormone (ACTH). That hormone "turns on" the adrenal glands' production of cortisol. Then, feeding back, high levels of cortisol act on both the pituitary and the hypothalamus to "turn off" further production of hormones. Scientists have known for decades that depressives and anorexics have a defect somewhere in the production cycle that results in abnormally high levels of cortisol.

The researchers injected CRH into their subjects and found that in depressed and anorexic patients the pituitary did not make much more ACTH in response; it "knew," through feedback, that cortisol levels were adequate. But while the levels of ACTH didn't jump, the adrenals were hyperresponsive, producing large amounts of cortisol — as they would if they were constantly stimulated by ACTH. Together, the scientists say, the findings indicate that the defect in these patients occurs before the pituitary plays its part, at the level of the hypothalamus or even before that. That would mean that the high levels of cortisol seen in depressed and anorexic patients reflect abnormally high levels of CRH.

Earlier animal research has shown that the brain becomes hypersensitive to CRH; in fact, rats repeatedly injected with CRH eventually respond with seizures. That sensitization is also reflected in the natural history of depression, according to researcher Philip Gold at NIMH.

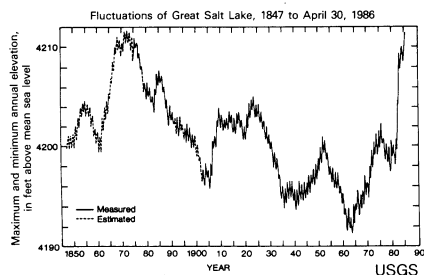
"The first episodes generally require emotional stress," says Gold, "but they progressively require less and less. CRH might be relevant there. . . . It represents a link between biological and psychological models of depression."

Next, the researchers plan to look for agents that suppress or block CRH, and to test them in animals. — *L. Davis*

Lake at record high

People in the six counties surrounding the Great Salt Lake in Utah collectively prayed on May 4 in hopes of stemming the lake's rising levels. But the lake has continued to swell, and on May 12 it topped, by 0.6 inches, its June 1873 historic record of 4,211.6 feet above sea level.

The U.S. Geological Survey (USGS) reports that the lake is 1.7 feet higher than its peak value last year and has risen 3.3 feet — two times the average seasonal rise — since its seasonal low on Oct. 16, 1985. USGS also notes that during the past four years the lake has risen 11.6 feet; it rose a similar amount before the 1873 high, but that increase took 12 years to occur.



Scientists expect that the lake will continue to swell for at least another month because most of the spring snowpack in the Wasatch Mountains has yet to melt, and northern Utah's rivers are already rushing with much more water than normal; the USGS predicts the waters will rise to 4,212.5 feet next month. According to the USGS the lake has already flooded about 770 square miles of shoreland, causing more than \$200 million in damage.

On May 14 the Utah legislature approved a \$71.7 million plan for pumping the flooding waters into the desert. However, it will be several months before pumping, which could drain the lake by as much as 16 inches in the first year, can begin. — *S. Weisburd*

Efficient WIMPs would rescue the sun

The sun emits only about a third of the neutrinos it ought to emit, according to theorists' "standard model" of the thermonuclear processes that go on in its center. However, adjustments to account for the neutrino observations tend not to predict properly the acoustic vibrations of the sun. Now, calculations by two groups show that putting WIMPs (weakly interacting massive particles) in the center of the sun would satisfy both criteria. It is the only theory that does so, John Faulkner of the Lick Observatory in Santa Cruz, Calif., told SCIENCE NEWS.

WIMPS (SN: 7/13/85, p. 23) would move energy out of the center of the sun, lowering the temperature, affecting both the thermonuclear processes and the acoustical properties, particularly the speed of sound. WIMPs and the speed of sound came to Faulkner's mind as he heard a description of the theory of the sun's p-wave vibrations by Douglas O. Gough of the Institute of Astronomy in Cambridge, England. To calculate theoretically the sequence of these waves and the differences in frequency from one wave to the next is extremely complicated, but Gough presented a simplification for cases where the differences fall a certain way. Cancellations in the mathematics then result in a very simple equation — "a simple integral," as Faulkner describes it

— on which the differences in these waves depend.

One of the things on which this integral depends is the sun's central temperature, so Gough's simplification yields a way of testing the effects of WIMPs on the acoustic pulsations. Faulkner, Gough and an Indian student, M.N. Vahia, did the calculation in a few days, using hand calculators, and found that the WIMP model predicted the observed differences between the vibration frequencies to within two significant figures.

Meanwhile another group had been at work. Ronald L. Gilliland of the High Altitude Observatory (HAO) in Boulder, Colo., W. Däppen of HAO and J. Christensen-Dalsgaard of Aarhus University in Denmark had been calculating descriptions of the p-waves according to the full theory using a high-speed computer — about the only practical way to do it from this full-dress approach. They had reached the same conclusion about the fitness of the WIMP theory. The two groups decided their approaches were complementary and agreed on simultaneous publication in the May 15 NATURE.

The results do not prove the existence of WIMPs, says Faulkner, but if WIMPs don't exist, something else in the sun has to be efficiently transferring energy out of the center. — *D.E. Thomsen*

Continuing the hunt for funds

Another university has joined the growing list of institutions seeking research and construction funds by going directly to Congress. Last week, the Senate appropriations committee voted to include \$25 million for a new science and engineering technology center at Arizona State University (ASU) in Tempe. According to an amendment to the "urgent supplemental appropriations" bill, the funds are to come out "of the amounts available to the Department of Defense" (DOD) for this fiscal year.

"A lot of universities are going this other way," says Brent Brown, ASU vice-president for university relations. The proposed building is part of a major effort to upgrade the university's engineering program, he says. "We're trying to make sure the effort we've started here is continued."

In the same bill, another amendment authorizes funding for nine more universities. Late last year, Congress passed legislation that granted \$55.6 million to these universities from DOD research and development funds (SN: 3/29/86, p. 196). However, DOD complained that granting these "set-asides" would violate other laws and regulations that require DOD to ensure that universities compete for research contracts. The Senate com-

mittee's action circumvents that problem.

Just two weeks before this vote, Defense Secretary Caspar W. Weinberger rejected a bid by seven senators to get DOD to release funds for the universities. In a letter to the senators, Weinberger stated, "Support of merit-based research is an important principle which we feel we must uphold." He added, "The . . . earmarking of research funds for specific universities, without merit competition, establishes a precedent that could jeopardize" the preeminence of U.S. universities.

"The Secretary of Defense took an enormous risk," says Robert M. Rosenzweig, president of the Association of American Universities (AAU) in Washington, D.C. "I was very pleased by his action."

The AAU and the National Association of State Universities and Land-Grant Colleges also tried to persuade the Senate committee to reject funding for specific universities. In a letter, the presidents of the two organizations, which represent many but not all of the nation's universities and colleges, stated, "If any of these . . . projects, or others that may be proposed, is funded, pressures on other institutions to seek direct funding for re-