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MIND *body* Connections

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How Emotional Pain Can Really Hurt



For most of us, losing a loved one is a traumatic, emotionally wrought event that affects us the rest of our lives. Although most people are able to recover from their loss and resume their normal activities and relationships, as many as 10 percent of the population may experience what researchers call complicated grief where they are unable to move on and resume their normal lives again. These people seem stuck in a never-ending cycle of grief that often perplexes therapists who are treating them.

A relative newcomer to the Cousins Center, Mary-Frances O'Connor, PhD., has recently advanced a theory, supported by her research that may explain why some people suffer from complicated grief.

O'Connor and her colleagues developed a study with two groups of women who had recently lost a sister or mother to breast cancer. One group was comprised of those who had uncomplicated grief while the other group had the more intransigent, complicated form of grief. Each woman brought in pictures of their loved ones. While undergoing functional magnetic resonance imaging, each person was

shown these pictures and O'Connor and her team analyzed the volunteers' brain activity.

Both groups had similar brain activities but the group with complicated grief showed unusually high activity in the nucleus accumbens, the region responsible for regulating the brain's reward system.

"Humans are social creatures and we derive pleasure from being with our loved ones," O'Connor said. "When they die, part of what we are processing is the realization that pictures or memories are no longer indications that they are coming back."

O'Connor theorized that those in the complicated grief group were still showing reward activity because they hadn't deeply processed the new reality that their loved one wasn't coming back and that this activity was getting in the way of their adapting to the loss reality.

She said this theory may lead to new methods to treat those with intractable grief and her research has led to collaboration with a colleague at Columbia University in New York.

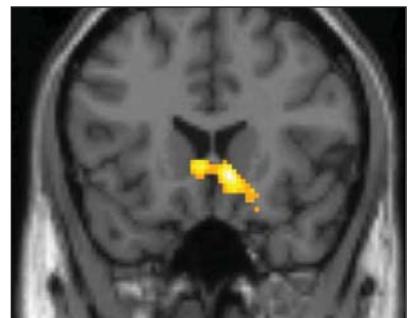
O'Connor's interest in grieving goes back to her doctoral work at the University of Arizona where her

dissertation focused on the autonomic responses of those grieving the loss of a loved one. In her study, she used journaling as a method to discern differences in grieving. This study eventually influenced her next effort, examining groups of grieving men and women to determine how their grieving affected their parasympathetic nerve system and whether this had an impact on cardiac function.

After earning her PhD, she was selected to serve a one-year internship at the Neuropsychiatric Institute and Hospital at UCLA and it was during this year that O'Connor worked with breast cancer patients under a grant from the California Breast Cancer Research Program.

"The year I spent doing clinical work at the Neuropsychiatric Institute changed me in that it made me realize that medicine had some tools that I wasn't using that I could bring to bear on my grieving research, such as the fMRI," she said.

Dr. O'Connor is conducting a new study called 'Grief in Older Adults' funded by the National Institute on Aging. To enroll in the study please call: 310.825.1889. •



New brain scanning technologies are revealing that the part of the brain that processes physical pain also deals with emotional pain.

Mindfulness more than a useful tool to combat stress



Imagine being stuck in rush-hour traffic one day with your three-year old child in the back seat. As the delays mount, you feel more and more stressed about arriving home late. Then, another driver cuts you off. Soon, you are about to lose control and spew a stream of insults that would make a truck driver blush. Out of the blue, your three-year old daughter starts singing a song and it immediately calms your nerves and helps you refocus on your driving.

The song is part of a mindfulness study that Sue Smalley, PhD, director of the Semel Institute's Center of Mindful Awareness Research Center (MARC) is conducting to determine if providing children with mindfulness exercises can improve their executive function—i.e. the ability to plan and organize, avoid distractions and regulate emotions.),

According to the MARC website, (www.marc.ucla.edu) mindfulness is the moment-by-moment process of actively and openly observing one's physical, mental and emotional experiences. Mindful Awareness Practices (MAPs) are tools and exercises such as meditation, yoga and tai- chi that develop greater mind-body awareness and promote mindfulness in daily life.

As an affiliated program of the Cousins Center, MARC provides education and training in mindfulness, and complements research-based work of the Cousins Center.

Mindfulness is the moment-by-moment process of actively and openly observing one's physical, mental and emotional experiences

"We have a shared interest in understanding basic biological mechanisms that underlie and are at the heart of mindfulness, and a commitment to teach mindfulness to the UCLA community and the general public," Smalley said.

Diana Winston, director of mindfulness education at MARC, observes that "People depart from the mindfulness classes with a better sense of life and with more tools to deal with their stressors. Mindfulness can help them be more present in the moment and give them more insight while improving their relationships."

To advance research that will inform the clinical teaching and practice of mindfulness, Cousins Center researchers have led the way in demonstrating that the practice of mindfulness has a host of positive benefits, from improving sleep and reducing pain to enhancing the potency of vaccines and increasing CD4-T cells in HIV patients.

As an example of this research effort, Cousins Center researchers report that the practice of mindfulness meditation stopped the decline of CD4 T cells in HIV-positive patients suffering from stress, slowing the progression of the disease. CD4+ T lymphocytes, or simply CD4 T cells, are the "brains" of the immune system, coordinating its activity when the body comes under attack. They are also the cells that are attacked by HIV, the devastating virus that causes AIDS and has infected roughly 40 million people worldwide. "This study provides the first indication that mindfulness meditation stress-management training can have a direct impact on slowing HIV disease progression," said lead study author David Creswell, a post doctoral fellow at the Cousins Center. "The mindfulness program is a group-based and low-cost treatment, and if this initial finding is replicated in larger samples, it's possible that such training can be used as a powerful complementary treatment for HIV disease, alongside medications."

Creswell and his colleagues ran an eight-week mindfulness-based stress-reduction (MBSR) meditation program and compared it to a one-day MBSR control seminar, using a stressed and ethnically diverse sample of 48 HIV-positive adults in Los Angeles. Participants in the eight-week group showed no loss of CD4 T cells, indicating that mindfulness meditation training can buffer declines. In contrast, the control group showed significant declines in CD4 T cells from pre-study to post-study. Such declines are a characteristic hallmark of HIV progression. In this study, "the more mindfulness meditation classes people attended, the higher the CD4 T cells at the study's conclusion."

In other studies conducted by the Cousins Center in collaboration with Arizona State University, the practice of mindfulness was found to improve pain symptoms among those with

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Sleep Disturbance Emerges as Key Risk Factor for Chronic Disease and Depression

Millions of Americans go to extreme lengths to get a good night's rest—from new mattresses and medications to sleep studies and snore guards. Insomnia has public health consequences that are staggering: costs attributable to insomnia exceed \$100 billion annually, and sleep difficulties lead to an additional \$13.8 billion in primary case visits.

With this as a backdrop, the Cousins Center has an ongoing commitment to addressing this huge problem. In two separate studies published in 2008, the Cousins Center research team found that sleep loss triggers cellular inflammation, which heightens one's risk for cardiovascular disease, arthritis and diabetes. In the second study, sleep disturbance emerged as a potent risk factor for depression recurrence in older adults.

In a new study published in *Biological Psychiatry*, the Cousins Center research team found that loss of sleep, even for a few short hours during the night, can prompt one's immune system to turn against healthy tissue and organs. Losing sleep for even part of one night can trigger the key cellular pathway that produces tissue-damaging inflammation. The findings suggest a good night's sleep can ease the risk of both heart disease and autoimmune

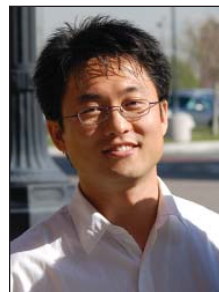
disorders such as rheumatoid arthritis.

"Physical and psychological stress brought on in part by grinding work, school and social schedules is keeping millions of Americans up at night," said Dr. Irwin, "America's sleep habits are simply not healthy. Our findings suggest even modest sleep loss may play a role in common disorders that affect sweeping segments of the population."

In the second study, the impact of sleep disturbance on depression recurrence was examined in older adults. Nearly 60 percent of the nation's elderly have trouble sleeping, whether it's a lot of tossing and turning or outright bouts of insomnia. While for most people sleeplessness can be annoying at best or unhealthy at worst, for elderly individuals who have suffered from depression in the past, poor sleep may be the first sign that a new bout of depression is coming on.

In a study in the prestigious *American Journal of Psychiatry*, Friends of the Semel Institute scholar and Cousins Center research fellow, Hyong Jin Cho, M.D., PhD, asked whether sleep disturbance could predict a relapse or recurrence of depression.

Insomnia is the most frequent sleep disturbance in depressed patients and is viewed as a symptom of current depression.



Jin Cho

Dr. Cho and colleagues found that it may serve as a precursor to another attack of depression.

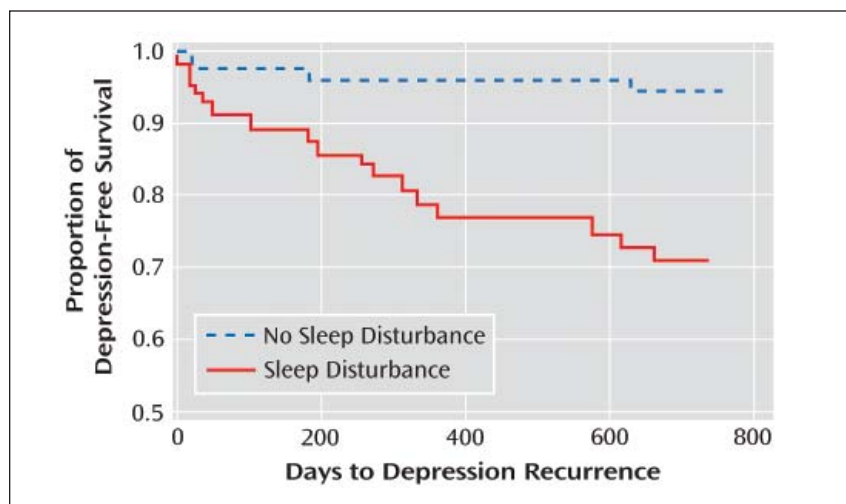
The study looked at 351 adults, age 60 and older over two years. Among the 145 older adults who had a prior history of major or non-major depression that was in full remission, 23 had a relapse and those who had a sleep disturbance had an over four-fold greater risk of developing a depression. Cho noted that this association was established independently of other depressive symptoms, chronic medical disease or any use of antidepressants.

"Unfortunately, sleep difficulties are often considered to be a part of normal aging, and asking about and assessing the quality of an older person's sleep is frequently overlooked during routine doctor visits," Irwin said. "The omission is particularly striking, since we know that sleep disturbance is associated with declines in health functioning and with increases in all causes of mortality in older adults.

To identify older adults at risk for depression, a two-step strategy can be employed. One step involves assessment of whether individuals have had a prior episode of depression, the other whether they have current and ongoing sleep disturbance.

"Given that sleep disturbance is a modifiable risk factor," Cho said. "These findings tell us that we need to develop treatments that target sleep disturbances for the prevention of depression recurrence in older adults." •

However, when sleep disturbances begin to emerge in an otherwise healthy adult who has experienced depression in the past,



Mindfulness more than a useful tool to combat stress

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rheumatoid arthritis. Rheumatoid arthritis patients who had previously experienced a depression benefited most from the mindfulness meditation as compared to the other groups, showing large decreases in joint tenderness by a physician examination.

Finally, given the prevalence of insomnia complaints and associated health risk of sleep disturbance (see accompanying article), the research team at Cousins Center report that practicing tai chi chih, a “moving meditation”, promotes sleep quality in older adults with moderate sleep complaints. The study, published in the journal *Sleep*, randomly assigned 112 healthy adults ranging in age from 59 to 86 were to one of two groups for a 25-week period: The first group practiced 20 simple tai chi chih moves; the other participated in health education classes that included advice on stress management, diet

and sleep habits.

The tai chi chih group showed improved sleep quality and a remission of clinical impairments, such as drowsiness during the day and inability to concentrate, compared with those receiving health education.

“Poor sleeping constitutes one of the most common difficulties facing older adults,” said lead study author Dr. Michael Irwin, Director of Cousins Center. However, sleep problems remain untreated in up to 85 percent of people. And for those who do seek help, the usual remedy is a sedative. But sedatives can cause side effects, such as daytime confusion and drowsiness which can lead to falls and fractures. And while most health professionals generally agree that physical exercise enhances sleep system that given the physical limitations of the elderly, rigorous exercise might not be an option. That’s why tai chi chih, with its gentle, slow movements, is an attractive

exercise option for the elderly population.”

However, mindfulness research is still in its scientific infancy, Smalley points out. A PubMed search on ‘mindfulness’ may return far few articles than other, better-researched topics such as cardiovascular disease.

If you are interested in taking one of the many mindfulness classes that MARC offers, or downloading a mindfulness meditation that you can listen to in the privacy of your home or office, visit the MARC website at www.marc.ucla.edu. To enroll in a clinical trial the Cousins’s Center is offering, click on www.cousinspni.org. •



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The Cousins Center for Psychoneuroimmunology is a research unit of the Jane and Terry Semel Institute for Neuroscience and Human Behavior at UCLA.

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