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BE KIND TO YOUR MIND #96

LAUGHTER AS MEDICINE: HUMOR THERAPY REDUCES DEPRESSION AND ANXIETY SYMPTOMS

Laughter as Medicine: Humor Therapy Reduces Depression and Anxiety Symptoms - Neuroscience News

Summary: Humor therapy might alleviate symptoms of anxiety and depression.

The comprehensive study comprised 29 diverse studies from nine countries, involving 2,964 participants with depression, anxiety, or both. While most participants reported a decrease in their symptoms, some felt the effect was insignificant.

This lends support to the idea that humor therapy could become a viable and accessible complementary alternative therapy for clinicians and patients alike.

Key Facts:

1. An analysis of 29 studies across nine countries reveals humor therapy's potential in alleviating depression and anxiety symptoms.
2. Participants of the study ranged from children undergoing surgery to older individuals in nursing homes and people with various chronic conditions.
3. Although the impact was deemed insignificant by some, the majority felt that humor therapy lessened their symptoms.

Source: Wiley

An analysis of published studies suggests that humor therapy may lessen symptoms of depression and anxiety.

For the analysis, which is published in *Brain and Behavior* , investigators identified 29 relevant studies that included a total of 2,964 participants and were conducted in nine different countries.

Most participants thought humor therapy lessened their depression and anxiety, but some considered the effect to be insignificant. Credit: Neuroscience News

Participants had depression or anxiety and included children undergoing surgery or anesthesia; older people in nursing homes; patients with Parkinson's disease, cancer, mental illness, or receiving dialysis; retired women; and college students.

Most participants thought humor therapy lessened their depression and anxiety, but some considered the effect to be insignificant "As a simple and feasible complementary alternative therapy, humor therapy may provide a favorable alternative for clinicians, nurses, and patients in the future," the authors wrote.

THE GUT-BRAIN CONNECTION: PROBING NEUROLOGICAL DISORDERS

The Gut-Brain Connec on: Probing Neurological Disorders - Neuroscience News

Summary: Researchers designed a technology that allows them to probe and control the neural circuits between the gut and brain, demonstrating their ability to influence feelings of fullness or reward-seeking behavior in mice.

The interface used flexible fibers embedded with sensors, temperature sensors, and light sources for optogenetic stimulation. The aim is to use this technology to explore the links between digestive health and neurological conditions such as autism and Parkinson's disease.

This work opens up the potential to manage these conditions by manipulating peripheral circuits in a non-invasive way.

Key Facts:

1. MIT researchers have developed a technology that uses sensor-embedded fibers to control neural circuits between the gut and brain, affecting feeding behaviors in mice.
2. This technology could offer insights into the correlation between digestive health and neurological conditions such as autism and Parkinson's disease.
3. The research holds the promise of managing neurological conditions in a non-invasive way by manipulating peripheral circuits.

Source: MIT

The brain and the digestive tract are in constant communication, relaying signals that help to control feeding and other behaviors. This extensive communication network also influences our mental state and has been implicated in many neurological disorders.

MIT engineers have now designed a new technology that can be used to probe those connections.

Using fibers embedded with a variety of sensors, as well as light sources for optogenetic stimulation, the researchers have shown that they can control neural circuits connecting the gut and the brain, in mice.
In a new study, the researchers demonstrated that they could induce feelings of fullness or reward-seeking behavior in mice by manipulating cells of the intestine.
In future work, they hope to explore some of the correlations that have been observed between digestive health and neurological conditions such as autism and Parkinson's disease.
"The exciting thing here is that we now have technology that can drive gut function and behaviors such as feeding. More importantly, we have the ability to start accessing the crosstalk between the gut and the brain with the millisecond precision of optogenetics, and we can do it in behaving animals," says Polina Anikeeva, the Matoula S. Salapatas Professor in Materials Science and Engineering, a professor of brain and cognitive

sciences, associate director of MIT's Research Laboratory of Electronics, and a member of MIT's McGovern Institute for Brain Research.

ADOLESCENT STRESS SHAPES MOTHERLY BEHAVIOR

Adolescent Stress Shapes Motherly Behavior - Neuroscience News

Summary: Stress during adolescence alters brain functions, influencing postpartum social behavior in mammals.

The research utilizes optogenetics and calcium imaging techniques to understand neuronal communication in mice that experienced psychosocial stress during adolescence. It found that this stress, combined with pregnancy and childbirth, impacts the function of the glutamatergic pathway, leading to changes in social behavior.

The findings suggest that a stress-hormone receptor (glucocorticoid receptor) within this pathway plays a crucial role in these alterations.

Key Facts:

1. Adolescent psychosocial stress can alter neuronal functions in the brain, leading to changes in postpartum social behavior in mammals.
2. The research pinpointed a decrease in the functionality of a cortico-cortical pathway — the anterior insula-prelimbic cortex pathway — as a result of adolescent stress and subsequent pregnancy, leading to abnormal social behavior.
3. The involvement of a stress-hormone receptor, known as the glucocorticoid receptor, in this pathway suggests the stress hormone's critical role in postpartum behavioral changes.

Source: University of Alabama at Birmingham

Stress during adolescence can cause postpartum behavioral changes in women and other mammals, including depression and changes in social behavior after the birth of a child.

Beyond Caffeine: How the Coffee Experience Enhances Brain Readiness

Beyond Caffeine: How the Coffee Experience Enhances Brain Readiness - Neuroscience News

Summary: Drinking coffee increases alertness and prepares people to switch from rest to task mode more so than just consuming caffeine.

Researchers found coffee drinking decreased the connectivity of the brain's default mode network – involved in introspection – indicating readiness to move on to tasks. However, coffee consumption also heightened connectivity in the higher visual network and the right executive control network, elements involved in working memory and cognitive control.

This increase in connectivity did not occur with caffeine alone, suggesting that the full coffee experience, not just caffeine, helps to enhance alertness and cognitive readiness.

Key Facts:

1. The study found that drinking coffee decreases connectivity in the default mode network of the brain, making individuals more prepared to switch from rest to task mode.
2. Drinking coffee also increases connectivity in the higher visual network and the right executive control network, contributing to working memory and cognitive control.

3. These beneficial effects on brain connectivity were not observed with caffeine alone, indicating that the full experience of drinking coffee plays a significant role in enhancing alertness and cognitive readiness.

Source: Frontiers

CHILDHOOD READING HABITS BOOST BRAIN AND MENTAL HEALTH IN TEENS

Childhood Reading Habits Boost Brain and Mental Health in Teens - Neuroscience News

Summary: Encouraging children to indulge in reading for pleasure can enhance their cognitive and mental health during adolescence, a recent study reveals.

The research, involving over 10,000 young adolescents from the US, discovered that an optimal reading duration of 12 hours per week contributed to improved brain structure and mental health.

The pleasure of reading fostered better verbal learning, memory, and speech development and showed signs of reduced stress, depression, and behavioral issues.

Key Facts:

1. Early reading for pleasure shows a strong correlation with positive cognitive development and mental wellbeing in adolescents.
2. An optimal weekly reading duration of around 12 hours appears to benefit young readers, with improvements tapering off beyond this point.
3. Adolescent readers showed larger total brain areas and volumes, especially in regions linked to cognitive functions and mental health.

Source: University of Cambridge

Children who begin reading for pleasure early in life tend to perform better at cognitive tests and have better mental health when they enter adolescence, a study of more than 10,000 young adolescents in the US has found.

In a study published today in *Psychological Medicine* , researchers in the UK and China found that 12 hours a week was the optimal amount of reading, and that this was linked to improved brain structure, which may help explain the findings.

The team found a strong link between reading for pleasure at an early age and a positive performance in adolescence on cognitive tests that measured such factors as verbal learning, memory and speech development, and at school academic achievement. Credit: Neuroscience News

Reading for pleasure can be an important and enjoyable childhood activity. Unlike listening and spoken language, which develop rapidly and easily in young children, reading is a taught skill and is acquired and developed through explicit learning over time.

During childhood and adolescence, our brains develop, making this an important time in which to establish behaviours that support our cognitive development and promote good brain health. However, until now it has been unclear what impact – if any – encouraging children to read from an early age will have on their brain development, cognition and mental health later in life.

To investigate this, researchers from the universities of Cambridge and Warwick in the UK and Fudan University in China looked at data from the Adolescent Brain and Cognitive Development (ABCD) cohort in the US, which recruited more than 10,000 young adolescents.

The team analysed a wide range of data including from clinical interviews, cognitive tests, mental and behavioural assessments and brain scans, comparing young people who began reading for pleasure at a relatively early age (between two and nine years old) against those who began doing so later or not at all. The analyses controlled for many important factors, including socio-economic status.

Of the 10,243 participants studied, just under a half (48%) had little experience of reading for pleasure or did not begin doing so until later in their childhood. The remaining half had spent between three and ten years reading for pleasure.

The team found a strong link between reading for pleasure at an early age and a positive performance in adolescence on cognitive tests that measured such factors as verbal learning, memory and speech development, and at school academic achievement.

These children also had better mental wellbeing, as assessed using a number of clinical scores and reports from parents and teachers, showing fewer signs of stress and depression, as well as improved attention and fewer behavioural problems such as aggression and rule-breaking.

Children who began reading for pleasure earlier also tended to spend less screen time – for example watching TV or using their smartphone or tablet – during the week and at weekends in their adolescence, and also tended to sleep longer.

When the researchers looked at brain scans from the adolescent cohort, they found that those participants who had taken to reading for pleasure at an early age showed moderately larger total brain areas and volumes, including in particular brain regions that play critical roles in cognitive functions.

Other brain regions that were different among this group were those that have been previously shown to relate to improved mental health, behaviour and attention.

Professor Barbara Sahakian from the Department of Psychiatry at the University of Cambridge said: “Reading isn’t just a pleasurable experience – it’s widely accepted that it inspires thinking and creativity, increases empathy and reduces stress.

“But on top of this, we found significant evidence that it’s linked to important developmental factors in children, improving their cognition, mental health, and brain structure, which are cornerstones for future learning and well-being.”

The optimal amount of reading for pleasure as a young child was around 12 hours per week. Beyond this, there appeared to be no additional benefits.

In fact, there was a gradual decrease in cognition, which the researchers say may be because it suggests they are spending more time sedentary and less time at other activities that could be cognitively enriching, including sports and social activities.

Professor Jianfeng Feng from Fudan University in Shanghai, China, and the University of Warwick, UK, said:

"We encourage parents to do their best to awaken the joy of reading in their children at an early age.

"Done right, this will not only give them pleasure and enjoyment, but will also help their development and encourage long-term reading habits, which may also prove beneficial into adult life."

ADVERSE CHILDHOOD EXPERIENCES LINKED TO TEEN CANNABIS USE DISORDER

Adverse Childhood Experiences Linked to Teen Cannabis Use Disorder - Neuroscience News

Summary: Early exposure to adverse childhood experiences (ACEs), including parental drug misuse and mental health challenges, increases the risk of problematic cannabis use during adolescence.

The study analyzed over 5,000 participants from the 'Children of the 90s' study. Individuals who experienced four or more ACEs were found to be over twice as likely to regularly use cannabis in their teenage years. Given the potential long-term mental and physical health effects, the researchers are calling for more supportive interventions for youth exposed to such adversities.

Key Facts:

1. The study found that young people exposed to four or more adverse childhood experiences (ACEs) are over twice as likely to regularly use cannabis during their teenage years.
2. Adolescents most at risk for regular cannabis use were those who had parents with a history of substance misuse or mental health problems.
3. The research underscores the need for increased support and interventions to help young people before cannabis use becomes a habit, especially among those exposed to multiple ACEs.

Source: University of Bath

Young people who are exposed to adverse childhood experiences between the ages of 0 – 12 years, including parental drug misuse, are at highest risk for developing problematic adolescent cannabis use as teenagers, according to a new study.

The research, led by University of Bath psychologist, and expert in adolescent mental health, Dr Lindsey Hines, analysed outcomes for over 5,000 participants tracked using the Avon Longitudinal Study of Parents and Children – also known as the 'Children of the 90s' study.

Adverse childhood experiences ('ACEs') considered included physical, emotional and sexual abuse, emotional neglect, bullying, parental substance use, violence between parents, parental mental health challenges, and a parent being convicted of a criminal offence.

Through the study they combined these negative experiences in childhood with self-reported data about the frequency of cannabis use at various points between ages 13 – 24. Self-reported data ranged from individuals having never experimented with cannabis to using it regularly in their teenage years.

They found that people who had experienced four or more ACEs were more than twice as likely to use cannabis regularly as teenagers, compared to those who experienced low levels of ACEs. Teens who had grown up with parents who had abused drugs or alcohol, or had parents with mental health problems, were at the most risk of going on to regularly use cannabis.

Given the long-term mental and physical health implications of cannabis use at young ages, they are calling for much greater support to be put in place to help young people before cannabis use becomes engrained. Parts of the UK could learn from approaches like the cannabis support for young people offered by Bristol Drug Project (BDP), they say.

Dr Lindsey Hines explained: "Our study is one of the first to comprehensively track adverse childhood experiences from birth, and to see how they relate to teenage cannabis use which can begin as early as 13.
"Through this, we observe a strong correlation between these difficult early life experiences and regular cannabis use in teenage years and young adulthood.
"A growing body of research is highlighting the challenges regular cannabis poses, in particular for young people's long-term mental health.
"With this study we wanted to focus on those factors underlying cannabis use, with the hope of informing more targeted interventions which in the future can help young people and their families."
The BDP is a charity providing harm reduction and treatment services for people who are experiencing a negative relationship with drugs and/or alcohol. With 36 years of experience, its goal is to support people towards the changes they want to see in their lives, no matter what they may be.

Hazel McMahon is one of BDP's New Leaf Cannabis Support Workers in its Youth team. She said: "Our youth team supports both young people who are using substances and those who are affected by someone else's substance use.

"Through working with these two groups concurrently we see the significant overlap in these populations daily. ACEs and other trauma are significant factors in steering the provision of our services.
"Our cannabis support group, New Leaf, utilizes a trauma-informed approach, and we build on protective factors known to reduce the negative impact of ACEs, such as having a positive and consistent relationship with an adult.

"We warmly welcome this research that evidences the link between ACEs and cannabis use, and we hope that it will influence the provision of specific cannabis support services for young people around the country."

KINDNESS MEDITATION BOOSTS MEMORY RECALL IN DEPRESSION RECOVERY

Kindness Medita on Boosts Memory Recall in Depression Recovery - Neuroscience News

Summary: Aform of meditation focused on unconditional kindness can enhance memory recall in individuals with a history of depression.

Participants engaged in daily ten-minute meditations aimed at promoting happiness, health, loving-kindness, and peace. Over four weeks, the meditation group saw increased retrieval of specific memories compared to the control group.

Both meditation and control participants (who engaged in coloring, an anxiety-reducing activity) experienced improved recall of positive-specific memories.

Key Facts:

1. The study involved 50 students with a history of depression who engaged in a daily kindness-focused meditation practice for four weeks.
2. Compared to a control group that performed coloring activities, the meditation group saw a greater increase in the retrieval of specific memories.

3. Both the meditation and coloring groups showed improved recall of positive-specific memories, but the meditation practice demonstrated a notable potential in making memories more specific and positive.

PLOS

Source:

BIRTH CONTROL PILLS AFFECT WOMEN'S STRESS HORMONE LEVELS

Birth Control Pills Affect Women's Stress Hormone Levels - Neuroscience News

Summary: Social activity reduces the levels of stress hormone ACTH in women not on birth control pills, but not in women who are.

The study, involving women of an average age of 20.5 years, discovered the stress response in women off birth control depends on their menstrual cycle phase. The team suggests that birth control pills could suppress the body's own production of progesterone, impacting the stress response.

Further research is needed to understand the complex interactions between hormone levels and stress response.

Key Facts:

1. Birth control pills may affect stress response: women on birth control pills do not experience the same reduction in stress hormone levels during social activities as those not on the pill.
2. The stress response in women who do not take birth control pills depends on their menstrual cycle phase, which may influence the production of stress-regulating hormones.
3. The study suggests that birth control pills might suppress the body's own production of progesterone, a hormone involved in a range of calming effects and the stress response.

Source: Aarhus University

MASTER YOUR BREATH, MASTER YOUR HEALTH: THE TRANSFORMATIVE POWER OF CONTROLLED BREATHING

Master Your Breath, Master Your Health: The Transforma ve Power of Controlled Breathing - Neuroscience News

Summary: Breathing, an autonomous function, also possesses afeature unique to a few bodily activities: we can control it.

According to research, controlled breathing stimulates the nervous and cardiovascular systems, potentially altering both physical and mental health states. By consciously slowing our breathing, we can stimulate the 'rest and digest' response managed by the parasympathetic nervous system.

Techniques such as inspiratory muscle strength training (IMST) or mindful, slow breathing have shown potential in reducing stress, improving mental health, and lowering blood pressure.

Key Facts:

1. Controlled breathing doesn't just alter the amount of oxygen intake, but also impacts how much blood is ejected from our hearts, affecting cardiovascular health.
2. Techniques like IMST can lead to significant health improvements, such as a reduction in systolic blood pressure.
3. Controlled breathing can also help manage mental health by reducing feelings of stress, anxiety, and depression, and can be used as a tool for pain control.

Source: American Heart Association

Odds are, if you are reading this, you know something about breathing. You're probably doing it right now.

It's an essential act that requires no thought. But thinking about it can alter your physical and mental health.

That's because breathing isn't just about the lungs, said Daniel Craighead, an assistant research professor in the department of integrative physiology at the University of Colorado Boulder.

It affects the nervous and cardiovascular systems and more. Changing how much we inhale affects more than just the amount of oxygen we get. "When we breathe, that actually impacts how much blood is ejected from our hearts."

Breathing happens regardless of whether we pay attention, said Dr. Ni-Cheng Liang, an integrative pulmonologist in private practice in Encinitas, California. "But what's a bit more miraculous about breathing is that, contrary to a lot of other bodily functions, we can also control our breathing."

To understand how that can be healthy, it helps to start with knowing how breathing both affects and is affected by the nervous system.

Breathing and heart rate are regulated by the same parts of the brain, and each "talks" to the other to work in sync. When we inhale, our lungs expand, and pressure on the heart and blood vessels changes. That stimulates sensory nerves that, in return, affect how hard we breathe.

When we encounter a threat – such as an attacking tiger or an angry boss – it triggers the "fight or flight" response.

"Along with that comes the increase in heart rate, the increase in sweaty palms and the increase in muscle tension," said Liang, who also is a voluntary assistant professor at the University of California San Diego and a mindfulness teacher. We breathe faster, and blood rushes to the muscles as the body braces for action.

That's the work of the sympathetic nervous system.

Conversely, when we're relaxed, we breathe more slowly. Heart rate decreases, blood vessels dilate and more blood flows to the gut to help with digestion. This "rest and digest" response is managed by the parasympathetic nervous system.

Breathing is affected by these systems, but by consciously slowing our breathing we can manipulate them.

Research suggests that controlled breathing can trigger the "rest and digest" response by stimulating the vagus nerve, which controls many involuntary functions, including heart rate.

If you take a slow, deep breath to calm down, that's actually working physiologically by affecting the nervous system, Craighead said. "It's not just all mental."

Craighead, a cardiovascular physiologist, led research demonstrating just how much a specific breathing activity can affect one important measure of health: blood pressure.

He and his team measured the effect of inspiratory muscle strength training, or IMST, which involves the use of ahandheld device that makes it harder to inhale.

In a group of healthy adults, those who practiced high-resistance IMST for 30 breaths a day for six weeks saw their systolic blood pressure – the first number in a reading – drop by 9 millimeters of mercury.

Acontrol group that had sham training with low breathing resistance saw no improvement, according to the results published in 2021 in the Journal of the American Heart Association .

Other research has shown that deep breathing can improve blood glucose in healthy people. Breathing exercises also have been shown to bolster mental health by lowering stress and reducing feelings of anxiety and depression. Just learning to manage stress has its own health benefits.

Controlled breathing is also a well-established tool for pain control, Liang said. Pain, for most people, is perceived as a threat. “It’s something that stresses our body out,” she said. Mindfulness and breathing have been shown to help decrease pain, she said, by calming the sympathetic nervous system and encouraging the parasympathetic.

There are limits to what controlled breathing can do, Liang said. For example, deep breathing may not provide as much relief for severe pain resulting from a traumatic chest injury or a blood clot in the lungs.

And controlled breathing cannot cure severe depression or anxiety or treat serious psychological problems, although applying mindfulness and deep breathing may help with symptoms.

And, Craighead said, the type of breathing he studied can’t replace a full workout. “I definitely wouldn’t replace aerobic exercise with IMST,” he said. “Aerobic exercise has lots of other health benefits that we haven’t seen” in breathing research, such as helping to control weight and cholesterol levels.

But Craighead, a marathoner, has incorporated resisted breathing into his routine. Resistance is measured in centimeters of water; look for a device that provides at least 150, he said, but check with a doctor first.

Liang regularly recommends controlled breathing to her patients. Four well-known approaches, which she said are rooted in Indian traditions of pranayama, or yogic breathing, are:

4-7-8 breathing

Inhale through your nose for four counts, hold for seven counts, and exhale through your mouth for eight.

“This can be used by anyone who doesn’t have chronic lung disease in circumstances of heightened stress, anxiety, or where you feel like you’re not able to wind down at the end of your day or have some trouble falling asleep,” Liang said. Making the exhale longer than the inhale helps to activate the vagus nerve and bring on the parasympathetic nervous system, she said.

Pursed-lip breathing

Inhale, then exhale through your mouth through pursed lips, as if you’re blowing out birthday candles, two to four times longer than your inhale. This works for anyone who has trouble holding their breath, such as people with chronic lung disease.

Pursing your lips creates pressure that opens the airways a bit, Liang said, and the long exhale helps get rid of unexchanged gas in the lungs and makes room for more fresh air.

Box breathing

Inhale through the nose for four counts, hold your breath for four more, exhale for four, then hold for four. “When you breath-hold, that increases your carbon dioxide level temporarily. And when you increase your carbon dioxide level in your bloodstream, that decreases your heart rate. And so it helps to bring on that parasympathetic physiology online as well.”

Liang recommends box breathing for people who “need to remain focused and alert, yet calm at the same time. For instance, before taking a big test or before speaking to a large audience.”

Diaphragmatic breathing

Place both hands on your abdomen, inhale through the nose, letting the abdomen balloon out, and exhale through your mouth. Liang said that the focus on the abdomen and hands makes this approach helpful for people who get anxious if they have to focus too much on their airflow.

Anyone with a medical condition related to the heart or lungs or who has a mental health condition should check with a health care professional before trying any method, Liang said.

“I don’t recommend people to do these breathing practices more than three to five breath cycles at a time, especially if they’re just starting out,” she said. Beginners might find that exhaling too much carbon dioxide can make them dizzy. “So be cautious about the dosage.”

But she also encouraged people to embrace the wonder that comes with the power of breath.

“The body works in a very miraculous way,” Liang said. “And there’s a lot of science behind it. And the way that we’re wired, and the way that all of our organ systems are interconnected is pretty remarkable.”