



*Dedicated to the Integration of Biological, Psychological and Social Factors in Medicine*

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Anthony Austin*

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**Research from Ohio University conducted by Anthony Austin, PhD, and Stephen Patterson, PhD suggests that blood clots more during acute psychological stress, both through actual activation of blood clotting and as a consequence of reduced blood plasma.**

**Athens, Greece** – We asked our sample of 40 healthy, male college students to participate in a stressful mental arithmetic task in the laboratory. We collected blood samples immediately before (baseline), during, and 20 minutes after the task (recovery) to examine changes in blood clotting and plasma volume (the relative amount of the fluid portion of blood). We showed that plasma volume decreased and blood clotting increased during stress relative to baseline and that they returned to baseline levels after recovery, with the notable exception of clotting factor VIII activity (associated with abnormal physiology and development of cardiovascular disease). We also showed that traditional mathematical correction for the effects of plasma volume changes should not be used when examining stress-effects on clotting time and clotting activity. On the other hand, a new method of physically correcting for plasma volume changes developed in our laboratory is more appropriate for these blood clotting parameters.

Clotting factor concentrations and activity increase during acute psychological stress. Most of these changes seem to be a consequence of reduced plasma volume, with the exception of factor VIII clotting activity, which seems to be genuinely activated during stress. Over time, repeated stress could put one at greater risk for developing heart disease by increasing blood clotting more often than is normal. Similarly, elevated blood clotting during stress may be one mechanism through which stress could trigger a heart attack.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Yvo Meevissen*

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**OPTIMISM AND STRESS: HOW CULTIVATING A POSITIVE VIEW ON THE FUTURE CAN LEAD TOWARDS A DIMINISHED STRESS RESPONSE IN A PUBLIC SPEAKING TASK**

**Athens, Greece** – 48 students of Maastricht University participated in a stress task in which they had to give a speech in front of an audience on two different occasions 4 weeks apart. Half of the participants were given an optimism exercise in between the two stress tasks. This exercise consisted of constructing the best possible future for themselves in which they had realized all of their life dreams, and visualizing this future on a daily basis during a period of two weeks. During the same period, the other half of the participants carried out a neutral exercise (time management) in which they were asked to write down and visualize their daily activities.

Both groups showed a significant stress response during the first stress task, as evidenced by increases in their subjective feelings of stress as well as by increases in the stress hormone cortisol. During the second stress task, participants who carried out the optimism exercise showed a considerable decline in their stress response whereas participants who did the neutral exercise showed a stress response of similar magnitude as during the first session. Questionnaires, administered on both occasions, revealed that this declined stress response may be the result of reduced worrying and neuroticism, and increased active coping and positive mood. The present study demonstrates that enhancing optimism, by means of visualizing a best possible future self, can protect against the negative effects of stressful events.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Xuejie Chen*

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**Research from Brandeis University suggests that higher lifetime chronic stress exposure is related to unhealthy biological responses in acute stress situations.**

**Athens, Greece** – We recruited 23 healthy young participants and exposed them to a fifteen-minute laboratory stress situation twice on two consecutive days. In this public speaking task, participants talk about their personality and solve a difficult math task in front of an evaluative panel.

Before and after both stress situations, blood and saliva samples were taken at five time points (immediately before, after, 30 minutes, 60 minutes and 120 minutes after stress), to measure the stress hormone cortisol, and the inflammatory marker interleukin-6. Lifetime chronic stress was assessed using self-report questionnaires: the Trier Inventory for Chronic Stress (TICS) was used to test the stress events during the preceding 3 months in 9 different subscales, and the Life Stress Questionnaire (LSQ) asked for stressful life events the participants and their close relatives experienced throughout their entire life.

In the entire group of participants, both biological markers increased after both stress situations. On average, we found that cortisol showed habituation, i.e. that it was reduced after secondary stress exposure, but that inflammation showed sensitization, i.e. that it was higher after the second stress test. Differences in these patterns were found between participants: Individuals reporting more recent work-related stress showed less effective habituation of cortisol, and individuals reporting more recent general chronic stress showed a greater inflammatory response to the repeated stress. Finally, participants reporting more parental stress showed greater cortisol responses to the second stress test.

In summary, our results suggest that recent and lifetime chronic stress is related to maladaptive acute stress response patterns of cortisol and peripheral inflammation. Such maladaptive biological response might indicate higher disease susceptibility in chronically stressed individuals. These findings have implications for understanding the aversive consequence of chronic stress, and might show how our individual stress history affects how we respond to future stress situations, and thus affect future health. These findings could help in the development of strategies for prevention of stress-related health problems.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Viola Vaccarino*

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**Research from Emory University links posttraumatic stress disorder to heart disease**

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**Athens, Greece** – Post-traumatic Stress Disorder (PTSD) is a psychiatric condition characterized by a persistent maladaptive reaction due to severe psychological stress. Many studies have documented a higher prevalence of physical health problems in persons with PTSD, particularly symptoms of heart disease. However, empirical evidence using objective measures of heart disease is lacking. Furthermore, PTSD often co-occurs with depression. The relative contribution of PTSD and depression on the risk of heart disease has not been well established.

We followed 562 male twins from the Vietnam Era Twin Registry without previous cardiovascular diseases who had PTSD and depression measured in 1992. Their mean age at baseline was 42 years. After 15 years of follow-up the twins were examined in person and occurrence of heart disease was assessed by medical history and by cardiac imaging scans.

We found that heart disease events occurred twice as often in twins with PTSD than in those without PTSD. This increased risk was not due to depression which showed a weaker association with heart disease. Twins with PTSD, but not those with depression, had abnormal cardiac scans indicating presence of heart disease. These findings were not explained by lifestyle factors such as smoking, nor were they explained by family factors or other heart disease risk factors such as high blood pressure.

Our findings indicate that persons with PTSD are at increased risk for heart disease, independent of depression, and may benefit for enhanced efforts toward heart disease prevention.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Tristen K. Inagaki, & Naomi I. Eisenberger\**

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**New findings from researchers at the University of California, Los Angeles reveal overlapping neural regions underlying feelings of physical warmth and ‘social warmth.’**

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**Athens, Greece** – Often times being around or thinking about friends, family, and romantic partners can make us feel warm and pleasant. Indeed, temperature-related language is often used to describe these feelings such as “we shared a warm moment” or “she warms my heart.” Here, for the first time, we show that this linguistic overlap between feelings of ‘social warmth’—the pleasant feelings that arise when we feel connected to those we love and care about—and actual increases in physical warmth share neural activation patterns.

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Participants came in for a neuroimaging session in which they read socially warm messages (e.g., “I love you for being so thoughtful”) and neutral messages (“You have black hair”) written by their closest friends and family members. They also held a warm pack and a room temperature object in the scanner. Analyses, which examined overlapping activations between the social and physical warmth tasks, revealed activity in the ventral striatum and insula, regions associated with processing physical warmth as well as highly pleasing, rewarding stimuli. Additionally, participants reported feeling more connected to others when holding the warm pack compared to when they held the neutral object and warmer when reading the socially warm messages compared to when they read the neutral messages from loved ones. Interestingly, those who showed the most activity in the ventral striatum to reading the warm messages were also more likely to report helping and supporting their friends and family members one month after the experiment ended. Together, these results suggest that part of what makes our closest relationships feel so good are, quite literally, the warmth we experience from others.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Research from the E-Da Hospital suggests that autonomic dysregulation may associate with arterial stiffness in people with major depressive disorder.**

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**Athens, Greece** – Previously studies found the associations between depression and cardiovascular morbidity and mortality. The autonomic dysregulation may be an important mechanism between depression and cardiovascular disorder. We asked 13 major depressive disorder (MDD) patients recall an depressive event and measured the heart rate variability (HRV) as the cardiac autonomic function by electrocardiographic. In addition, we also measured the arterial stiffness by record pulse wave velocity during the resting baseline.

We found a correlation between cardiac autonomic dysregulation and arterial stiffness during the depressive event recall. This result indicated that when people with depression think about depressive event or in the depressive mood that would decrease cardiac autonomic function and vascular function. In the long run, depression thinking and depressive mood may increase the risk of arterial stiffness and cardiovascular disorders.

This study indicated that change your depressive mood and change your cardiac autonomic function; think positive and keep your arterial healthier. To achieve prevent the cardiovascular diseases, we suggest the following strategies: antidepressant, cognitive-behavior therapy, positive thinking style, heart rate variability biofeedback, and exercise for depressive thinking and depressive mood.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Sarah B. Lupis*

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**Research from Brandeis University suggests that body esteem may affect physiological stress responses, independent of actual BMI.**

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**Athens, Greece** – Although the acute stress response is an adaptive way to deal with an immediate threat, repeated activation, such as in chronic stress, is often associated with stress axis dysfunctions and subsequently, negative health outcomes. Hence, understanding why people differ in their responses to stress is of great importance. One prominent theory concerning predictors of stress responses proposes that shame is a potent activator. If so, body esteem may be an important factor predicting who will experience shame in response to a psychosocial stressor and thus is more prone to show stress axis dysfunctions.

To test this hypothesis, we exposed 44 healthy undergraduates to an acute psychosocial stressor incorporating a social evaluative situation and collected saliva samples to assess their cortisol stress response. Questionnaires were used to assess body esteem as well as feelings of shame before as well as during stress. Lastly, we used facial coding analysis to assess actual expression of shame throughout the stress test.

As hypothesized, we indeed found that independent of actual body mass index (BMI), those with low body esteem were more likely to report – but not necessarily to express – shame during the stressor. Furthermore, we found that body esteem but not shame itself was linked to cortisol stress responses. This suggests that a social evaluative situation such as the one used in the current study may to a large extent lead to strong stress responses by triggering *beliefs* one holds about one's own body, rather than *emotions* associated with body esteem.

This latter effect further occurred in a gender-specific manner: Women with low body esteem responded stronger than women with high body esteem, while males showed the opposite pattern. This suggests that for males, high body esteem may make a social evaluative situation even more stressful, potentially through a link to performance. On the contrary, for females, feeling good about one's appearance seems to make performance less relevant and as such high body esteem may even be stress protective.

Most importantly, however, given that most of the stressors we are exposed to today are of social evaluative nature – as opposed to being chased by a lion – the current study emphasizes the importance of acknowledging the central role body esteem plays in these processes.



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*Release from American Psychosomatic Society Meeting, Athens, Greece*

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## **Financial Pressures May Influence Inflammation, University of Minnesota Researchers Find**

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**Athens, Greece** – Chronic stress could be leading to increased inflammation for many women. In a study out of the University of Minnesota, researchers analyzed the association between financial strain and several other factors along with circulating levels of adiponectin, an important anti-inflammatory hormone that modulates several metabolic processes. Women with high strain had a lower adiponectin level than those with no financial strain.

The study involved 581 healthy, middle aged participants selected from the Study of Women’s Health Across the Nation. Approximately one third of the women reported it was somewhat or very hard to pay for basics, and were thus considered to be facing high financial strain. This group of women had over 12% lower adiponectin levels than women not under strain after adjustments were made for lifestyle factors, physical attributes and mental health.

Results of this study suggest that financial stress may be negatively affecting levels of circulating adiponectin. Findings highlight a pathway by which chronic stressors may contribute to increased inflammation, metabolic dysregulation and related diseases in women.

The National Institutes on Aging funded this study.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Research from University of Minnesota and University of Alabama-Birmingham links high stress to stroke symptoms.**

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**Athens, Greece** - Higher stress could be putting people at higher risk for stroke symptoms. Using Data from the REGARDS (REasons for Geographic and Racial Differences in Stroke) study, researchers at the University of Minnesota and the University of Alabama-Birmingham analyzed data from nearly 22,000 participants to look for a link between perceived stress and stroke symptoms. Study participants had no history of stroke, transient ischemic attack (mini-strokes) or stroke symptoms at enrollment. Over an average 5 years of follow up, participants were asked biannually if they experienced sudden onset of stroke symptoms in the past six months. Symptoms included unilateral numbness, unilateral weakness, bilateral or unilateral vision loss, difficulty communicating, and loss of ability to understand.

Stress levels were measured at enrollment using a standard scale, then categorized into four quartiles increasing in severity. The lowest quartile included those living relatively stress free whereas the top quartile included participants with the highest stress levels.

Overall, 15.4% of participants reported sudden onset of stroke symptoms at some point during follow-up. The risk of developing stroke symptoms differed by level of stress, with the most stressed participants twice as likely to experience stroke symptoms as the least stressed group. These trends remained despite adjustments for income, diabetes, hypertension and other stroke risk factors.

A focus on stress reduction for those experiencing high stress could reduce the likelihood of developing stroke symptoms, and perhaps later, an actual stroke. This tactic may be particularly helpful among people previously considered healthy or stroke-free. The National Institute of Neurological Disorders and Stroke funded REGARDS

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Research from the University of Birmingham, UK, suggests a broken brain might explain some types of pain.**

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**Athens, Greece** – Patients with fibromyalgia suffer continuous pain that is similar to feeling bruised over large parts their body. Patients also suffer fatigue and difficulties in concentration that they sometimes describe as ‘fibro fog’. Imagine working out (hard) for several hours and then hopping on a round the world flight. At the end of that you will feel similar to how fibromyalgia patients describe their everyday experiences.

A significant barrier to treating fibromyalgia is a lack of clarity as to what might cause their pain and other problems. Generally speaking, fibromyalgia patients do not show signs of damage or disease beyond the symptoms they report. One possibility is that the brains of patients with fibromyalgia misfire and fail to inhibit signals and feelings that most people easily ignore. When most people touch something, for example, there is an immediate increase in activity that quickly fades. This process means that we are alerted to changes in our environment but are not then continually distracted by the change. Similarly for painful stimuli, initially the pain might be felt intensely but then the intensity subsides. Most people are sensitive to change but fibromyalgia patients might be sensitive in general, regardless of change, and that might explain some of their symptoms.

In our experiment, patients with fibromyalgia felt pulses of painful heat that briefly increased and then decreased. Normal volunteers experience increased pain followed by dramatic relief and this experience correlates with activity in the brain stem that is thought to cause pain relief. Patients with fibromyalgia, in contrast, experienced continuous pain without relief even though they still had activity in their brain stem. This finding suggests that patients with fibromyalgia have a faulty system for damping sensory experience, which may eventually explain their continued experience of pain and other symptoms.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Frequently misdiagnosed, the "Atrial Myxoma Masquerade" refers to the most common type of primary benign heart tumor which can mimic other illnesses.**

**Athens, Greece** – Symptoms of dizziness, rapid heart beat, fainting, shortness of breath, cough, weight loss, interrupted sleep, general weakness may appear in various combinations.

Delay and misdiagnosis is frequent. But it is important for psychiatrists and psychologists to be aware of this possible condition when faced with puzzling clinical pictures. Patients of all ages from 2-80 have been reported throughout the world, with a predominance of women. There is a modest familial incidence. Symptoms may occur at any time but most frequently accompany rapid changes in body position.

The first **angiocardiographic** diagnosis was made in 1951. Since then, the international literature is rich and vast. However, delay in diagnosis is frequent. My recent patient was initially diagnosed to have thyroid disease, then depression, then stroke, and finally somatoform disorder.

The young woman lawyer was referred to me as the third psychiatric consultant; I was told she was the angriest patient he had ever seen. Shortly after a couple of evaluative sessions, I was telephoned by her lawyer husband and told that she had collapsed at a Christmas party. She was taken by ambulance to a local hospital. A stroke had been diagnosed. When I arrived at the hospital, they were about to begin treatment with blood thinners. I questioned the decision to begin treatment since most of the symptoms had disappeared.

Despite the associated dangers involved with transfer from one hospital to another, I urged a 20 minute trip to the Columbia Medical Center.

Prompt diagnostic cardiography revealed an atrial **valve tumor**, which had functioned like a ball-valve, producing symptoms which had been appearing for two years. Various psychological explanations involving her role in a male dominated family and career had been presented to explain her symptoms when the patient started as a novice attorney. Prompt removal of the tumor resulted in cure.. No relapses to date

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Research from University of Maryland Baltimore County, University of Maryland Baltimore, and University of Delaware suggests that negative changes in brain health that have previously been associated with diabetes may be found in non-diabetic older adults.**

**Athens, Greece** – We investigated 172 healthy older adults who were part of a study of cardiovascular risk factors, brain health, and mental function. Because prior research had shown that older adults with diabetes are more likely to have poor brain health, we were interested in finding out about the brain health of older adults without diabetes, but relatively higher blood glucose (sugar) levels. We predicted that higher levels of glucose, even within the normal range, might be related to negative brain changes even if participants did not have a diabetes diagnosis.

First, blood was collected from participants that had fasted overnight to measure their baseline glucose levels. Anyone found to be diabetic was excluded from the sample. Next participants were given oral glucose to see how well their bodies could bring their glucose levels back down to normal. On a different day, participants underwent magnetic resonance imaging, a technique that produces images of brain anatomy.

We found that some negative brain changes reflecting early signs of cerebrovascular disease were indeed related to fasting glucose levels, and that those changes were more significant in our participants that had completed less than 12 years of education.

These findings suggest that even non-diabetic older adults should carefully monitor their glucose levels. Careful observation and control of glucose may help older adults to maintain a healthier brain. Having more education may also help to protect the brain against the negative impact of higher blood glucose; however, research suggests that keeping mentally active is also beneficial.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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### **Scientists Report New Method for Measuring Emotional Content in Expressive Writing**

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**Athens, Greece** – How does writing about one’s deepest thoughts and feelings lead to improvement in one’s health? Richard D. Lane, M.D., Ph.D. and colleagues brought 25 years of scientific investigation on emotional awareness to bear on this question. Two decades ago, other investigators reported that writing about one’s deepest thoughts and feelings about past traumas led to significant improvements in health outcomes, such as fewer doctor visits and improved pain. These findings were consistent with the concept that keeping one’s emotional distress bottled up is not good for your health. Since then studies have shown the beneficial effects of writing on health to be detectable but weak. At the Annual Meeting of the American Psychosomatic Society, Dr. Lane from the University of Arizona in Tucson, AZ, with Dr. Karen Weihs from Arizona and Dr. Annette Stanton from UCLA, reported the creation of a reliable performance measure of the range of emotions expressed in writing samples from women recently diagnosed with breast cancer. “People tend to think of emotions as subjective states with no objective reality, and assume that they can’t be studied scientifically. We found that the number of unique emotion words women use in writing about their breast cancer experience, in just one 15-20 minute writing sample, corresponds to the differentiation and complexity of their emotional experience generally, as measured by the Levels of Emotional Awareness Scale. This gives us the opportunity in future research to examine whether the emotional content in writing is the operative mechanism in influencing health.”

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**More chest pain and discomfort for distressed persons despite near normal arteries.**

**Athens, Greece** – People with a Type D –Distressed- personality tend to experience more negative affect, while at the same time inhibiting these emotions when among others. In recent years, it was shown that people with established heart disease who have a Type D personality are at increased risk for reporting a poor quality of life, being hospitalized, and even having a greater risk of dying.

The CoRPS research group of Tilburg University, the Netherlands, is now unraveling harmful effects of having a distressed personality in the earliest stages of heart disease.

As people age, they show a slow gradual clogging, or stenosis, of their coronary arteries. A number of well-known risk factors speed up this process, such as being overweight, having high blood pressure, an inactive lifestyle, smoking and poor socio-economic status. Severe stenotic arteries pose a risk for a heart attack, which warrants invasive intervention.

Patients in the ‘TweeSteden Mild Stenosis’ (TWiST) study showed only mild stenosis of the coronary arteries based on coronary catheterization. In this early stage patients are sent home with medication and life-style advice since no invasive treatment is feasible. In the present study of 273 patients, those with Type D personality reported significantly more chest pain (57% versus 40%), greater physical limitations, a general poor health status, less satisfaction with their treatment, more fatigue, depressive symptoms and anxiety, independent of disease severity. Based on these findings, Type D personality may be added to the list of exacerbating factors in the early stages of coronary heart disease.

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**Release from American Psychosomatic, Athens, Greece**

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**Prospective association between anxiety but not depressive disorders and leukocyte telomere length in a population based sample**

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**Athens, Greece** – Telomeres are the ends of chromosomes and are proposed as a marker of biological aging. Shorter telomere length has been shown to be associated with age-related morbidity and mortality. The question arises which factors influence the shortening of telomeres. Several studies have indicated that psychosocial stress is associated with shorter telomeres, and thereby increased biological age. Depression and anxiety are of particular interest in relation with telomere length, not only because these disorders are treatable to a certain degree, but also because they are associated with excess morbidity and mortality. We therefore questioned: do anxiety and depressive disorders predict telomere length over time in a large population based sample? And can we explain this association?

We assessed the presence of anxiety and depressive disorders with a psychiatric diagnostic interview in 911 participants. They provided us with blood samples which were used to measure telomere length at baseline and follow-up, with an intervening period of about six years. The participants filled in questionnaires about lifestyle measures (smoking habits, exercise frequency, alcohol use) and their body mass index was measured.

We found that anxiety disorders (but not depressive disorders) predicted shorter telomeres at follow-up in a large population based sample. The association was only for a small part explained by baseline telomere length and lifestyle factors, such as smoking, alcohol use, and exercise. These findings suggest that anxiety might lead to accelerated biological aging. How anxiety leads to accelerated telomere shortening and whether this might be a link between the excess mortality risk associated with anxiety deserves further investigation.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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## **PERCEIVED CONTROL MODERATES THE VASOVAGAL RESPONSE**

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**Athens, Greece** – Feelings of faint, such as dizziness and nausea, are a common and distressing problem associated various conditions including blood-injury-injection phobias, and can cause people to avoid necessary medical procedures. These reactions are not well understood and emotions seem to play an important role.

We asked 86 healthy young adults to watch a video of different medical procedures that are known to cause these reactions, including blood-draws and a surgery. We divided these adults into two groups. Group 1 were given a sense of control by having the option to pause the video and take a 2-minute break at a time of their choice. Group 2 did not have this sense of control and took the 2-minute break at the same time of the previous participants.

Interestingly, group 1 reported significantly less severe feelings of faint, such as dizziness and light-headedness. Also, this sense of control prevented a decrease in blood pressure which may partly explain these less severe symptoms.

Participants who were more sensitive to feelings of disgust or who feared blood experienced more feelings of faint. When we statistically controlled for the effect of other known predictors of feelings of faint, participants who said they were more afraid of feelings of faint actually experienced more of those symptoms.

Treatment strategies and medical interventions may benefit from allowing the patient a greater sense of control and/or decision-making in order to prevent these negative reactions.

###

**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**THE PERCEPTION OF DISEASE: DOES A SYSTEMIC INFLAMMATION AFFECT BODY ODOR, LOOKS AND BIOLOGICAL MOVEMENT?**

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**Athens, Greece** – Everyone knows how it feels to be sick, but is it also possible to tell when other persons are ill? Anecdotes suggest that physicians may use visual or odor cues to help determine a patient’s state of health. Rodents can through smell spot inflammation in other animals, and avoid body odors of infected individuals.

To test whether humans can detect if someone is sick we let other people judge photographs and films as well as smelling body odors from individuals that were made sick in an experimental model. We injected humans with a bacteria related product that causes a temporary sickness response. This product, endotoxin, triggers a harmless inflammatory response that affects the brain so that one feels sick for a few hours. Eight individuals were injected, once with endotoxin and once with placebo. They donated odors by wearing cotton T-shirts for four hours, and they were photographed as well as filmed after injection.

Forty naïve panelists smelled all 16 shirts twice. They judged samples from sick individuals to smell less pleasant, more intense, and less healthy. Forty-three other panelists judged sick individuals as looking less healthy, more tired, and slightly more depressed when seeing short films of the individuals walking. These signs of sickness were, however, not detected from photos.

These data support the notion that humans can detect sickness in other individuals through subjective perceptual cues. The capacity to detect sickness in others, and perhaps to actively signal to others when sick, may have promoted survival in our ancestors.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *M. Habibović*

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**Anxiety is associated with ventricular arrhythmias and mortality in patients with an implantable cardioverter defibrillator**

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**Athens, Greece** – Patients who have experienced a cardiac arrest or who are at increased risk are implanted with an implantable cardioverter defibrillator (ICD). The ICD is a cardiovascular implantable electronic device that is attached with leads in and on the heart. The ICD can give an electric shock with up to 800 volts in order to terminate potentially life-threatening arrhythmias that occur due to an extremely fast and/or abnormal heart rate. The ICD is well accepted by the majority of patients, but a subgroup of patients experiences psychological problems like anxiety, depression, and impaired quality of life.

In our study 1012 patients with an ICD were asked to fill in a questionnaire within two weeks of their ICD implantation to assess their level of anxiety. We followed up patient until one year post implant to examine whether anxious patients were more likely to experience a ventricular arrhythmia or to die prematurely. To date, this is the largest study that has examined the association between anxiety and adverse clinical outcomes in ICD patients.

We found that patients who were anxious at the time of implantation had an increased risk of experiencing a ventricular arrhythmia or mortality. Especially patients with high anxiety levels had a 2 and 3 fold increased risk for arrhythmias or mortality respectively, as compared to patients with low anxiety levels.

This suggests that identifying patients who are anxious just after the ICD implantation is important. These patients might benefit from additional psychological support which might decrease their risk of life-threatening arrhythmias and mortality.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Jessica Grimes*

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**Research from The Miriam Hospital sheds light on link between smoking during pregnancy and adverse outcomes**

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**Athens, Greece** – Prenatal cigarette smoke exposure has been linked to behavioral problems, such as attention deficit hyperactivity disorder, in children, but the mechanisms are unknown. Now, researchers from The Miriam Hospital’s Centers for Behavioral and Preventive Medicine may have a possible genetic explanation.

They say that, like maternal stress, smoking during pregnancy appears to “program” infants’ hypothalamic pituitary adrenocortical (HPA) axis, part of the neuroendocrine system that controls reactions to stress and plays a key role in regulating the stress hormone cortisol. Previous research suggests a connection between maternal smoking, infant cortisol levels and childhood behavioral issues.

The study included 95 mother-infant pairs; half of the mothers smoked during pregnancy. Researchers say infant cortisol response was dampened in children prenatally exposed to smoke compared to unexposed infants. They also discovered alterations to the DNA including DNA methylation in the glucocorticoid receptor (GR) of exposed infants. GR receptors regulate circulating levels of cortisol following exposure to stress; alterations in DNA methylation may regulate GR expression. Variations in GR methylation were also found to be directly related to infant basal and reactive cortisol levels. The findings suggest impaired GR function alters HPA regulation and could be a potential underlying mechanism.

According to lead author Laura Stroud, Ph.D., the findings support the theory that smoking triggers epigenetic changes in infants’ genes that influence their hormonal response to stress, which could increase risk for behavioral deficits. If so, she says this research could help identify early “bio-behavioral” risks from prenatal smoking exposure and inform preventive interventions.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Sharon K. Willis*

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**Research from the Uniformed Services University and the University of Maryland Medical Center suggests that dispositional optimism is related to reduced hospitalizations and fewer physical symptoms in people living with heart failure.**

**Athens, Greece** – Heart failure is increasing in prevalence, mortality is high, and symptoms and hospitalizations for heart failure are a major source of medical utilization and cost in Western countries. Psychosocial factors may be associated with important heart failure health outcomes. We therefore studied 105 patients with congestive heart failure to see if personality characteristics such as optimism would affect symptoms, functional limitations, or predict subsequent hospitalizations for heart failure. Patients completed a questionnaire assessing optimism-pessimism as a personality trait (general expectations that good versus bad things will happen). We then examined whether patients’ optimistic traits would predict their physical symptoms at an initial visit and at a 3 month follow-up and whether or not it would predict heart failure hospitalizations over the following 18 months.

Study results indicated that patients who had higher levels of optimism experienced fewer physical symptoms, functional limitations, and better quality of life at both visits, even after accounting for their disease severity and other medical risk factors such as smoking and body mass index. We also found that patients with higher levels of optimism were less likely to be hospitalized over the 18 month follow-up period.

These findings suggest that heart failure patients who approach life with a sense of general optimism have fewer symptoms, better quality of life, and are less likely to be hospitalized for their disorder. Attention to these psychological characteristics may have implications for reducing symptoms, functional limitations, hospitalizations, and health care utilization.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**SPOUSES OF PROSTATE CANCER PATIENTS REPORT SIGNIFICANT PTSD SYMPTOMS AND HAVE CHANGES IN BIOLOGICAL FUNCTIONING THAT MAY INCREASE RISK FOR DISEASE.**

**Athens, Greece** – A recent study found that spouses of men with prostate cancer identified their husband’s cancer diagnosis as a traumatic event that caused them to experience significant fear and anxiety. When data collected from these women were compared to a sample of women whose mates had no cancer history, it was discovered that spouses of men with prostate cancer had significant symptoms of post-traumatic stress disorder, including intrusive thoughts and heightened physiological arousal following their mate’s cancer diagnosis.

The study was led by KaMala Thomas, an assistant professor in psychology at Pitzer College in Claremont, California. In addition to conducting a psychological interview, the researchers also obtained blood and saliva samples from women in the study to measure immune activity and the stress hormone, cortisol.

Compared to women whose mates had no cancer history, spouses of prostate cancer patients had higher levels of interleukin-6, an inflammatory immune marker that has been linked to risk for heart disease, arthritis, type-2 diabetes, and some cancers. They also had lower levels of cortisol, a hormone produced by the adrenal glands during stress. This pattern of suppressed cortisol activity has been found in studies of women with PTSD and may result from stress overload or over stimulation of the body’s stress response system. Given that cortisol has anti-inflammatory properties by blocking the release of interleukin-6 and other inflammatory markers, it is noteworthy that cortisol was lower in the sample of spouses of prostate cancer patients.

These findings highlight the importance of providing emotional support and resources to spouses who serve as caregivers to men with prostate cancer. Providing them with support during the early phases of cancer diagnosis and treatment could potentially prevent the development of psychological disturbance and have beneficial health effects down the line.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Kristen Sorocco*

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**Childhood Adversity May Impact Personality and Temperament in Young Adults**

**Athens, Greece** – Adversity and trauma in childhood may impact personality and temperament traits in young adults, suggests research at the University of Oklahoma Health Sciences Center.

William Lovallo, Ph.D., a professor of Psychiatry and Behavioral Sciences, and his colleague, Kristen H. Sorocco, Ph.D., associate professor in the Donald W. Reynolds Department of Geriatric Medicine, at the OU College of Medicine and the VA Medical Center in Oklahoma City found early lifetime adversity may negatively impact various aspects of personality and temperament in adulthood.

Early life stress is known to impact physical and mental health, but less is known about the impact of early life adversity on personality and temperament. The Oklahoma Family Health Patterns Project, a long-term study on risk for substance abuse, examined the impact of early life adversity on personality and temperament in 594 healthy young adults, including 394 women, 18 – 30 years of age.

Participants were assigned an adversity score based on whether they'd been mugged, robbed, threatened with a weapon, sexually assaulted or separated for at least six months from a biological parent.

As the number of adverse life events increased, emotional stability became more labile, with persons showing more symptoms of depression, mood instability, and more negative emotions in general.

Further, the greater the number of early life events the more likely that the individual exhibited personality traits associated with behavioral undercontrol and impulsive behaviors. Such individuals are more likely to violate social norms and take risks in life.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Keely A. Muscatell*  
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**Neural Responses to Social Rejection and Reward**

**Athens, Greece** – Many people cope with stress by doing things they find rewarding, such as eating ice cream, shopping for a new pair of jeans, ordering a tall glass of beer, or taking a weekend trip to Las Vegas. In this study, we examined how the brain responds to one type of rewarding experience, the possibility of earning money, after experiencing the stress of being socially rejected. We tested the possibility that the more participants' brains responded to the social rejection, the more they would subsequently respond to reward.

To test this possibility, fifteen young adults underwent an MRI scan that allowed us to measure what brain regions were active when they were performing different tasks. First, participants played a virtual game of catch with two other players, in which they eventually stopped receiving the ball, leading to an experience of being socially excluded. We were especially interested in how two regions of the brain (the dorsal anterior cingulate cortex and anterior insula) that are known to be related to how upset people feel when they are left-out would respond to this experience of social rejection. Following the virtual ball tossing game, participants played another virtual game in which they had an opportunity to win money. During the money game, we investigated how much neural activity was present in the ventral striatum, a brain region that is often responsive during rewarding experiences.

As expected, we found that people who showed more activity in distress-related brain regions during the rejection task also showed more neural activity in the reward-related region during the money task. These results suggest that positive experiences, like the opportunity to win money, might be even more pleasant and rewarding if we've recently had our feelings hurt during an episode of social rejection. These results also suggest that seeking out rewarding experiences may be a natural way of coping with distress and may be more powerful for those who experience the greatest upset. The data may also have implications for our understanding of maladaptive strategies for coping with stress, such as drinking, gambling, or eating unhealthy food, that over time may lead to poor health.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Research from the University of Birmingham suggests that acute inflammation can impair mental ability in young healthy people**

**Athens, Greece** – It is known people with increased levels of chronic inflammation do not perform as well on tests of mental ability compared to those with low inflammation. This has been looked at in older people or people who are suffering from a disease, but we do not know if acute inflammation in young healthy students can influence their mental function.

Young healthy students completed a maths test, which was our measure of mental function. They did the test twice. Before they completed the test for the second time, they were given a vaccination, which caused acute inflammation.

Young people with lower levels of inflammation did better at the test than those with higher levels of inflammation. Everybody did better the second time they did the test, which shows that performance improved with practice. Interestingly, there was a link between improvement in mental test score and inflammation after the vaccination; those who had more inflammation did not do improve as much as those with less inflammation.

This study shows that decreased mental function is linked to acute inflammation with in young healthy people, like it is in elderly or people with an inflammatory-related disease. Anti-inflammatory interventions might help to improve the mental performance of those with an inflammatory disease.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Julia Staab*

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**Research from the University of Göttingen investigates the role of a transcription factor in interferon-induced depression by modulating gene activation**

**Athens, Greece** – Major depression is a common, sometimes fatal disorder and the leading cause of disability worldwide. Numerous clinical studies have reported that patients with depressive symptoms exhibit higher serum levels of circulating inflammatory markers as compared to healthy subjects. Interferons are critically engaged in the fight against invading microorganisms and frequently cause severe depressive symptoms when administered to patients for anti-viral treatment. The most serious adverse events reported with interferon therapy are depression and suicidal ideation. Withdrawal of the drug commonly resulted in complete remission of depressive symptoms. This observation indicates that interferons are engaged in the pathology of both inflammation and depression. However, it is currently unknown how these cytokines can cause depressive symptoms on a molecular and cellular level.

To address this research question, we investigated the role of a transcription factor, called STAT1 (signal transducer and activator of transcription 1), in the context of interferon-induced depression. This protein is known to function as an important intracellular activator of interferon-mediated gene expression. Interferons released in the serum modify this intracellular protein, which then enters the nuclei of stimulated cells to activate specific target genes.

We generated mutants of this protein using recombinant DNA technology and introduced these mutants into human cells. When we tested these mutants in response to interferon stimulation, we observed that the mutants were less active than the wild-type molecule. They showed a severe defect in the activation of interferon-driven genes and, furthermore, a decrease in the nuclear residence time. In addition, we revealed the molecular nature of these loss-of-function mutations, which resulted from an impaired stability to form transcriptionally active DNA-binding dimers. From these data we conclude that STAT1 mutants are useful biological tools in the study of interferon-induced depression.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Jean-Philippe Gouin*

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**Childhood Abuse and Inflammatory Responses to Daily Stressors**

**Athens, Greece** – Individuals with a history of childhood abuse are at greater risk of experiencing physical health problems in adulthood. The physiological mechanism linking history of abuse early in life with poor health outcomes several years later is not well understood. Some theories have proposed that a poor control over inflammatory responses produced by the immune system may explain the increased health risk related to childhood abuse.

Interleukin-6 is a protein produced by the immune in response to infection, injury, and psychological stress. Although interleukin-6 is essential for a strong immune response, an exaggerated production of this immune marker is associated with poor health. In this study, 130 older adults provided information on the presence of childhood abuse history and the occurrence of daily stressors over the past 24 hours. Blood samples were taken to determine the concentration of interleukin-6 in their blood. Results showed that individuals with a history of childhood abuse had a greater interleukin-6 response to stressors, compared to participants without an early abuse history. On average, older adults with a history of childhood abuse had an IL-6 response to daily stressors that was 2.35 times greater than the IL-6 response of participants without abuse history. This study suggests that the increased production of IL-6 in response to stress may partially explain why individuals with an early abuse history are at greater risk for poor health in adulthood.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *June Allison He*

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**Research from Brandeis University suggests that subjective social status may predict the magnitude of the body's immune response to a repeated stressful situation**

**Athens, Greece** – We recruited 19 healthy young adults to take part in a repeated laboratory stress task that took place over the course of two days. Participants were exposed to a mock job interview followed by challenging mental arithmetic in front of a panel of judges in white lab coats on both days of the experiment.

We took blood samples at several points both before and after the 15-minute stress task in order to measure the change in interleukin-6 (IL-6), an inflammatory biomarker in the body implicated in the body's immune response to acute stress. We also administered the MacArthur Subjective Social Status (SSS) Ladders, a pictorial scale used to self-assess one's status in the community relative to others. Recent research has reported that subjective social status (SSS) is also a correlate of health, and in some instances, predicts health outcomes *better* than socioeconomic status (SES), i.e., income or education, alone.

We found that our participants reported a wide range of social status ratings, despite the fact that they were relatively high on traditional SES metrics (i.e., they all had a relatively high level of education). Blood concentrations of the inflammatory marker IL-6 increased up to two hours after stress in all participants, on average. However, in participants who assessed their own social status to be lower, these increases in inflammation were significantly higher. Interestingly, this relationship was even stronger on the second exposure to stress. On the other hand, traditional measures of SES, such as income or education, were unrelated to the immune system's response to stress.

These results provide further evidence that subjective self-assessments of social status may be a better predictor of health than SES, especially within populations where minute differences in SES may be less important than subjective perceptions of differences in community social status. In addition, these findings allow drawing conclusions about potential mechanisms linking lower social status with disease. If these laboratory responses are indicative of real-life stress experiences, individuals who find themselves to be lower on the status ladder would expose themselves to significantly higher blood concentrations of inflammatory mediators. These in turn have been shown to stimulate a large array of diseases, including heart disease, stroke, and diabetes.



**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Jaime Hardy*

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**Research from the University of Kentucky suggests that in women with fibromyalgia, exercise may be especially important in reducing “fibro-fog.”**

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**Athens, Greece** – Fibromyalgia is a disorder with symptoms that include body pain, physical fatigue, and cognitive fatigue, sometimes described as “fibro-fog.” Many people with this cognitive fatigue report that this is one of the more distressing symptoms to manage, and that it affects their ability to function on a day-to-day basis. We wanted to see what role sleep quality and exercise had on fibromyalgia symptoms of pain and cognitive fatigue.

Twenty-seven women with fibromyalgia tracked their fibromyalgia symptoms, including physical pain and cognitive fatigue, as well as emotional distress over a five-day period, every morning and evening. They also reported on their level of exercise and sleep quality for each night.

First, we found that women who engaged in regular exercise had lower levels of cognitive fatigue and body pain. Unfortunately, when a woman had worse quality of sleep than she usually has, the protective effects of exercise on reducing body pain disappeared. This suggests that it is important to focus treatment on sleep quality first in order for exercise to help reduce physical pain.

Second, we found that in women who also had more emotional distress, regular exercise was even more potent at reducing cognitive fatigue. This suggests that for women with emotional distress, exercise needs to be a critical component of treatment to manage the effects of cognitive fatigue.

Practitioners working with women with fibromyalgia may need to individually tailor treatment plans to address each person’s symptoms. Highlighting the impact of exercise on “fibro-fog” may increase adherence to exercise recommendations.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Judith E. Carroll*

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**Press release for APS Abstract titled: Emotional social support is positively associated with late life telomere length: The Multi-Ethnic Study of Atherosclerosis (MESA)**

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**Athens, Greece** – We sampled 948 adults between the ages of 45-84 years old, who were part of the Multi-Ethnic Study of Atherosclerosis (MESA), and asked them to tell us if they had someone available to confide in, and who will listen to them, give them emotional support and affection. We also measured participant’s leukocyte telomere length, a marker of biological aging found at the end of chromosomes of DNA, with existing research suggesting that longer leukocyte telomere length is predictive of longevity. We found a positive association between emotional social support and telomere length in older adults (65-84 years old), but not younger adults (45-64 years old). The older adults who report having someone available who will listen, give affection, and provide emotional support showed longer leukocyte telomere length than those who have relatively less available emotional social support. Our findings parallel research showing that social isolation increases risk for disease and death, and point to a possible mechanism through which social isolation “gets under the skin” to increased disease susceptibility. We theorize that in later life, not having people to talk to and provide you with emotional social support, which increases feelings of loneliness and isolation, may accelerate the rate of biological aging. These findings highlight the importance of fostering social connection, especially in later life when older adults are vulnerable to losing their social support system and are at elevated risk for disease and death. Supported by grants R01 HL101161, N01-HC 95159 through N01-HC 95169 from the NHLBI, and T32-MH19925 from NIMH, and the Cousins Center for Psychoneuroimmunology, UCLA.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Imke Janssen*

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**Research from Rush University Medical Center Suggests That Persistent Depressive Symptoms Are Associated With Coronary Artery Calcification in Midlife Women**

**Athens, Greece** – According to research conducted at Rush University Medical Center in Chicago, Illinois, USA, women who suffer from persistent depressive symptoms may be more likely to have elevated levels of CT-assessed coronary artery calcification (CAC), an indicator of future heart disease.

“These results suggest that persistent depressive symptoms are more likely to have an effect on the development of cardiovascular disease than does a single assessment of depressive symptoms,” said Imke Janssen, PhD, associate professor, Department of Preventive Medicine at Rush University Medical Center, and lead author of the study.

Participants included 195 African American and 333 Caucasian women, ages 46-59, who were free of clinical heart disease. All participants were asked annually about depressive symptoms such as feelings of sadness, insomnia, loss of appetite, and lack of energy, using the well-validated Center for Epidemiologic Studies Depression scale, for a total of five years prior to assessment CAC.

Depressive symptoms at least once over five years were reported by 39 percent. Women with depressive symptoms on at least 3 of 5 occasions were twice as likely than women with no depressive symptoms over the course of the study to have elevated CAC, as indicated by an Agatston score of 10 or higher, . The findings were similar for African American and Caucasian women. Women with depressive symptoms on one or two occasions did not differ from women with no depressive symptoms.

“These findings should encourage medical care providers to assess their patients for depression and monitor those with persistent symptoms of depression,” said Janssen.

###

**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Faren Grant*

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**Research from the University of Maryland, Baltimore County and the National Institute of Aging's Intramural Research Program suggests that African-Americans and Whites differ on the types of depressive symptoms that predict cardiovascular disease risk factors.**

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**Athens, Greece** – Depression is a risk factor in the development of cardiovascular disease. We examined depressive symptoms and cardiovascular disease risk factors in a sample of 2,115 African-Americans and Whites enrolled in the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study.

Participants completed a depression questionnaire that measures four types of depressive symptoms: negative emotions, lack of positive emotions, physical symptoms, and problems with interpersonal relationships.

We evaluated the participants' risk for cardiovascular disease by a select profile of risk factors including body mass index (high levels indicate obesity), waist circumference, glycated hemoglobin (a measure of average blood sugar levels), systolic and diastolic blood pressure, cholesterol levels, and C-reactive protein (a blood-based marker of inflammation).

For African-Americans, certain subtypes of depressive symptoms were associated with blood pressure. Specifically, greater negative emotions were associated with higher systolic and diastolic blood pressure. In addition, more physical symptoms were associated with higher systolic blood pressure.

For Whites, however, depressive symptoms were more associated with body composition and blood sugar. In that regard, greater negative emotions were associated with higher blood sugar levels; lack of positive emotions was associated with higher BMI; more interpersonal relationship problems were associated with higher blood sugar levels; and more physical symptoms were associated with a larger waist circumference.

Interestingly, more interpersonal relationship problems were associated with higher levels of body inflammation in both Whites and African-American women.

The results suggest that African-Americans and Whites differ on which types of depressive symptoms are associated with risk factors for cardiovascular disease. Early identification and treatment of different types of depressive symptoms may be important in decreasing the risk of cardiovascular disease.

This research was supported in part by the Intramural Research Program of the NIH, National Institute on Aging.

**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Eimear Lee*

Email: *e.lee3@nuigalway.ie*

**Research from the National University of Ireland, Galway suggests that anxious personality styles influence daily changes in blood pressure.**

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**Athens, Greece** – We were interested in examining how a person’s heart works could be related to an aspect of their personality. We measured blood pressure to assess how the heart is working. In particular we looked at systolic blood pressure, which is the highest point of a heart-beat, and diastolic blood pressure which is the point during a heart-beat when the heart is most relaxed. Past research has shown that even small changes in blood pressure for young healthy people can reflect future health risk.

Our participants were 44 undergraduate women at our university. We asked these women to complete some questionnaires about their personality and their tendencies to generally experience worry or anxiety. We also asked them to carry portable blood pressure monitors with them for a period of 5 days. They were asked to measure and record their blood pressure during pre-defined times. Later, we separated the measurements recorded into daytime and evening periods.

Our study found that there were differences in the patterns of people’s blood pressure depending on their tendency towards an anxious personality style. The findings also showed variations in blood pressure measured during daytimes or evenings. These patterns showed that anxiety and blood pressure were most closely associated with the maximum level of the heart beat (systolic blood pressure) during daytimes, while during evening periods the results showed a relationship between anxiety and the most relaxed level of the heart beat (diastolic blood pressure).

This suggests that people who have greater anxiety or worries may not be as well-equipped to relax after the exertions of daily activity as those who do not have a personality style that is as disposed towards anxiety. The results of this study give us further direction to help explain differences in blood pressure using variations in personality styles. This may be important for gaining a further understanding about some of the factors that may influence blood pressure, which in the future could lead to greater awareness of the role of personality differences in heart disease.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Eva Kingma*

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**Research from the University Medical Center of Groningen, University of Groningen, suggests a prospective association between intelligence and telomere length.**

**Athens, Greece** – Low intelligence has been associated with poor health and mortality, but underlying biological mechanisms remain obscure. Shortening of telomeres represents an interesting candidate. Telomeres are protective caps at the ends of our chromosomes. Each chromosome consists of DNA tightly coiled around proteins that support its structure. Sometimes telomeres are explained as the plastic caps at the end of a shoelace. As the plastic ends shred, and the shoelace becomes frayed, so can shortening of our telomeres leave our cells vulnerable to damage. Telomere shortening has been linked with a spectrum of ageing-related diseases and mortality, and telomere length is often considered a marker of biological ageing.

We studied a group of 895 relatively healthy participants from the general population to examine the association between intelligence and telomere length. In addition, we examined if this association is explained by adverse environments and unhealthy lifestyles, since these factors are related to intelligence and to telomere length.

The intelligence of the participants was measured with an IQ-test and the participants filled in questionnaires about their socioeconomic status (level of education, work situation, and income), lifestyle measures (smoking habits, frequency of exercise), and their body mass index (BMI) was calculated. At baseline and follow-up, with an intervening period of about six years, blood samples of the participants were used for mean telomere length measurements.

We found that low intelligence was associated with shorter leukocyte telomere length at follow-up. In addition, nearly 40% of this effect was explained by an unhealthy lifestyle, while there was no significant explanation by socioeconomic position. Concluding, low intelligence may be a risk factor for accelerated biological ageing, thereby providing an explanation for its association with poor health and mortality. However, the effect is relatively small and exact effects of unhealthy lifestyle on telomere shortening should be further studied.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Donald M. Lamkin*

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**Chronic Stress Accelerates Disease Progression in Leukemia and Points to Beta-Blockers as Potential Therapy**

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**Athens, Greece** – UCLA researchers have found that chronic stress accelerates disease progression in acute lymphoblastic leukemia, perhaps leading to new ways to fight cancer spread using beta-blockers. Scientists used a mouse model of human leukemia to examine the effect of chronic stress on established leukemic disease. To chronically stress the mice, they used a standard laboratory stressor that restrains the animals in a small enclosed space, prohibiting the free movement to which they are accustomed. In order to accurately measure the amount of leukemia tumor growth over time, they programmed the leukemia cells to “glow” inside the mouse so they could be measured by a special sensitive camera to document where the cells are located in the body and how many there are. This programming was accomplished by genetically engineering the cancer cells to express the gene found in fireflies that enables them to glow at night.

The UCLA team found that mice exposed to two hours of restraint stress per day for two weeks showed significantly more leukemia tumor burden and dissemination compared to controls. However, when the beta-blocker, propranolol, was given to the mice, the tumor load in the stressed mice was reduced to levels that were equivalent to control mice not being restrained. The researchers confirmed that the leukemia cells do express the protein molecules on their surface membrane that would normally be affected by the drug, but subsequent studies showed that such protein complexes were not functional and did not appear to mediate the stress effect seen in the mice. Thus, the exact biological pathway by which the beta-blocker drug exerts its effect is now the subject of ongoing investigation at UCLA.

Cautious extrapolation from the model suggests that chronic stress in leukemia patients may accelerate progression of the disease and further proposes that pharmacologic treatment with beta-blockers could represent a novel adjuvant therapeutic strategy for inhibiting adverse stress effects on disease progression.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Dionne Kessing MSc*

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**Research from Tilburg University suggests that positive emotions contribute to better self-care in people living with chronic heart failure.**

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**Athens, Greece** – Self-care is crucial for patients with heart failure, an advanced, chronic cardiac condition in which the pump function of the heart cannot meet the body’s needs, leading to the often occurring symptoms of fatigue and shortness of breath. Heart failure involves amongst others daily weighing, taking multiple medications, fluid- and diet restrictions, and physical exercising. It is known that depressed patients are less likely to perform good self-care behaviors. However, the contribution of positive emotions (i.e., mood states such as feeling active, joy or cheerful) have received very little attention in this context, while they in fact may facilitate a patient’s motivation and energy to successfully engage in optimal self-care.

In the current study, we followed 220 patients with heart failure for one year and asked them questions about (a) their self-care and about (b) both positive and negative emotions. Additionally, clinical and demographic factors were collected.

We found for our patients that positive emotions led to better levels of self-care one year later, irrespective of depression or anxiety. Also, higher age and having a partner were important predictors of good self-care.

While the focus of the past decades has been on negative emotions, our research suggests that the role of positive emotions is a key psychological factor in the way patients adhere to their treatment recommendations. It may be very important for clinicians working with heart failure patients who report low levels of positive emotions to include in their treatment strategies to spend more attention on self-care aspects and mood state during the visits.



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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Chia-Ying Weng, Ph. D*

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**Type D personality and Flexibility of Vascular Dilation in Healthy Population**

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**Athens, Greece** – Of cardiovascular diseases, coronary artery disease is the major cause of death. Biological and psychological factors are both important to disease development. Recently, distressed personality, also known as Type D personality, has been found to correlate significantly with the prognosis of coronary artery disease. People with Type D personality tend to experience excessive negative emotions and hold negative attitudes toward themselves. They search for impending trouble, face stress events often, and react strongly. Instead of expressing negative emotion, they inhibit emotional expressions in daily interpersonal situations to avoid the “possible” disapproval of others.

Reduced flexibility of vascular dilation is an index of atherosclerosis, occurring before clinical detection of the disease. We compared the flexibility of vascular dilation of individuals with Type D personality with that of non-Type D personality. We found that the flexibility of vascular dilation of individuals with Type D personality is inferior to that of non-Type D personality even after matching their age and sex.

The finding that Type D personality can adversely affect the flexibility of vascular dilation improves our understanding of early phases of atherosclerosis and suggests potential therapeutic and preventive approaches to modify the disease process. From the perspective of disease prevention, in addition to controlling traditional risk factors, we may add psychological intervention to high-risk population (people with Type D personality, especially the offspring of patients) by providing a cognitive-behavior program to modify their emotional experiences and behavior expression patterns in their daily life before they develop overt cardiovascular diseases.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Carrington Rice Wendell, Ph.D.*

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**Research from Johns Hopkins University and the National Institute on Aging at NIH suggests that atherosclerosis is associated with future onset of dementia.**

**Athens, Greece** – We studied atherosclerosis, or hardening of the arteries, and dementia in a sample of 293 relatively healthy older adults (aged 60+) in the National Institute on Aging’s Baltimore Longitudinal Study of Aging. Atherosclerosis underlies many cardiovascular diseases, including heart attack and stroke.

We used ultrasound imaging to measure atherosclerosis in the carotid arteries – the major blood vessels that travel up the neck, carrying blood to the brain. First, we measured the thickness of the vessel wall of both the left and right carotid arteries. Thicker walls generally indicate more atherosclerosis. Second, we counted the number of plaques in both the left and right carotid artery. Plaques are fatty, waxy deposits that clog your arteries; they represent a more advanced form of the disease than simple thickening of the artery walls.

We then followed these participants for up to 14 years. During this time, 52 individuals developed dementia. The vast majority were diagnosed with Alzheimer’s disease. We assessed for dementia using extensive cognitive testing and physician evaluations, approximately every 2 years.

We found that individuals with more pronounced atherosclerosis at the beginning of the study were more likely to develop dementia in the future than individuals with more limited atherosclerosis. Most interestingly, the more carotid plaque, the more likely an individual was to develop dementia. Thirty-three percent of individuals with plaque in both the left and right carotid arteries developed dementia, versus 17% with one-sided plaque, and only 13% with no plaque.

Results of this study suggest that there is increasing risk of dementia associated with increasing levels of atherosclerosis. These findings support the possibility that early intervention to reduce atherosclerosis may prevent or delay the onset of dementia with aging.

This research was supported in part by the Intramural Research Program of the NIH, National Institute on Aging.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Carrington Rice Wendell, Ph.D.*

Email: *carringtonwendell@gmail.com*

**Research from Johns Hopkins University and the National Institute on Aging at NIH suggests that poor physical fitness is associated with quicker decline in cognitive function across adulthood.**

**Athens, Greece** – We studied physical fitness and cognitive function in a sample of 1,400 relatively healthy adults who participated in the National Institute on Aging’s Baltimore Longitudinal Study of Aging.

To test physical fitness, we asked participants to walk on a treadmill at increasing speeds and inclines. While they walked, they wore a mask that measured the maximum amount of oxygen used by their lungs (also called VO<sub>2</sub>max) during completion of the treadmill test. People who are physically fit have lungs that use oxygen efficiently, meaning that they have higher VO<sub>2</sub>max.

We then evaluated our participants’ cognitive functioning up to 6 times over the next 18 years. At each visit, participants completed standard paper-and-pencil tests of attention, memory, speed, language, and executive function to track cognitive functioning and change over time.

We found that individuals with poorer physical fitness demonstrated quicker declines in performance on several cognitive tests over the course of the study, especially when compared with more physically fit individuals. The areas of cognitive function that particularly showed this pattern were multiple types of memory, including verbal memory and visual memory.

Results of this study suggest that physical fitness is related to brain function as we age. It may therefore be important to stay physically fit to promote brain health and function. It is possible that interventions to improve physical fitness may also prevent the quicker declines that we observed.

This research was supported in part by the Intramural Research Program of the NIH, National Institute on Aging.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Bianka Karshikoff*

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**SICKNESS HURTS: HUMAN PAIN SENSITIVITY IN RESPONSE TO  
EXPERIMENTAL INFLAMMATORY STIMULATION**

**Athens, Greece** – Pain conditions are highly prevalent, but their physiological causes are often unknown. Findings in animals show that inflammation has strong pain facilitatory effects, but this has not yet been shown experimentally in humans. In two separate studies (including totally 57 individuals) we used peripheral injections with two different low doses of endotoxin, which is a bacteria related product that causes an inflammatory response from the immune system. Pain sensitivity increased during inflammation. More specific, inflammation caused the participants to become substantially more sensitive to pressure pain. The inflammation also caused noxious heat to be perceived as more painful, but did not affect sensitivity for mild heat. Our findings suggest that increased pain sensitivity is part of a natural response during sickness, probably with the purpose to reduce activity and aid recovery. Further studies are needed before we can understand the role of inflammation in chronic pain conditions.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Ali Weinstein*

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**A study conducted by an interdisciplinary team from the National Institutes of Health, the College of Health and Human Services at George Mason University, and Inova Fairfax Hospital suggests that patients with pulmonary hypertension may reduce fatigue by engaging in aerobic exercise.**

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**Athens, Greece** – Primary Pulmonary hypertension is defined as high blood pressure in the lungs which causes the right side of the heart to work harder than normal. Both long-term survival and overall quality of life are poor in people who have pulmonary hypertension. The hallmark symptoms are shortness of breath during routine activity (for example, climbing stairs), chest pain, racing heartbeat, and fatigue. Persistent and excessive fatigue is one of the most debilitating symptoms. The etiology of this disease is uncertain but standard treatment has been medication and lifestyle changes that limit vigorous exercise. This study challenges the current prohibition on exercise in this patient population.

The investigators performed a case control trial, comparing severity of fatigue in patients with pulmonary hypertension and age-matched healthy controls. The patients were tested before and after an exercise program which consisted of 30-45 minutes of treadmill walking at 70-80 percent heart-rate reserve for 10 weeks. The program was individually tailored based on performance during a cardiopulmonary exercise test.

A fatigue evaluation was used to categorize the severity of patient's fatigue by the degree to which it interfered with the patient's ability to function physically and socially. Patient's fatigue was evaluated both before and after each intervention. Eight out of nine patients with pulmonary hypertension had severe fatigue where none of the healthy controls had severe fatigue at baseline. After completion of the 10-week program, patients with pulmonary hypertension displayed a significant decrease in fatigue severity. After exercise, only three of the nine patients with pulmonary hypertension reported severe fatigue, whereas five patients had moved out of the severe fatigue category with levels of fatigue now similar to healthy controls.

Exercise in patients with primary pulmonary hypertension seems to diminish fatigue and likely improves quality of life. It may be very important for patients with pulmonary hypertension who are experiencing debilitating levels of fatigue to engage in an aerobic exercise program. Research is ongoing to further investigate the relationships between the reduction in fatigue and improvement in clinical outcomes.



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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Research from Tohoku University suggests that brain structural changes predict the likelihood of seeing Post Traumatic Stress Disorder symptoms in healthy survivors of the Great East Japan Earthquake.**

**Athens, Greece** – A magnitude 9.0 earthquake hit Japan on March 11, 2011. Many survivors, even those without posttraumatic stress disorder (PTSD), needed psychological support. Reduced regional brain volume in several brain regions, such as the anterior cingulate cortex (ACC) and the orbitofrontal cortex (OFC), were reported in patients with PTSD. However, controversy exists over the nature and source of the changes in the brain in PTSD. Revealing whether the changes in the brain are a pre-existing factor or a sign of PTSD is essential both to understand the pathogenesis of PTSD and to prevent survivors from developing PTSD. The aim of this study was to identify the brain changes as a pre-existing factor and a sign of PTSD in non-PTSD survivors.

We happen to have taken much brain MRI data from a group of healthy adolescents before the earthquake. Therefore, this extremely miserable episode provided a rare opportunity for investigating the brain structural changes associated with large-scale disasters. We recruited 42 subjects from our previous group to examine their brain MRIs and assess the PTSD symptoms 3 to 4 months after the earthquake. We found that the smaller ACC volume before earthquake is a pre-existing factor and the decreased OFC volume through the earthquake is a sign of PTSD symptoms. The results suggest that the ACC and the OFC, which are involved in attention, fear conditioning, and emotional regulation, play an important role in the pathogenesis of PTSD.

These findings may be essential in discriminating between survivors with and without PTSD symptoms soon after a traumatic event and it could be helpful in discriminating between people who will and will not develop PTSD, even under normal circumstances.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Annelieke Roest*

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**Research from Tilburg University and University of Groningen suggests that somatic and psychic symptoms of anxiety are related to adverse cardiac prognosis in myocardial infarction patients**

**Athens, Greece** – Anxiety and depression following acute myocardial infarction have been found to be associated with adverse cardiac outcomes. Several studies found that somatic depressive symptoms, such as fatigue and insomnia, were associated with cardiac events and not cognitive depressive symptoms, such as guilt or low self-esteem. However, somatic depressive symptoms have been shown to be related to cardiac disease severity. Therefore, the association between somatic depressive symptoms and poor cardiac prognosis might be explained by more severe cardiac disease in patients who report many somatic depressive symptoms.

The objective of the present study was to explore the association between symptom dimensions of anxiety following acute myocardial infarction with disease severity at baseline and recurrent myocardial infarction and mortality at follow-up.

Our sample consisted of 477 patients with myocardial infarction who were followed for almost 4 years. Anxiety was assessed 2 months following myocardial infarction using the Hamilton Anxiety Rating Scale (HARS), a psychiatric interview. The interview assesses two types of anxiety symptoms, namely somatic symptoms, such as insomnia, muscular symptoms or respiratory symptoms, and psychic symptoms such as anxious mood, tension and fear.

Both psychic and somatic symptoms of anxiety were not related to pump function of the heart (left ventricular ejection fraction) at baseline. Both somatic and psychic symptoms of anxiety were predictors of recurrent myocardial infarction and mortality at follow-up, also when gender, age, and measures of cardiac disease severity were taken into account. Patients high on anxiety were at a 2-fold increased risk of recurrent myocardial infarction and mortality and this risk could not be explained by more severe cardiac disease in anxious persons.

Future studies should assess the mechanisms through which anxiety is associated with recurrent cardiac events and assess how anxiety and cardiac prognosis can be improved in patients with heart disease.



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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Annelieke Roest*

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**Research from the University of Groningen suggests that generalized anxiety disorder after acute myocardial infarction predicts adverse cardiovascular prognosis**

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**Athens, Greece** – Anxiety and depression following myocardial infarction have been found to be associated with adverse cardiovascular outcomes. However, most studies have used questionnaires to assess the presence of elevated symptoms of anxiety. Questionnaires are inadequate in distinguishing between anxiety and depression and are not sufficient to diagnose an anxiety disorder.

Objective of this study was to assess the association between generalized anxiety disorder diagnosed with a formal psychiatric interview and cardiovascular events and all-cause mortality in myocardial infarction patients.

A sample of 438 patients with acute myocardial infarction was recruited between September 1997 and September 2000 and followed until December 2007 to determine cardiovascular outcome. Generalized anxiety disorder and depression were assessed by means of the Composite International Diagnostic Interview at 3 months post-myocardial infarction.

During the follow-up period, 198 patients died or had an adverse cardiovascular event. Patients with generalized anxiety disorder were at an almost 2-fold increased risk of cardiovascular events and mortality. Age, gender, and measures of cardiovascular disease severity could not explain the difference in outcome between patients with versus without generalized anxiety disorder. Also comorbid depression could not explain the association.

Besides the impact of anxiety on disability and decreased quality of life, clinicians should be aware of the finding that generalized anxiety disorder is associated with an increased risk of cardiovascular events and mortality in myocardial infarction patients. Also, more research is needed to identify the mechanisms through which generalized anxiety disorder is associated with adverse cardiovascular prognosis.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Anne Reiser*

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**Participation in a minimalist online aftercare program significantly reduces symptom severity in patients with psychosomatic disorders**

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**Athens, Greece** – About 170 patients of a psychosomatic inpatient rehabilitation center agreed to participate in the study. During their stay, about half of them were asked to compile a list of six personal goals they wanted to concentrate on and achieve during their first three month back home (e.g. introducing a new eating regime, getting to know new people, keeping some form of diary), allocating two weeks to focus on the attainment of each goal. Before leaving the hospital, these goals were then entered into a web-based portal and after discharge participants received bi-weekly electronic invitations to provide feedback on their progress regarding the current goal. This was done by logging on to the online portal and answering a set of brief questions.

Whilst the other half of the participants received no special treatment or aftercare, all of them were asked to complete three sets of questionnaires (one when admitted to the hospital, one at discharge and one after the three month goal attainment period) assessing various psychological and somatic symptoms .

When comparing the results of these questionnaires we found that after three month patients using the online aftercare program reported significantly less depressive symptoms than patients receiving no aftercare. Thus, our results demonstrate that a minimalist e-therapy aftercare intervention can be useful to help patients maintain/expand on achievements made during inpatient rehabilitation, helping them to feel better for longer and prolonging the overall effectiveness of such a treatment.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Do Pessimists Age Faster?**

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**Athens, Greece** – How pessimistic you are may influence not only how you feel but also how quickly you age at the cellular level. New research suggests that pessimism promotes key mechanisms of biological aging known to play a role in health and longevity.

Study after study has shown that pessimists are more likely to get a host of chronic illnesses, from heart disease to cancer to stroke. How could our attitudes to life ‘get under the skin’ to make it more likely that we will develop these diseases of aging?

One possibility is that pessimism speeds up biological aging by shortening telomeres, the caps that protect DNA from damage. Telomeres are thought to act as a kind of ‘cellular clock’ that runs faster under chronic stress. Evidence is fast accumulating that psychological stress shortens telomeres, and pessimists are highly susceptible to stress.

The present study suggests that pessimists have shorter telomeres and begins to explain why by looking at inflammation and oxidative stress, biochemical processes that can erode telomeres.

At rest, pessimists showed higher levels of inflammation and oxidative stress. Moreover, when forced to spend 15 minutes trying to perform demanding tasks (solving math problems and giving a speech) most subjects showed an increase in inflammation. But pessimists started at a higher level and remained higher for one hour afterward, meaning that they got a larger dose of physiologically important but potentially damaging inflammatory proteins.

Thus, pessimism may lead to disease by promoting processes that speed up the cellular aging clock.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

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**Research from Harvard University suggests that a high level of stress at work may lead to higher risk of heart disease in men.**

**Athens, Greece** – Our study finds that high levels of work-related stress may lead to higher risk of heart disease in men, independent of health behaviors, such as diet, exercise, and smoking. As heart disease is the leading cause of death in the US, it is critical to understand how stress contributes to this disease. We found that stress at work is associated with one biomarker in the lining of blood vessels – the endothelium – that is a risk factor for heart disease.

A questionnaire about diet and medical history was first distributed in 1986 to a nationally representative sample of more than 400 male health professionals between the ages of 40 and 75 years, for the purpose of studying men’s health over time. Follow-up questionnaires were distributed every two years and blood was drawn from a subset of healthy men between 1993 and 1995. We analyzed two questions asked in 1992 about stress at work and at home in relation to levels of two adhesion molecules (ICAM and VCAM) that contribute to inflammatory and immune response, and when over-activated, may lead to atherosclerosis.

We found that men who experienced higher levels of stress at work had higher levels of VCAM than men with lower stress at work. No differences in levels of either molecule were found according to stress at home. Because the relationship between stress at work and VCAM didn’t change after accounting for health history or health behaviors, our results suggest a direct biological mechanism through which stress affects cardiovascular outcomes.

Policies designed to reduce stress at work may prevent heart disease and save billions in healthcare costs.

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Yoshiya Moriguchi*

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**Neuroscience research suggests that women feel from the body, and men feel from the eyes.**

**Athens, Greece** – People believe that women are more emotionally intense than are men, although objective measures of emotion do not consistently find evidence to support this sex-difference in emotion. Our novel hypothesis here is that men and women draw on different sources of information that contributes to the intensity of their emotional experience, such that women are more *internally (bodily)* focused and men are more *externally (visually)* focused.

Seventeen men and seventeen women rated the intensity of their emotional feelings (how subjectively aroused or “worked up” they felt) while viewing evocative pictures, during which their brain activation was measured with functional MRI (fMRI). As predicted, we found that men and women did not differ in the intensity of their feelings, but women showed a relatively stronger correlation between the intensity of their feelings and neural responses in a brain region that represents bodily sensations (the anterior insula); men, in contrast, showed relatively stronger correlations between the intensity of their feelings and activation in a region of the brain that processes visual input (primary visual cortex). Furthermore, men showed enhanced 'functional connectivity' between more upper part of the anterior insula and a brain region that is important for regulating shifts of attention to the outside world when determining what information is most salient (anterior cingulate cortex). These findings show that men and women differ (relatively) in the source of their emotional feelings, with women’s feelings containing more information from within the body, while men’s feelings contain more information from the world outside.

There has been a long-standing debate about whether women are more 'emotional' than are men. But our results provide a novel point of view, such that men and women differ not in the property (intensity) of their experience, but are instead different in the 'ingredients' for constituting those experiences. Our findings also show, for the first time, something novel about subjective experience: different people (men and women) have different neural correlates for the same phenomenological content (i.e., subjective experiences of arousal).

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**Release from American Psychosomatic Society Meeting, Athens, Greece**

Contact: *Bruce L. Rollman*

Email: *rollmanbl@upmc.edu*

**Telephone-Delivered Collaborative Care for Treating Post-CABG Depression is Effective and Cost-Saving Compared to Physicians' Usual Care for Depression**

**Treating depression following coronary artery bypass graft (CABG) surgery improves quality of life and reduces health care costs suggests research from the University of Pittsburgh.**

**Athens, Greece** – While CABG surgery clearly benefits most of the 400,000 patients who undergo this procedure in the United States annually, approximately 1-in-4 experience depression afterwards and these patients report delayed recovery and higher levels of health care costs versus those who do not become depressed.

The National Heart Lung and Blood Institute-funded *Bypassing the Blues* Trial that involved 453 post-CABG patients was the first comparative-effectiveness trial to examine the impact of “collaborative care” for treating depression following an acute cardiac event. The intervention involved a nurse “care manager” who telephoned patients to educate them about their depression, offered various treatment options, and monitored their condition in collaboration with patients’ primary care physicians (PCPs).

As reported in the *Journal of the American Medical Association*, intervention patients reported significantly greater improvements in mood symptoms, health-related quality of life, and physical functioning versus patients randomized to their PCPs’ usual care for depression ([www.bypassingtheblues.pitt.edu](http://www.bypassingtheblues.pitt.edu)).

In the first cost-effectiveness analyses for treating depression in patients with cardiovascular disease, Julie Donohue, PhD, Associate Professor of Health Policy and Management and the *Bypassing the Blues* team examined study participants’ Medicare and other insurance claims. Bruce L. Rollman, MD, Professor of Medicine and principal investigator of the *Bypassing the Blues Trial* will report at the Annual Meeting that: intervention patients had \$449 *lower* 12-month health care costs than usual care patients (\$18,172 vs. \$18,621); and depression treatment produced a highly favorable *negative* incremental cost effectiveness ratio of -\$9,889 per “quality-adjusted life year” (QALY) (i.e., *more* QALYs and at a *lower* cost).

“Collaborative care has emerged as an integral part of the “*patient-centered medical home*” model to reorganize and reimburse PCPs for providing high-quality chronic illness care. Demonstrating its cost-effectiveness for post-CABG depression and other cardiovascular conditions is crucial to support its widespread adoption” said Dr. Rollman.