

# The cold facts about heat and mental health

## ASU experts explain the science behind heat's effect on mental health and share advice for dealing with it

By Dolores Tropiano, ASU News  
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### Story highlights

Researchers have long studied the impact of dangerously high temperatures on the body, but new studies are beginning to uncover ways that extreme heat can be linked to worsening mental health.

Experts encourage people to find ways to stay connected and active even when soaring temperatures force them indoors.

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If you find yourself binging on sweets and screen time this summer — skip the guilt. At least some of it.

Just blame it on the heat.

Many people are familiar with the winter version of seasonal affective disorder, a form of depression that occurs in cold climates during the long, dark and dreary days of winter when sunlight is limited.

But too much sun — and other hot-weather changes — can have the same effect. Summer depression is [a form of seasonal affective disorder](#).

And according to one Arizona State University researcher, exposure to extended periods of intense heat can marginalize mental health.

“When it comes to depression, people are often more familiar with the historical diagnosis of seasonal affective disorder (SAD), where darker months produce low mood and bright light therapy is one of the recommended treatments,” said [Nicole Roberts](#), an associate professor at ASU’s

## [School of Social and Behavioral Sciences.](#)

“In the latest edition of the 'Diagnostic and Statistical Manual of Mental Disorders,' SAD was replaced with a specifier ‘with seasonal pattern,’ reflecting that, while less common, depression or bipolar disorder symptoms could take on a seasonal pattern during the summer months, too.”

With many parts of the country and world now experiencing extreme, extended and sometimes unpredictable heat, there is a growing awareness of heat’s effect on mental health.

According to a [study published by Cambridge University Press](#) in 2024, oppressive heat “showed a clear and consistent” adverse impact on mental health, with hospitalizations for mood disorders consistently elevated during heat events.

Higher temperatures are also associated with anger, violence and an increase in incidents of road rage.

“There are metaphors such as ‘I’m boiling with rage’ and ‘I’m feeling hot under the collar’ that reflect real physiological changes,” said Roberts, whose research focuses on emotion regulation. “In lab studies, higher skin temperature is associated with greater feelings of anger. ... Our cues as to how we feel come from our body, so a temperature increase can make us feel worse, and vice-versa.”

In addition, Roberts says that poor sleep underpins all sorts of mental health conditions, and to the extent that the discomfort of feeling hot and sweaty makes it difficult to fall asleep or stay asleep, it can contribute to daytime mood disruption.

Extreme heat doesn't just tax the body — it quickly restricts daily routines that support healthy lifestyles.

“Extreme heat means you can’t go on a hike with your friends, you may miss out on fitness and connecting with others,” said [John Coffey](#), associate professor in the [School of Social and Behavioral Sciences](#), who studies the link between positive and negative emotions and happiness. “These are all the best predictors of well-being.”

“People walk less, exercise less or spend long periods alone indoors,” said Eun Young Choi, an expert on the health effects of extreme heat and an assistant professor at ASU’s [School of Social Work](#).

“In that sense, chronic heat exposure can reshape daily life, where people go, whom they see, how active they are and whether they can maintain routines that support brain health.”

## **The science behind the summer blues**

Being tired, irritable and cranky during months of extreme heat makes sense. Who wouldn't be moody when forced to watch summer slip away from behind the living room window?

But there is more to it than cabin fever. Mood changes can stem from the physiological effects of prolonged heat exposure on the body and brain, such as elevated levels of cortisol, also known as the "stress hormone," which over time is associated with a host of negative physical and mental

health outcomes.

"To release heat, the body increases blood flow to the skin ... and produces sweat for evaporative cooling," Choi explained. "Heat can also cause people to breathe more rapidly. ... Together, these responses can reduce cerebral blood flow and contribute to fatigue, dizziness, slower thinking and difficulty concentrating.

"When sweating and increased skin blood flow are no longer sufficient to dissipate heat, internal body temperature begins to rise. ... Experimental research has found impairments in executive function and cortical activity. A person may not recognize that they are experiencing a heat-related illness. Instead, they may simply feel unusually tired, impatient or mentally foggy."

Those subtle changes can have real consequences when driving, managing medications, making financial decisions, caring for others or performing work that requires sustained attention.

Perhaps more alarmingly, during a recent presentation at the Alzheimer's Association International Conference, Choi explained that short-term exposure to higher outdoor temperatures has been associated with impaired cognitive function, while repeated exposure over time has been linked to cognitive decline and a higher risk of Alzheimer's disease and related dementias.

"We did not observe the same relationship for days between 90 and 102 degrees, suggesting that the most extreme heat may be especially important," she said.

Choi has also analyzed blood biomarkers from more than 3,600 older adults and found that women who had lived for years in hotter environments showed profiles more consistent with early Alzheimer's disease pathology than women living in cooler areas.

Excessive heat poses a risk to everyone, but especially to older adults, people with dementia, cardiovascular or kidney disease, people on certain medications and individuals without reliable cooling or who live alone. The association was also stronger among those living in communities with greater social vulnerability.

Women and men may also face different heat-related risks; men may experience greater occupational exposure while menopausal changes can reduce women's ability to regulate body temperature.

## **Keeping your cool**

Understanding the link between extreme heat and the brain is just the beginning. While science may offer a physiological explanation for why people gravitate toward the couch and comfort food during the heat of the summer, staying cool, staying connected and maintaining regular physical activity — even indoors — can help reduce some of the heat's physical and psychological toll.

From a brain-health perspective, Choi emphasizes three priorities.

"The first is to cool the body before cognitive symptoms become obvious rather than waiting until someone feels seriously ill," she said.

"The second is to protect sleep and nighttime recovery, because several hot nights can create cumulative fatigue even when daytime exposure is limited.

"And the third is to deliberately preserve routine and social connection. If outdoor walking, exercise or social activities are no longer safe, they need to be replaced with cooler alternatives rather than simply eliminated for several months."

Coffey agrees, encouraging people to find ways to stay connected and active even when soaring temperatures force them indoors. That might mean joining an indoor basketball league, taking a yoga class, hosting a board game night or simply making time for friends and family.

"Writing gratitude letters and practicing mindfulness are other good indoor well-being activities," he said.

Experts also recommend paying attention to changes in mood or mental sharpness. Feeling more irritable, anxious or mentally sluggish during prolonged periods of heat is common, but persistent symptoms that interfere with daily life could be more serious. And of most importance, mental health researchers encourage people to give themselves permission to adjust their expectations during extreme heat.

Productivity, patience and energy levels decline when the body is working harder to stay cool. Recognizing and accepting that those changes are normal physiological responses — not a personal failing — can help reduce productivity guilt and self-criticism.

And if you still find yourself spending too much time in front of a screen, make the most of it. Chill out with movies set in cooler climates such as "Frozen," "Elf," "March of the Penguins," "Home Alone 2" or even "The Shining." They may not lower the thermostat, but they can provide a refreshing mental escape to sustain you until September.

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*This story originally appeared on [ASU News](#).*

## **Main image**



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