

With my stress comes sleepiness ^[1]

Hi Alice,

Whenever I am in a very stressful situation such as an approaching big deadline, my body gets unusually tired and sleepy regardless of how much rest I get. I sleep well but it never seems to be enough. Why do I get so sleepy and what can I do to prevent this change when stressful situations approach?

Answer

Dear Reader,

Most people are used to getting tired in certain situations, such as at the end of a long day, after exerting increased energy, and when traveling. As you've mentioned, some also experience sleepiness in the face of stressful situations! This may occur due to the hormones that are released into the body during the stress response. As for how to avoid this, managing stress to reduce the stress response in the body may be your best bet. The good news is that there's research to suggest why this might happen and what can be done about it.

As you navigate through life, your eyes and ears send information to an area of your brain called the amygdala, which is responsible for interpreting images and sounds and processing emotions. When stressed, the amygdala sends signals to the hypothalamus. It then sends signals to the adrenal glands, which activates the sympathetic nervous system, which is what tells the body to start the "fight or flight" response. These glands increase the release of epinephrine (a hormone also known as adrenaline). As the adrenaline circulates through the body, it brings on a number of physiological changes, such as increased heart rate and blood pressure. This process helps people respond to perceived threats. So how is it that people end up falling asleep amidst all of these bodily sensations?

Well, when the concentration of adrenaline decreases in the body, the hypothalamus activates the hypothalamic-pituitary-adrenal axis, a system that allows the body to continuously release a variety of hormones including cortisol, the body's main stress hormone. However, if the threat persists, cortisol remains at a high concentration in the body. Elevated cortisol levels create physiological changes that help to replenish the body's energy that's typically lost when undergoing stress. For example, cortisol increases appetite so that people will want to eat more

to obtain extra energy. But the body often stores this energy as fat, which can contribute to decreased levels of wakefulness like you've experienced. Further, cortisol stays in the body for an extended period of time, which may induce higher levels of brain fog, forgetfulness, and difficulty concentrating, as well as decrease wakefulness. Thus, under severe stress, some people find that feelings of anxiety are replaced with lethargy and apathy. In these cases, because it's harder to access the emotional regulation and memory function of the hippocampus, people may feel tired and fall asleep. All in all, sleep can act as a coping mechanism in which people disengage from their stressful surroundings.

Some researchers think glucose (a type of sugar that your body uses for energy) may also play a role in the sleepiness that often comes with stress. Studies have shown that when you're in a stressful situation (assuming it's not life threatening), your levels of wakefulness will likely be lower if your brain is deprived of glucose. Because stressful situations require energy (in the form of glucose), metabolic exhaustion may set in over a short time frame, resulting in depleted glucose levels that can be restored in the form of a nap. Consider how children — who, given their limited resources — tend to rely on sleep as a coping mechanism, particularly after a stressful situation in which they use up energy by crying or yelling. Some researchers argue that this same model can be applied to adults in that simply replaying stressful events or having stress inducing thoughts consumes energy in the form of glucose.

While a great deal of research exists showing *why* people may get sleepy in response to stress, little is actually known about how to directly prevent the sleepiness. And although it's hard (well, nearly impossible!) to avoid stressful situations altogether, it may be worth trying to identify strategies that help you cope [2] in the face of stressful situations in order to reduce your likelihood of becoming sleepy. For example, being physically active, practicing time management skills, and some relaxation techniques (such as deep breathing exercises) may all help to manage your stress and reduce that release of hormones that may lead to feeling sleepy. If you've already tried these strategies, or you find they don't work for you, you may consider speaking with someone (such as friends, family, or a mental health professional) about the stress you're experiencing and your body's subsequent response.

Here's to meeting deadlines and decreasing stress and sleepiness!

Alice!

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