

As you might expect, taking a math test can be a very stressful experience. Before starting your exam, we are going to go through a procedure designed to help you perform well.

In the following pages, you will read brief excerpts from scientific journal articles. The research you will read about provides information about how our body's response to stress helps improve performance. You will be presented with excerpts from four articles. While you read each excerpt, we would like you to think about how these bodily reactions can help your testing performance today.

After each article you will be asked to answer two questions regarding the information that was presented to you.

This first excerpt is taken from Craske and Barlow's (2001) *Patient Workbook for Anxiety and Panic*

Stress is referred to as the "fight-or-flight" response because its effects are aimed toward the organism's either fighting or fleeing from danger. That is, stress and anxiety help us address the challenges we face every day. The number one purpose of our body's stress response is to protect us. In today's hectic world, this response is a very necessary mechanism for optimal functioning.

For example, imagine if a person were crossing a busy intersection when a car suddenly sped toward him or her. If the person experienced no stress arousal, he or she would be hit. The purpose of this story is simple - stress and anxiety protect humans, it does not harm them. It is a survival mechanism. To experience anxiety in stressful situations means to be fit for survival.

Question 1: Stress is a human survival mechanism. True or False?

True
False

Question 2: Who experiences anxiety in stressful situations?

- a.) Only people with anxiety disorders
- b.) Only people scared of taking tests
- c.) Everyone. To experience anxiety is to be fit for survival

The second excerpt is adapted from S.L. Smith's 2008 article that appeared in the *Journal of Experimental Psychology*

When people are stressed or anxious, the sympathetic nervous system (SNS) tells the body to release energy. This results in an increased heart rate, which is vital because it delivers oxygen to the brain. Thus, a racing heart rate signals that your body is moving blood to where it is needed to perform cognitive operations.

The SNS also affects breathing. Breathing becomes faster and deeper because of our body's need for more oxygen. Again, an increased breathing rate helps deliver oxygen to our brain, assisting cognitive processing. Sometimes breathing can become irregular and cause harmless but unpleasant symptoms, such as breathlessness.

Finally, SNS activation increases sweating. This cools the body to prevent it from overheating, and allows the person to address the anxiety-provoking situation without collapsing from heat. So, sweating during stressful situations is perfectly normal.

During the math test today it is important to remember that your body's responses to stress are both normal and helpful. Please try and remember this if you find yourself feeling nervous during test.

Question 3: What happens when the sympathetic nervous system (SNS) is activated?

- a.) Heart rate increases
- b.) Heavy breathing
- c.) Increased sweating
- d.) All of the above

Question 4: Why does our heart rate increase when we are stressed?

- a.) Heart rate increases help deliver oxygen where it is needed
- b.) Heart rate increases help break down muscle tissue
- c.) Heart rate increases signal that we are scared

This excerpt is adapted from Jamieson & Mendes' 2010 study that appeared in the *Journal of Experimental Social Psychology*

In stressful situations, people feel increases in arousal, which are usually interpreted as nervousness. However, arousal is a fuzzy term. Arousal increases co-occur with a variety of emotions and do not necessarily signal negative states. For instance, arousal helps the body mobilize resources to meet task demands. Our emotional responses depend in large part on the way we think about stress and arousal.

To demonstrate how the body and mind work together, imagine you are a skier staring down a steep, icy slope with no other way off the mountain than going down this trail. Regardless of whether you like skiing, this situation would elicit an increase in arousal. Expert skiers may experience excitement if they believe they can handle the difficult trail, whereas novices are more likely to be afraid if the difficulty of the trail is perceived to exceed their skill level. Thus, the skier's emotions (excitement vs. fear) depend on how they perceive the situation and the body's responses.

The negative consequences of anxiety are the direct result of people's beliefs that feeling anxious will make them perform poorly. However, our research indicates that anxiety does not hurt performance, but actually helps because our body releases hormones called catecholamines which enhance cognitive functioning. So, during the test today, try and view your stress arousal or anxiety as a coping tool.

Question 5: When you are stressed, your sympathetic nervous system releases catecholamines which improve cognitive performance. True or False?

True
False

Question 6: According to scientific research. How does stress affect performance?

- a.) Stress harms performance by causing people to worry
- b.) Stress does not impact performance
- c.) Stress helps performance by releasing catecholamines

The final excerpt is adapted from Nock et al.'s (2011) study that appeared in the *International Journal of Psychophysiology*

Anxiety is a normal physical reaction that helps you address stressors. It is not harmful. In fact, if we did not have these reactions we could not survive. If anxiety is adaptive, why is it such a negative experience?

Our negative reactions to social interactions are the result of how we think about our body's responses. When the *fight or flight* system activates, our brain searches for potential sources of harm. However, in modern society there is often no obvious physical threat. When no explanation can be found, the search turns inwards and the brain invents an explanation such as, "There must be something wrong with me." Nothing could be further from the truth.

During anxiety-provoking situations remember that your body's responses are good. Increased heart rate, sweating, and heavy breathing all help deliver oxygen where it is needed. So, if you find yourself experiencing anxiety during tests, focus on the benefits of your body's responses.

Question 7: If the sympathetic nervous system (SNS) has evolved to help us deal with stressors, why is stress such a negative experience?

- a.) Stress is negative because SNS activation is bad in the long run
- b.) Stress is just result of how we label physiological arousal
- c.) Stress is always bad. Increased arousal never helps us.

Question 8: If you find yourself feeling nervous in social evaluative situations, you should _____.

- a.) Try and avoid looking at the evaluators.
- b.) Give up because increases in physiological arousal are maladaptive.
- c.) Remind yourself that you body's reactions are helping you perform well.

We would now like for you to answer some brief questionnaires before starting your test. Please turn the page to begin these materials.

Remember during the test today, we ask that you to try to remind yourself that your body's responses to the stressful testing situation will help you to perform well on the test today.

Good luck!