**What Happens to Our Brains When We Have Stage Fright: The Science of Public Speaking** by Mikael Cho

Palms sweaty. Heart racing. You know the feeling. Whether it’s five people or fifty, public speaking is a *gut-wrenching* experience for most of us.

The reality is, if you’re planning on presenting pretty much anything in your life (which you most likely will), you’ll need to be able to effectively communicate your ideas in front of at least a few people. To get over my fear of public speaking, I realized a good place to start would be to understand why I was getting stage fright in the first place.

**What is stage fright really?**

Sometimes, even weeks before a presentation, I would think, “What happens if people think I suck or someone thinks I don’t know what I’m talking about?” As humans, we’re *hardwired* to worry about our reputation above almost all things. There are *primitive* parts of your brain that control your reaction to threats on your reputation, making these reactions extremely difficult to control.

These reactions to threats are precisely what Charles Darwin tested when he visited a snake exhibit at a zoo in London. Darwin tried to remain perfectly calm while putting his face as close to the glass as possible in front of a snake that was ready to strike. However, every time the snake would lunge toward him, he would grimace and jump backward. Darwin wrote his findings in his diary,*“My will and reason were powerless against the imagination of a danger which had never been experienced*.” He concluded that his response to fear was an ancient reaction that has not been effected by *nuances* in modern civilization. This response is know as the **“fight or flight” syndrome**, a natural process that is designed to protect your body from harm.

**What happens in our brain?**

When you think about negative consequences, a part of your brain, the *hypothalamus*, activates and triggers the *pituitary gland* to *secrete* the hormone ACTH. This hormone *stimulates* the *Adrenal Glands* in your kidneys and results in the release of adrenaline into your blood: It is at this point in the process when many of us experience the reactions of this process. Your neck and back muscles contract (forcing your head down and your spine to curve) moving your posture into a slouch. This results in a *Low-Power position* as your body tries to force itself into the fetal position:

If you try to resist this position by pulling your shoulders back and lifting your head up, your legs and hands shake as the muscles in your body instinctively prepare for an impending attack. Your blood pressure increases and your digestive system *shuts down* to maximize efficient delivery of even more *nutrients* and oxygen to your vital organs. When your digestive system shuts down, this is what leads to the feeling of dry mouth or *butterflies*. Even your *pupils* *dilate*, which makes it hard to read anything up close (like presenter notes) but improves long range visibility, making you more aware of your audience’s facial expressions.

**Your experience of stage fright is also affected by 3 main things:**

1. **Genes**

Genetics play a huge role in how strong your feelings of anxiety are in social situations. For instance, even though John Lennon performed on stage thousands of times, he was known for *throwing up* before going on stage for his live performances. Some people are simply *genetically wired* to feel more scared when performing or speaking in public.

2. **Level of task mastery**

We’ve all heard the saying, “practice makes perfect.” The main benefit of practice is to increase your familiarity of a given task. As this familiarity increases, feelings of anxiety decrease, and have less of a negative impact on performance.

To support these findings, in 1982, a team of psychologists watched *pool players* play alone or in front of crowd. The study found that: *“Stronger pool players sank more shots when performing in front of a crowd, while poor pool players performed worse. Interestingly, the stronger pool players performed even better when people were watching them versus when they were playing alone.*” What this means is if you know your presentation it’s more likely that you’ll give an even better presentation in front of a large audience than when you rehearsed alone or in front of a friend.

**3. Stakes**

If you’re giving a presentation where your class is on the line or the whole school is watching you speak, there’s an increased chance that your reputation could be massively damaged if you *screw up*. As the *stakes* increase, there’s a chance your reputation could be completely ruined if you perform poorly, which *triggers* the release of more adrenaline, and can result in **paralyzing fear and anxiety**.

We’ve seen the effect of stakes on reputation in online communities as well. For example, many Taobao sellers worry about their reputation a ton because it directly affects how much money they make. One piece of negative feedback can ruin a Taobao seller’s profile and cause them to lose sales. Having a good reputation is important to protect but, this also leads to having a fear that one *slip-up* could ruin your reputation and cause the loss of future opportunities.

**One small tip**

The most *nerve-racking* part of public speaking for me is always those last few minutes before heading on stage. What I do to combat those feelings is I head into the bathroom, stretch my arms up, and take three deep breaths in and out. Elliot Hulse, a YouTube-famous fitness-expert calls this “Breathing into your balls”. He recommends this as the first and foremost way to avoid being anxious before a meeting to giving a speech. This exercise activates the hypothalamus, and sends out hormones to trigger a relaxation response.

In fact, researchers tested a single session of slow breathing on 46 trained musicians and the results of the study found that one session of slow breathing helped control arousal, especially for musicians that had high levels of anxiety. The feelings associated with stage fright are usually the strongest during the lead-up to the presentation rather than during it, so take a minute to breath and stretch before heading out on stage.