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The Stress of Public Speaking Increases Cortisol Levels in Undergraduates: Is increased Preparation Really the Best Remedy?

Jodi F. Evans Ph.D.

Molloy College, jevans@molloy.edu

Erin Clinton

Grace Cookson

Stephanie Brown

Daniel Woods

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The Stress of Public Speaking Increases Cortisol Levels in Undergraduates: Is increased Preparation Really the Best Remedy? Erin Clinton, Grace Cookson, Stephanie Brown, Daniel Woods and Jodi F. Evans, Molloy College, Rockville Centre, NY.

Perceived stress is prevalent among the undergraduate population. When this stress persists, it has the potential to lead to mental health illnesses. Recent research shows 85% of students experience overwhelming anxiety from academic pressures. Physiologically, during stressful events, cortisol levels rise in the body which disrupts homeostasis. The anticipation prior to a class presentation, a form of public speaking, is a common source of perceived stress among undergraduates. The focus of this experiment was to determine if there is a correlation between factors such as increased preparedness, sleep, level of understanding, perceived anxiety and physiological stress parameters. Twenty-eight student volunteers with an impending oral presentation were enrolled from both 100-level and 200-level undergraduate courses. At baseline and on the day of the presentation, salivary cortisol, heart rate, and blood pressure were measured. The participants were also asked to complete the Beck's Anxiety Inventory (BAI). Compared to baseline, cortisol levels on the day of the presentation were significantly increased in both groups. The change in salivary cortisol levels did not correlate with the number of hours spent preparing, the level of understanding nor hours of sleep the night before the presentation. However, the analyses revealed a trend toward an inverse correlation between the self-reported level of understanding and change in cortisol levels. Essentially, students who felt ambiguous toward their level of understanding of their presentation experienced lower changes in cortisol levels when compared to those students who reported a stronger understanding of the material. This study confirms that undergraduates' perceived stress in anticipation of public speaking does manifest in significantly elevated cortisol levels. It does not provide a link between increased preparation and reduction of stress parameters. Future studies could focus on alternative methods such as mindfulness and meditation and their efficacy in reducing undergraduate stress associated with public speaking.

Anterior Cerebral Artery Stroke: A Case Study Created to Understand the Clinical Dysfunctions Related to the Ischemic Brain Regions. D. Colgan, W. Mirza, L. Lorentzen and K. Reilly, Kean University, Union NJ.

A case study was developed by a student team in an undergraduate neuroscience class to link functional brain anatomy to cardiovascular attack in a teaching style format. The student team reviewed the three major cerebral arteries (anterior, middle and posterior) and researched all brain regions that each artery and major bifurcation branches supply. The students then researched

the neurological functions of each brain region. The students selected one artery of interest and a case study was then created that presented the signs and symptoms of embolic anterior cerebral artery stroke. The case study presented a patient, with a history of hypertension and high blood pressure, who suddenly began suffering from a series of ailments such as aphasia, apraxia, and topical anesthesia. Further medical examination performed by the patient's neurologist revealed the diagnosis of Broca's Aphasia, Hemiplegia, and Alien Hand Syndrome. Case study questions were then created to relate the symptomology to the functional anatomy of the brain regions supplied by the artery. In researching and conducting this case study, the students learned to integrate their classroom content in neuroscience and anatomy/physiology with clinical relevance as they designed this case for future use by faculty in an advanced course.

Isolation and Identification of Antibiotic-Resistant Bacteria From New York City Soil Samples. Adolfo Coyotl and Joan Petersen, Queensborough Community College, Bayside, NY.

As an urban environment, New York City puts an enormous amount of pressure on its natural areas. As part of the Soil Joint Seed Project we are interested in the potential effects of antibiotic resistant bacteria on human health and the environment. My research project is focused on determining patterns of antibiotic resistance among bacteria found in New York City soils. Samples were collected from three sites with varying degrees of human influence: Thain Forest (TF-pristine), Central Park (CP-intermediate), and Newtown Creek (NC-heavily polluted). Over 131 pure cultures were isolated on Reasoner's agar (R2A) from dilutions of soil samples. To test for antibiotic resistance, cultures were streaked onto R2A plates containing either penicillin or kanamycin. Gram staining and microscopy were used to determine morphology and Gram reaction of the resistant isolates. Overall there were 96 gram-positive and 35 gram-negative isolates. Endospore-formers were found among all three sites: Newtown Creek had the largest percentage of endospore-formers (65% of isolates). Antibiotic testing showed that there were resistant bacteria in all three sites, with more isolates being resistant to penicillin than to kanamycin. The Newtown Creek site had the most penicillin-resistant isolates (89%). Further studies will involve identification of species by 16S rDNA sequencing along with determination of resistance mechanism using PCR primers specific to resistance genes. The prevalence of the isolates in the natural soil community will be determined by comparing our sequences to metagenomic sequencing results. This research has possible implications for determining sources of antibiotic resistance genes in urban microbiomes.