The Brain of Everyday Situations

Humans often begin their days by waking up, dragging their feet through morning routines, and running out the door to ensure they arrive to school or work on time. During this period of the day, very few consider the science behind their ability to stumble out of bed in the morning, and even less consider the precise systems that work in tandem to produce the exact processes of this science. But regardless of whether or not one, perhaps sitting in class and answering questions on an exam, considers the process by which the brain permits these procedures, the nervous system is constantly working and processing information to allow the body to function in all circumstances humans may encounter in life.

In certain situations, some parts of the system and some regions of the brain become more active than others. For example, a person nervously sitting in an exam session and determining the correct answers to questions on the exam has sections of the brain that are particularly active for his or her purposes, and these communicate with each other and all the other sections of the nervous system to produce specific actions.

For most students, the thought of any exam arouses extreme feelings of apprehension and nervousness. Perhaps one's palms become sweaty; one's heart rate increases. These signs, among others that show reactions to nerve-wracking and stressful situations, indicate that the sympathetic nervous system of the body's autonomic nervous system [ANS] is responding to the situations (Myers, 2014). A section of the brain called the medulla controls a person's heart rate, meaning that in this instance, the student's medulla is particularly active (University of Alberta, Department of Psychology, 1999). The medulla increases the heart rate in response to a stimulus, which in this case happens to be the stressful situation of the test. The nervous feeling that arises from same situation is also an indicator of the reaction to this situation. The amygdala, located

above the medulla, is a section of the brain that is linked to the emotions of fear and anger; when a certain area of a person's amygdala is active, the emotion of fear shows through the individual's behavior (Myers, 2014). Having feelings of nervousness, a feeling related to the emotion of fear, may indicate that the amygdala is active. Additionally, the hypothalamus of the brain has influence over the ANS and is linked to controlling fear and anger (University of Alberta, Department of Psychology, 1999). The hypothalamus also plays a role in the nervous reactions a student has in response to a test.

As a student listens intently to the instructor and reads the directions on the exam paper, however, this means that yet another section of the brain is active. The thalamus attached to the top of the brainstem receives the information arriving from the auditory and visual senses, relaying that information to other areas of the brain (Myers, 2014). As the ears pick up the vibrations that come from the instructor's speech, they transport the signals to the thalamus for redirection; as the eyes receive the light bouncing off the paper, they also transport these signals to the thalamus, then the thalamus sends signals up to the cerebral cortex to be processed. The temporal lobe of the cerebral cortex processes audio while the occipital lobe processes visuals (Myers, 2014). After processing the visuals, the activity in the brain lights up in another area of the cerebral cortex: the frontal lobe. The frontal lobe is responsible for judgment and planning (Myers, 2014). When the student taking the exam intends to eliminate answers, the frontal lobe allows him or her to make a judgment call about which answers seem incorrect.

Between the remaining answers, both of which have been judged to possibly be correct, the student must call upon previously studied information, and in doing so, another section of the brain increases in activity. The hippocampus deals with memory formation, laying down and maintaining explicit memories, such as memories of information from studied material (Myers,

2014). The student is then able to obtain the memories of studying the class material and can choose the correct answer to the question.

After all those complicated systemic procedures, it seems that the detailed functioning of the brain would slow down, but the brain does not stop working as easily as that. Even the simple act of using a pencil to select the right answer involves greater activation in certain parts of the brain, like the cerebellum. The cerebellum stores information about repetitive procedures like the act of writing with a pencil (University of Alberta, Department of Psychology, 1999). The cerebellum allows this memory of the act to work with the frontal lobe to plan the movement of the hand holding the pencil. The motor cortex near the frontal lobe controls information about movement (Myers, 2014). This section of the brain becomes even more activated as it relays information down the brain and to the spinal cord. The spinal cord itself carries motor control information through the nervous system (University of Alberta, Department of Psychology, 1999). Because of this ability, the spinal cord can send signals to the nerves of the arm and hand that spur the movement of a hand writing with a pencil to answer a test question.

From just a basic description of what happens in the brain and what sections of the brain are most active during a situation such as taking an exam, it is clear that the processes of the brain and the nervous system are by no means simple, even if their placement inside the body tends to encourage ignorance on just how complicated they really are. Just a single situation that lasts a span of a few minutes may contain dozens and dozens of these small calculations and signal relays; when considering the whole lifespan of a single human, the body performs many, many more. Although a person may not always consciously consider the steps it takes to do even a task as presumably simple as answering a test question, the brain is still active in many ways, and this activity is the reason why people are able to perform big and small actions alike.

References

Myers, D. G. (2014). *Exploring psychology.* New York: Worth.

University of Alberta, Department of Psychology. (1999). *Midsagittal structures study module.* Retrieved from http://www.psych.ualberta.ca/~ITL/brain/module1.htm

Work Sample Evaluation

Subject Area: Psychology
Task Title: Your Brain: Don't Leave Home Without It
Student Work Sample Title: The Brain of Everyday Situations

The document was scored using the *CCR Task Bank Rubric*. The final scores are indicated in the following chart.

Scoring Criteria	Insufficient Evidence	Developing	Progressing	Accomplished	Exceeds
Research and Investigation				**X**	
Ideas and Content				**X**	
Reading and Analysis				**X**	
Communication				**X**	
Organization				**X**	
Accuracy			**X**		

Annotations: The following evidence from the work sample and the reviewer's comments support the scores above. Page and line numbers refer to the original work sample.

Scoring Criteria	Page #	Line #	Commentary about the work sample
Research and Investigation: *Locating resources independently and/or identifying information within provided texts*	1	19	The student makes reference to material in the textbook.
	1	20-21	The student refers to the web site that was previously provided as part of the task.
	1	15-22	The work sample includes information from the provided sources that supports the student's introduction.
Ideas and Content: *Presenting a thesis and understanding concepts*	1	6-9	Work sample provides a unifying opening statement in the introduction paragraph.
	1	19-21	The student shows a strong understanding of the concepts (e.g., the medulla).
Reading and Analysis: *Evaluating sources and selecting evidence to support the central idea*	1	19-22	The student identifies brain structures and effectively connects them to the provided scenario (e.g., the medulla and heart rate).
	2	21-25	The student's descriptions of brain structures suggest a careful reading of the provided sources (e.g., a discussion of the hippocampus and explicit memories).
Communication: *Using subject-appropriate language and considering audience*	2	23-24	The student uses subject-appropriate language (e.g., discusses the role of the hippocampus in memory formation).
	2	17-20	The student writes for a general audience (e.g., identifies the frontal lobe as being involved with planning and judgment before connecting it to the provided scenario).
Organization: *Structuring main ideas and supporting information*	1	2-14	The work sample starts with two paragraphs of introduction rather than focusing on the scenario right away.
	1	11-14	The thesis is vague and doesn't adequately explain that the "example" of "a person nervously sitting in an exam session" is the case study under analysis.
	3	16-25	The student provides a conclusion paragraph that connects to the introduction paragraph.
	2-3	2(8)-3(15)	The organization of the essay follows the organization of the provided scenario.
Accuracy: *Attending to detail, grammar, spelling, conventions, citations, and formatting*	3	8-9	Issues of readability sometimes detract from the essay's content.
	4	1-4	The References page uses the correct formatting to cite resources.