



Mood & Memory Activity Guide

Mission 3: Synaptic Sparks, Objective 2

Name:

The activity for this objective is to run a simulation of different scenarios and see how they affect key neuromodulators serotonin and dopamine and in turn mood and memory. The simulation includes five different scenarios: life events, exercise, added sunlight, more sleep and less sleep.

Students can work individually or with a partner for this activity.

1. Connect the NeoPixel ring to the CodeX on PORT0.	<input type="checkbox"/> NeoPixel Ring connected to CodeX
2. Go to File → Browse Files... and open the file BRN_brain_sim	<input type="checkbox"/> File opened
3. Go to File → Save As and rename the file brain_sim	<input type="checkbox"/> File saved as brain_sim
4. Follow CodeTrek to: <ul style="list-style-type: none">• In the events() function, assign values for points• In the adjust_levels() function, use the min() function to select a value for the memory percent• In the while True: loop, assign a delay to the time.sleep() function• Break out of the loop when BTN_B is pressed	<input type="checkbox"/> CodeTrek followed
5. Run the code. Fix any errors or problems with the code.	<input type="checkbox"/> No errors in the code
6. Choose a scenario by pressing a button. The serotonin and dopamine levels will adjust, the NeoPixel ring will indicate the mood, and the memory and motivation percent will display. Wait two seconds between scenarios. The scenarios can be tested in any order and multiple times. Scenarios: <ul style="list-style-type: none">• BTN_A triggers a life event. It can be something pleasant, like listening to music, or something unpleasant, like stressing for a test.• BTN_U triggers more sleep.• BTN_D triggers less sleep.• BTN_R triggers getting more sunlight.• BTN_L triggers exercise. The amount of increase depends on the level of exercise for three seconds. After the button press, shake the CodeX and see the result.	Test each scenario at least once. They can be repeated multiple times and in any order. <input type="checkbox"/> Life events scenario (BTN_A) <input type="checkbox"/> More sleep scenario (BTN_U) <input type="checkbox"/> Less sleep scenario (BTN_D) <input type="checkbox"/> More sunlight scenario (BTN_R) <input type="checkbox"/> More exercise scenario (BTN_L) * requires shaking the CodeX
7. End the simulation by pressing BTN_B . The simulation can be repeated by restarting the code.	<input type="checkbox"/> End the simulation (BTN_B)
8. Answer the reflection questions on the next page.	<input type="checkbox"/> Reflection questions



Reflection: From this simulation, what did you learn about:

The effect of sleep on the brain?

The effect of sunlight on the brain?

The effect of exercise on the brain?

The effect of life events, both positive and negative, on the brain?

