**-- Signal Detection --**

**Materials:**

* 3 jugs of water: no sugar, low sugar (4 tsp/gallon), high sugar (1 cup/gallon)
* tasting cups
* tasting pipettes
* paper towels

**Procedures:**

* Read all materials thoroughly
* Complete pre-testing group report
* Complete signal detection procedure & sensory adaptation procedure
* Complete post-testing group report

Each person should have 3 cups (labeled “plain” and “low sugar” and “high sugar”) and 1 pipette and write his/her initials on them. Just before your turn to taste, pour a small amount of liquid from the appropriate jug into your cup. You will then pipette directly from your cups (meaning pipettes should never go into jugs).

Working in pairs, one student (the “experimenter”) gives “blind” samples via pipette to the “taster” in randomized order, alternating between “plain” and “low sugar.” The taster responds whether they detect the flavor (is there sugar in the water?) and the experimenter records the responses. Administer numerous samples and ask the taster to determine whether the cup has sugar in it or not. Make tally marks in the signal detection chart below. When you have finished, switch roles with your partner.

|  |  |  |
| --- | --- | --- |
|  | **Response** | |
|  | **Response:  "Yes, sugar is present”** | **Response:  "No, sugar is not present"** |
| **Signal Present**  **(sugar in water)** | *(HIT)* | *(MISS)* |
| **Signal Absent**  **(water)** | *(FALSE ALARM)* | *(CORRECT REJECTION)* |

**For each row, convert the tally marks to probability of detection, given presence or absence of the signal (i.e., prob. of “yes” | signal present). Therefore, [hits + misses = 1] and [false alarms + correct rejections = 1].**

Hits:

Misses:

False Alarms:

Correct Rejections:

From these probabilities, it is possible to calculate d’ values which represent how well the subject discriminates between water with no sugar and water with sugar. d’ of 0 means performance is at chance (no better than random guessing) and d’ of 4.65 indicates a 99% hit rate and 1% false alarm rate.

Open the Excel file “Lab 1 (psychophysics). Calculating d’” and follow the instructions for calculating d’.

d’ = \_\_\_\_\_\_\_\_\_\_

**-- Adaptation --**

Repeat the process above, but periodically intersperse small sips from the “high sugar” solution. Do not include these administrations in the data below.

|  |  |  |
| --- | --- | --- |
|  | **Response** | |
|  | **Response:  "Yes, sugar is present”** | **Response:  "No, sugar is not present"** |
| **Signal Present**  **(sugar in water)** | *(HIT)* | *(MISS)* |
| **Signal Absent**  **(water)** | *(FALSE ALARM)* | *(CORRECT REJECTION)* |

**Again, calculate the following (as probabilities):**

Hits:

Misses:

False Alarms:

Correct Rejections:

d’ = \_\_\_\_\_\_\_\_\_\_