(Kantowitz, 2009)*Lab Report – 2*

*Signal Detection Method*

*PSY310: Lab In Psychology*

*19th September 2024*

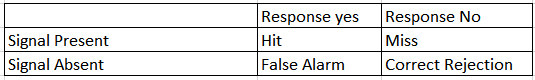
*Nirja Sukhadia*

*AU2120057*

Github link –

**Introduction**

Signal detection theory assess the person’s ability to detect a signal and how the person is able to perceive the signal and make a decision. According to the signal detection theory, noise, a disturbance that can be confused with the signal is always present. Thus, the detection of the signal depends on the sensitivity of the signal (d’) and response bias (c) of the person which helps us understand the perception and the process of decision making in an individual. Sensitivity of the signal (d’) measures the individual’s ability to differentiate signal from noise and response bias, the criterion (c), measures the willingness of the individual to report the signal) (Kantowitz, 2009) .There are four possibilities that we can get as a response; a hit, a miss, a false alarm, and a correct rejection. When the signal is present and participant detects it, it’s a Hit, and if they fail to detect the signal, it’s a Miss. When the signal is nor present and the participant reports it as a “yes” as in detecting the signal, then it’s a false alarm, and if does not detect the signal then it is a correct rejection. If the participant is more inclined towards saying “yes” then they are said to have a liberal criterion and if they are more inclined towards saying “no” then they are said to have a conservative criterion.



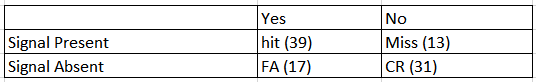
**Method**

The participant recruited was an undergraduate student with the age of 21. The experimental setup was designed on PsychoPy software on a 16” laptop. The experiment consisted of a circular shape with a Gaussian mask texture which was displayed with different degrees of tilt. The visual rating is displayed on the screen for 0.3 ms with a spatial frequency of 5 at the center of the screen. The tilt of the visual grating is decided by the random() function in the custom code. The range of degrees between which the tilt is present is {-5,-1} and {1,5}. The experiment would run for 100 trials, the data of which is then used to calculate d’ and c (criterion values).

The task of the participant was to press the “up” key when there was no tilt (signal present) and press the “down” key when there was a tilt present (signal absent). The vertical lines without the tilt is our signal/stimulus for the experiment.

**Result**

The d’ value is **1.04858516**, calculated by using the formula *z(prop hit) - z(prop fa),* and the criterion value is **-0.15019717**, which is calculated by using the formula *z(prop hit) - z (prop fa)]/2.*

**

**Discussion**

The d’ prime value is the measure of the participant’s ability to differentiate if the stimulus present is a signal or a noise. Any d’ prime value between 0 to 2.5 is quite high implying that the participant is quite good with discriminating signal from signal + noise. Criterion represents the willingness of the participant to respond “yes” or “no”. Since there was a negative sign in the formula used, the criterion value here is -0.1501, indicating that the participant has a liberal bias, that is, they are more likely to say “yes” easily.

# References

Kantowitz, B. H. (2009). Experimental Psychology 10th Edition. *Wadsworth Clengage Learning*, 169-174.