Modeling in Danio rerio: How Hyperactivity Is Affected by Different Wavelengths of Light Through a Range of Ages

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The increased use of technology has led to an increase in blue light exposure to children across the country. Studies have shown blue light to have negative effects on human circadian rhythms. The goal of this project is to determine the effect of blue light on individuals as a function of age. Zebrafish have been chosen as the model organism in this experiment. Behavior after exposure to various light wavelengths was studied on zebrafish ranging from late larval through late juvenile stage. Fish motion was tracked and analyzed using video analysis software after 10 minutes of exposure to either white or blue light. Time spent swimming at speeds less than 25% of the average speed, number of direction changes, percent of time spent in the center, and total distance swam were assessed. Movement data for fish aged 30, 42, and 51 DPF has been collected and results indicated that blue light data was insignificant over white light for all ages. The other conclusion that can be drawn from both observation as well as data analysis is that as the fish age, they tend to swim a further total distance at a faster speed with less time spent not moving. Said results denied both hypotheses for this experiment, however, the data shows several behavioral factors that can be further analyzed and may lead to different implications.

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