Quantifying Depression: An Art-Based Approach to Reducing the Self-Report Bias in Diagnosing Depression Using Koch's Baum Test and Color Psychology

Sharma, Saachi (School: Nikola Tesla STEM High School)

The current ways to diagnose depression are heavily dependent on patients self-reporting their symptoms which is closely related to its high rate of misdiagnoses. The purpose of this investigation was to develop a more accurate screening for major depressive disorder by increasing the ambiguous stimuli measured by using Koch's Baum Test – a projective test in which patients draw a tree – in combination with color psychology. Differences between depressed and healthy people that are undetectable with the current self-reported screenings alone are quantifiable with this novel colored version of Koch's Baum Test. Before participants were asked to draw a tree, their group was determined using the Beck Depression Inventory (BDI) – scores 0-14 made up the healthy group, 15-30 made up the mild-to-moderate depression group, and scores exceeding this range were excluded from the study. Color preference was measured in several ways, including the relative luminance and total number of colors used. Additionally, measurements of the tree were taken to validate the accuracy of Koch's Baum Test in relation to depression. Though the tree measurements did not have significant results across all trials, the total number of colors used by depressed participants had a strong positive correlation to BDI scores, $r(15) = 0.72$, $p < .001$. This study was successful in finding a correlation between color preference and depression using Koch's Baum Test and can be furthered to be used in conjunction with current self-reported screenings for depressions to minimize its misdiagnoses.

Awards Won:
Fourth Award of $500
University of Texas at Arlington College of Science: Scholarship of $10,000