



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

<b>Name(s)</b> <b>Safaa Hussain</b>	<b>Project Number</b> <b>J0407</b>
<b>Project Title</b> <b>Reward, Praise, and Criticism: Tangible vs. Intangible Reward Expectancy: What Works Best?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> The objective of this study was to continue studying the effects of varying stimuli on the performance of sixth graders and adults by discovering the impacts of tangible vs. intangible rewards, given either before or after a task.</p> <p><b>Methods</b> Informed consent was obtained from 40 randomly selected participants, 20 adults and 20 sixth graders, divided equally between males and females, who performed the board game Scramble. 10 from each age group performed this test with tangible (physical) reward, while the other half performed the same test with an intangible (recognition) reward. Each participant executed the task 3 times, once with no reward, once with reward beforehand, and finally with reward given after the task. When finished, each participant was given 3 survey questions on the perceived effectiveness of the stimuli.</p> <p><b>Results</b> I studied the scores from 40 participants of two age groups, adults and sixth graders. Fifty percent of sixth graders, the majority, performed best with tangible reward given after the task, while sixty percent of adults performed best with reward given before the task, without regard to the type of reward. Male and female participants varied in their most effective stimuli. For the survey questions, 50%, of sixth graders replied that reward given afterwards was most motivating for them, while 35%, replied that reward beforehand was most effective.</p> <p><b>Conclusions</b> Based on my findings from this year s project, the effects of tangible (physical) vs. intangible (recognition) reward on performance do change with age, partially supporting my hypothesis. The timing of when reward is given (before/after) does affect performance on a task. My previous year s project attempted to discover the effects of praise and criticism on performance of sixth graders and adults. Comparing the results from this year s project and my previous year s, I found that overall, taking into account reward, praise, and criticism, sixth graders still perform best with verbal praise, while adults do best with criticism.</p>	
<b>Summary Statement</b> I found that the impacts of tangible and intangible reward stimuli, as well as the timing of when reward is given, do change with age and gender.	
<b>Help Received</b> I designed and performed the experiment on my own, with the exception of my science teacher giving guidance on how to display raw data in graphs.	