Name(s)

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Project Number

S0314

Project Title

Spatial Reasoning Abilities: Chess Players vs. Non-Chess Players

Abstract

Objectives/Goals

For this science fair project, this young researcher wanted to conduct an experiment that studied spatial reasoning abilities and how these abilities can be related to chess. The objective of this experiment was to test my hypothesis: Individuals who participate regularly in strategy games--specifically tournament chess players in this study--will have spatial reasoning abilities that are measurably superior to individuals who do not regularly participate in these activities.

Methods/Materials

Before beginning the actual testing, each subject was interviewed to collect demographics for the research and analyze variables that could affect the outcome of the experiment. The demographic information included: name, gender, and age. Other information requested included: highest math level completed, tournament chess player (or not) and rating (assigned by the United States Chess Federation), etc. The instructions for the experiment were read and the demo card was shown to the subject.

The blocks required for the task were placed on the table, then the stopwatch was started and the diagram card for the task was shown to the subject for 10 seconds. After removing the card from view, the subject was instructed to #START# and timing was continued. The stopwatch was stopped and the time was recorded when the subject stated he/she was #FINISHED.# To derive the actual time a subject spent on a task, 10 seconds was subtracted from the total time elapsed. To determine block placement accuracy, the number of incorrectly placed blocks was recorded and the percentage correct was derived at a later time. These steps were repeated for each task until all 6 test trials had been administered.

Results

Total task time and total accuracy percentage was derived for each subject and an average composite score for each subject was computed based these two figures. Chess players were 16.1% faster and 12.6% more accurate than non-chess players with an average composite score 30.8% better than non-chess players. Data was also analyzed for the relationship between self-reported math skill level, age, level of math courses completed, and gender.

Conclusions/Discussion

Overall, the data did support the hypothesis. The results show that the spatial reasoning abilities of chess players are measurably superior to individuals who do not regularly participate in these activities.

Summary Statement

This experiment compares the spatial reasoning abilities of chess players vs. non-chess players.

Help Received

My parents helped purchase all project materials and my mother helped edit my paper.