



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Laura S. Levy	Project Number J0624
Project Title The Reading Mind: Word Recognition in Short-Term Memory	
Abstract Objectives/Goals I looked for a correlation between the ability to read a paragraph composed of anagrammed words easily (first and last letters are in the correct positions, middle letters are mixed up) and the ability to spell well. Hypothesis: if reading and spelling ability are connected through working visual and phonological memory, then people who can read anagrammed words in a paragraph easily are more likely to be better spellers than people who cannot read the same paragraph easily. Methods/Materials I tested 81 adults: To prevent bias I designed and created all testing materials myself and always tested using a particular order. 1) Subjects were given a spelling test made up of common and uncommon words from the paragraphs to be read in steps 2 and 3. 2) I timed each person while they read the anagrammed passage aloud and marked how many errors/long pauses they made. 3) They read the normal passage aloud and I recorded as in 2. 4) Subjects filled out a questionnaire that I used later to break the population into smaller cohorts so I could isolate other variables that might affect results. Results were plotted using Excel. Regression lines and r values were determined using the Excel statistical tools. Results I found no correlation between reading ability (anagrammed reading speed/normal reading speed) and the number of spelling errors made or for most of the relationships compared in the total population. There was no correlation between variables in the cohorts, although those who learned to read phonetically vs. sight recognition were better spellers. I constructed 2 x 2 tables to find the p values using the statistical calculator at http://statpages.org/ctab2x2.html : most results could have occurred by chance. Conclusions/Discussion My hypothesis cannot be supported by my data. I did not find a correlation between reading anagrammed words and spelling ability so these tasks may not use the same neurological pathway. The phonics vs. whole word data suggests that learning how to spell may involve several pathways, such as hearing or speaking. Because reading ability did not predict spelling ability and vice-versa, this suggests that some people cannot learn to spell by just reading words. I am next going to try to test for other connections to see if there is a better way to help people learn how to spell.	
Summary Statement Do reading and spelling use the same neurological pathways through working memory?	
Help Received Drs. H. Stark and M. Czech reviewed my project for design and ethics. My mother helped me learn the statistics I needed, showed me where to find the statistical calculator and how to use Excel.	