



CALIFORNIA SCIENCE & ENGINEERING FAIR

2019 PROJECT SUMMARY

Name(s) Paulina Wodarz	Project Number J0424
Project Title The Evolution of Human Feelings through Writing over Two Hundred Years	
Abstract People's worldviews, opinions, thoughts, characteristics, and feelings are often reflected in the way they write. By looking at which kinds of words increased/decreased in their frequency, it is possible to determine how the world's emotions have changed. The goal of this project was to study the change in human emotions by looking at word frequencies and how they changed throughout the years.	
Objectives A large Corpus of Historical American English was used to research changes in words' frequency over the last 200 years. The words were searched in the corpus to find the frequency of usage per million words, at every decade. Each word was made into a graph on google sheets. Linear fitting was used to determine the slope, and hence the trend over time. Statistical significance of the results was determined by calculating the p-value, using online tools.	
Methods The first part of the research studied 15 common emotion words. It was found that most emotion words decreased in usage, except the words "tired" and "bored", indicating that emotions are becoming less passionate and less positive. The second part of the research showed that phrases "I" and "I don't care" increased, while "we" and "I care" decreased in frequency, demonstrating characteristics of isolation and independence. Finally, 115 common words were studied whose emotional "coordinates" (positive/negative and energetic/non-energetic) were known. It was found that energetic words decreased in frequency, and also, both very positive and very negative words decreased in frequency. All the results were proven to be statistically significant.	
Results All results indicated the decrease of strong (both positive and negative) feelings over the last 200 years. A connection with a documented rise in depression was discussed.	
Conclusions By studying changes in word frequencies in a written corpus over the last 200 years, it was found that words expressing strong negative and positive emotions have become less frequent, indicating the rise of indifference.	
Summary Statement My parents helped me with finding scientific papers, and also explained how to use online statistical tools.	
Help Received Ap2/19	