

# Midterm Report

## Parson's Programming Puzzles: Optimizing Efficiency and Investigating the Effects of Feedback

Further research on Social Addictive Gameful Engineering (SAGE) design  
and computational thinking (CT)

Spring 2021

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# Progress Summary



1. Setup/Initialization



2. Preprocessing



3. Analysis

a. Normality testing

b. Performance

c. Cognitive load



4. Interpretation

# Preliminary Results



## Cognitive Load

### ANOVA

Overall Cognitive Load

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	41.233	8	5.154	1.797	.075
Within Groups	1628.723	568	2.867		
Total	1669.956	576			



## Performance (Training)

### ANOVA

V7

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15218146.726	8	1902268.341	35.618	.000
Within Groups	172561064.970	3231	53407.943		
Total	187779211.696	3239			

\*V7 = performance column (labelled automatically in SPSS)

# Discussion

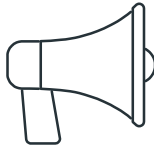
1. Data completeness
2. Training data vs. transfer data
3. Binary vs. non-binary performance scoring
4. Puzzle scoring
5. fs1 feedback
6. Methodology updates (e.g. quantitative motivation analysis, etc.)

# Ongoing Objectives

1. Finalize cognitive load and performance analysis



3. Motivation



2. Efficiency (performance and instructional)



4. Writing



# Additional Resources

<https://statistics.laerd.com/spss-tutorials/one-way-anova-using-spss-statistics-2.php>

<https://statistics.laerd.com/spss-tutorials/testing-for-normality-using-spss-statistics.php>

<https://statistics.laerd.com/spss-tutorials/kruskal-wallis-h-test-using-spss-statistics.php>