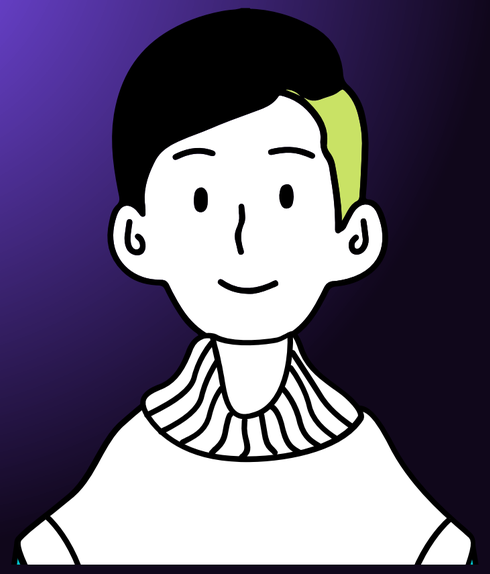
DataFest@UofT2022

May 2, 2022

ELM CITY STORIES ANALYSIS

A statistical analysis to investigate
an educational video game and its players.



Team The Scout Regiment:

Nanyi Wang

Jessica Wang

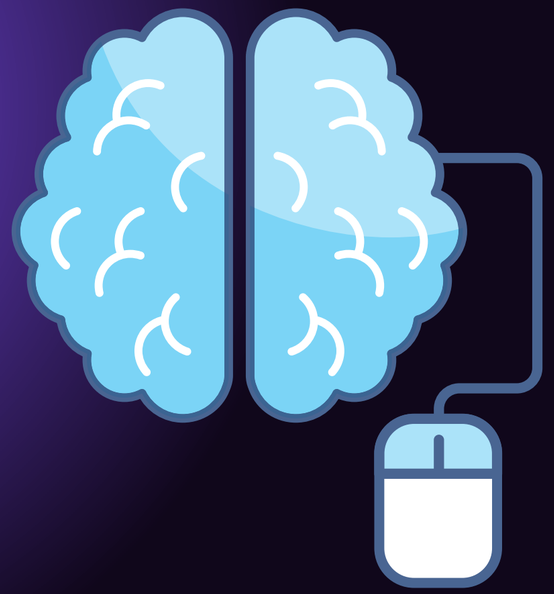
Meiyi Wu

Yuanjun Xia

Let's Get Started!

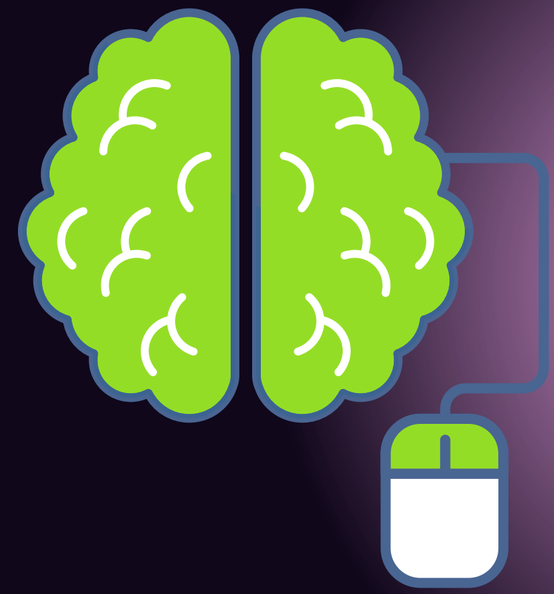
Standardized Assessment Mean Score

Standardized assessment mean score is collected before playing the game in week 0

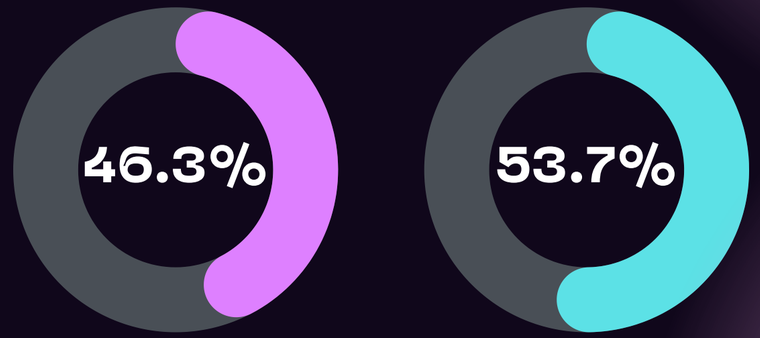


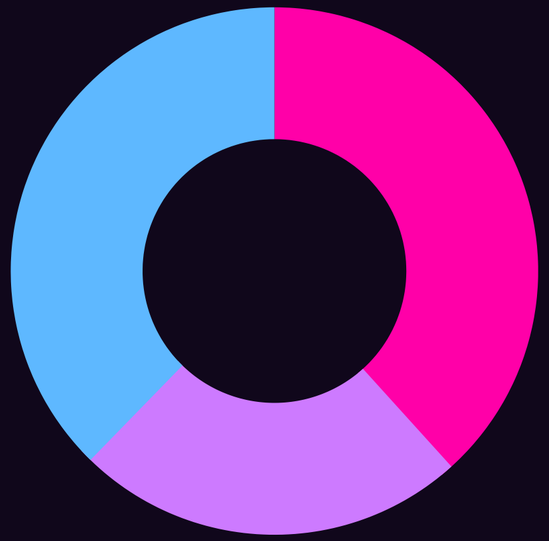
MINUS

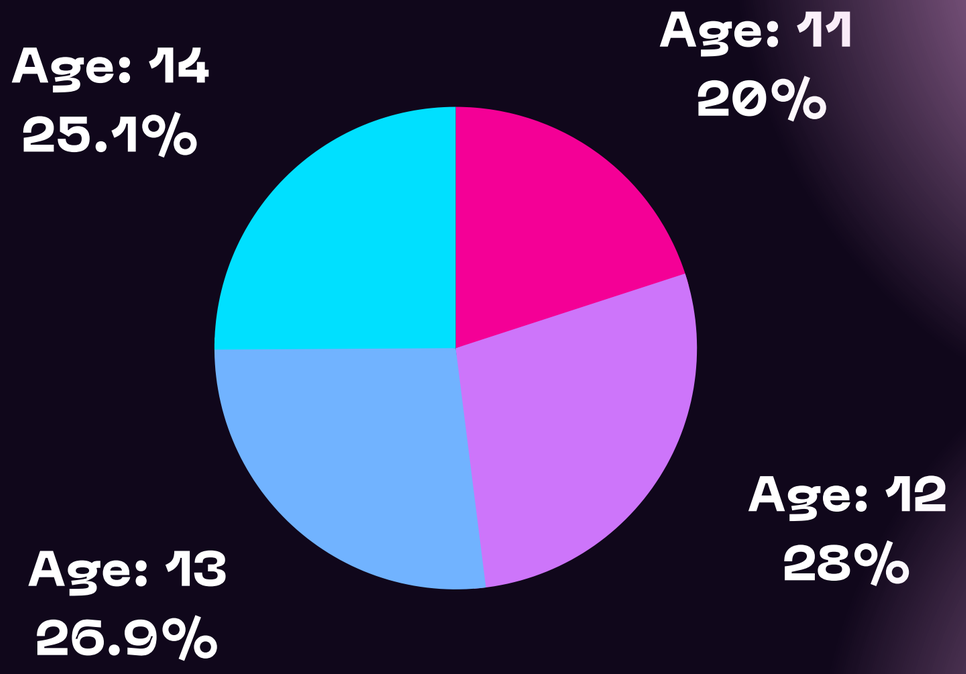
Standardized assessment mean score is collected after playing the game in week 6



Avatar Information







Linear Mixed Models - Gender

Response Variable:

Reduction in mean score

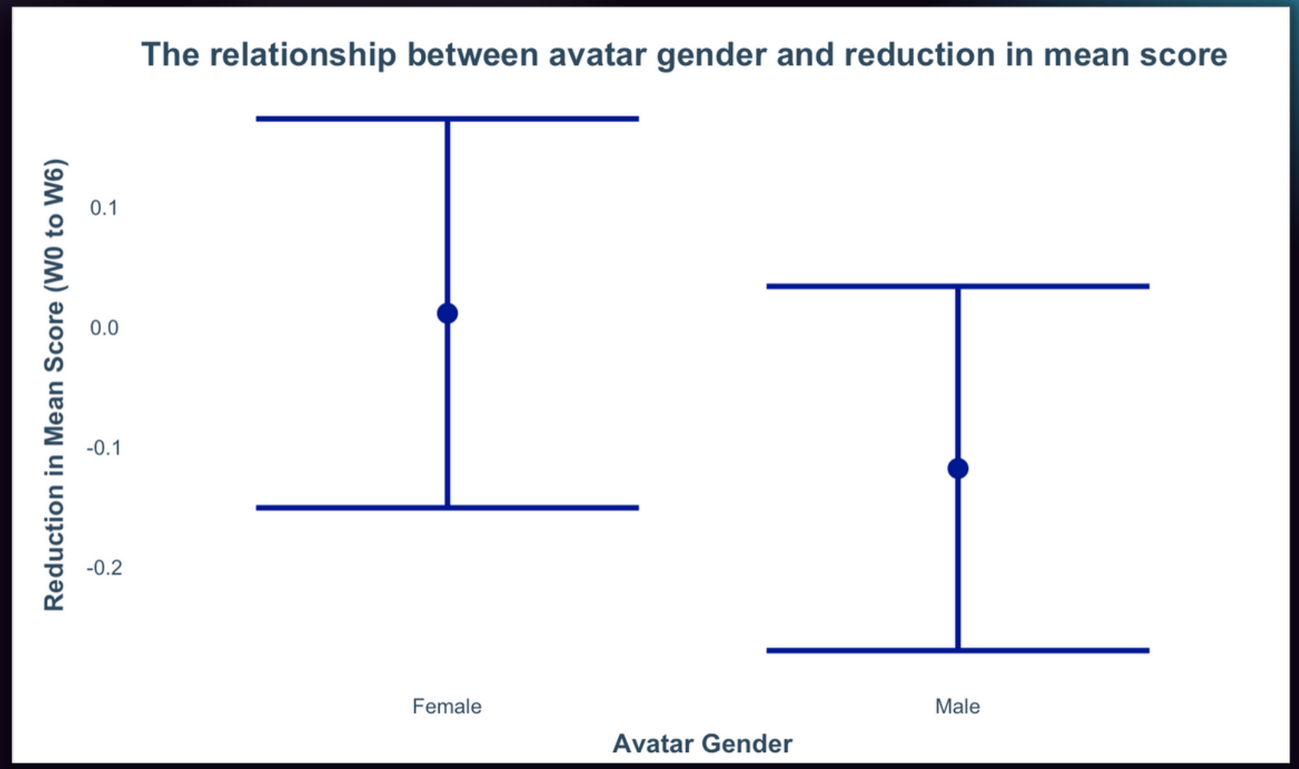
Fixed Effects:

Selected avatar gender:

Male/ Female

Random Effects:

Random Intercept: Each school



Results:

There is a decrease of 0.129 in average mean score reduction by male avatars compared to female avatars.

Linear Mixed Models - Ethnicity

Response Variable:

Reduction in mean score

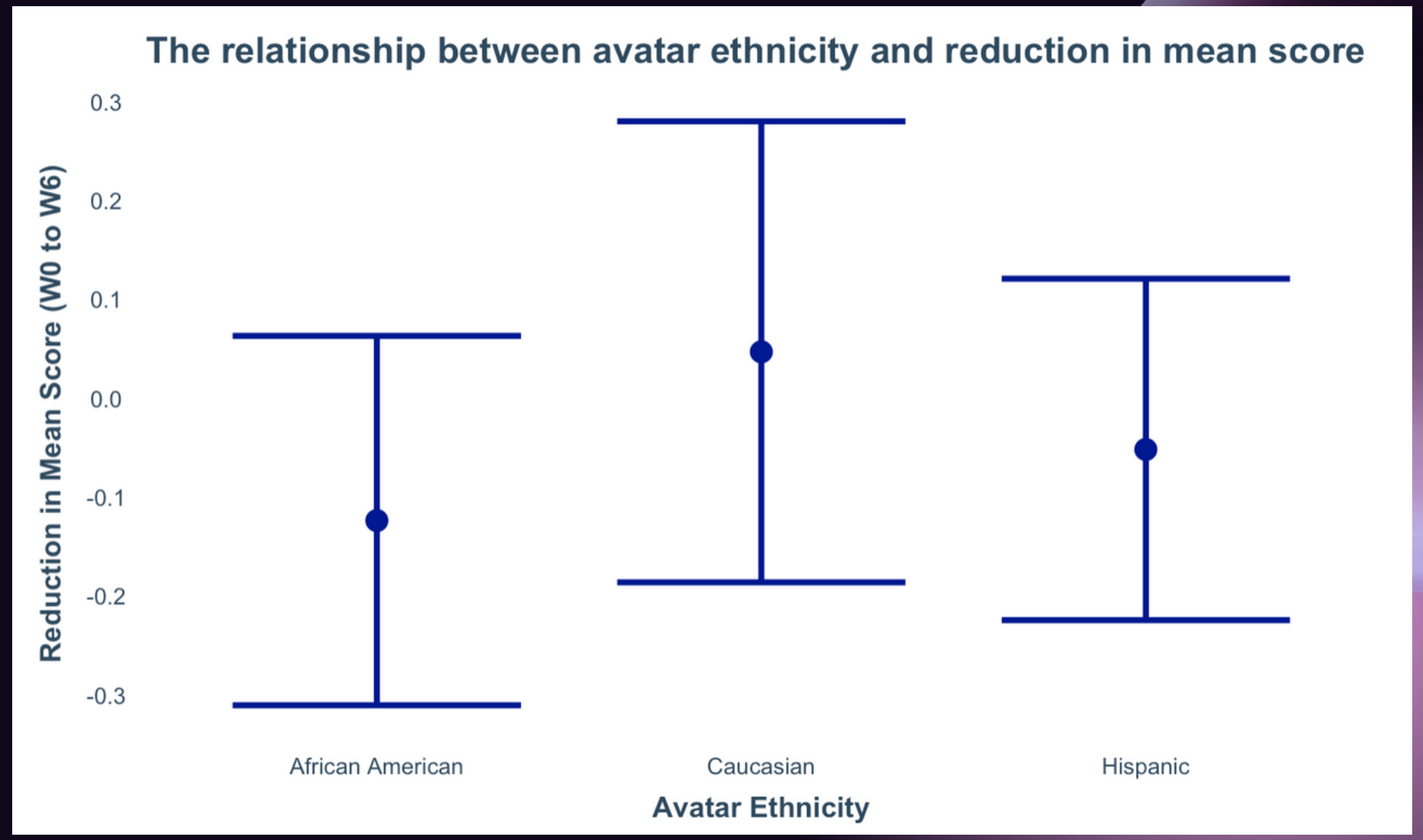
Fixed Effects:

Selected avatar ethnicity:

African American, Hispanic, Caucasian

Random Effects:

Random Intercept: Each school



Results:

An increase of 0.17 in avg reduction by Caucasian compared to African American avatars.

An increase of 0.07 in avg reduction by Hispanic compared to African American avatars.

Linear Mixed Models - Age

Response Variable:

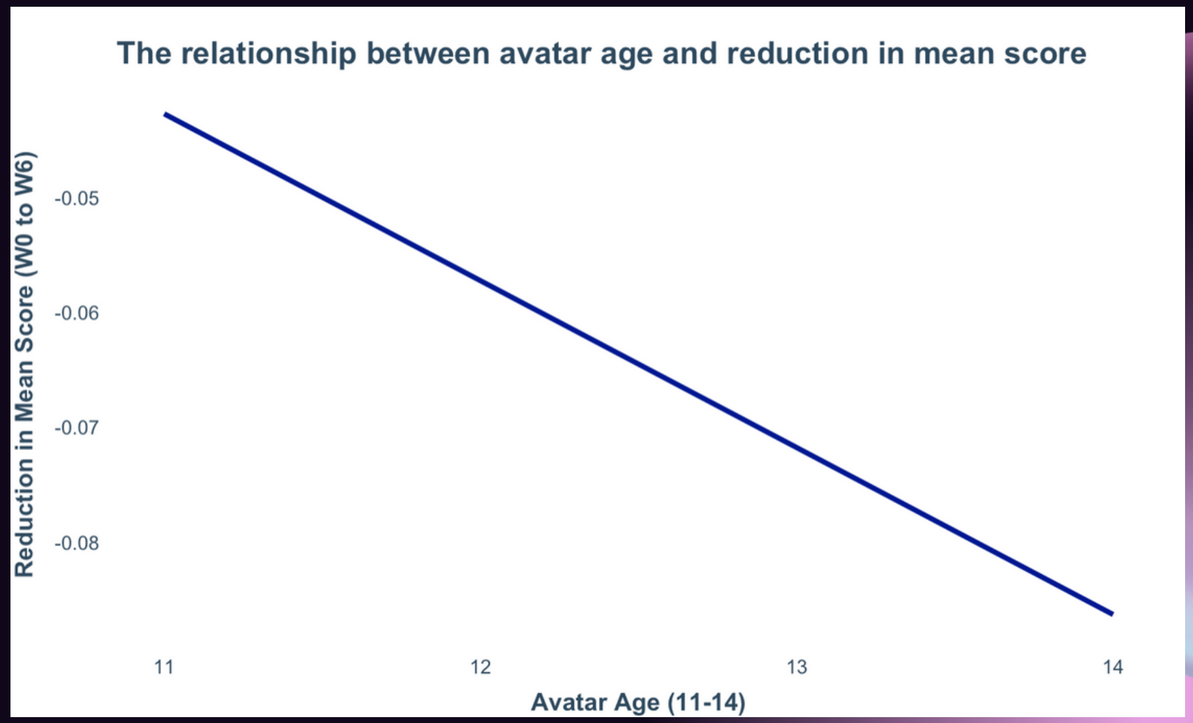
Reduction in mean score

Fixed Effects:

Selected avatar age: 11, 12, 13, 14

Random Effects:

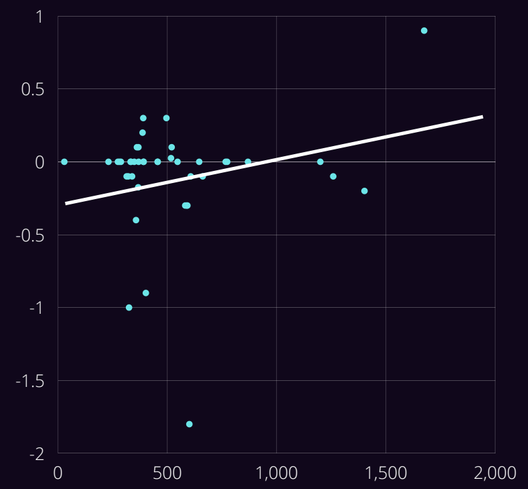
Random Intercept: Each school



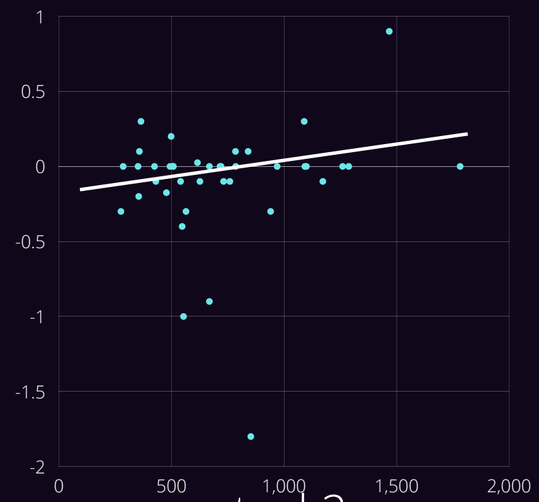
Results:

A negative relationship between avatars' age and reduction in mean score.

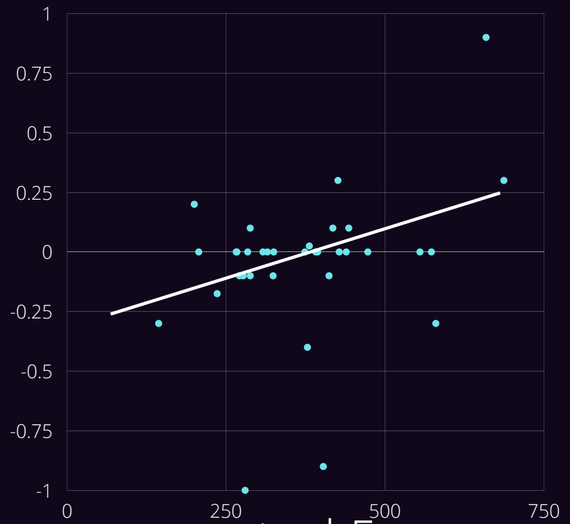
Time Spend on Stack
V.S.
Reduction in Mean Score



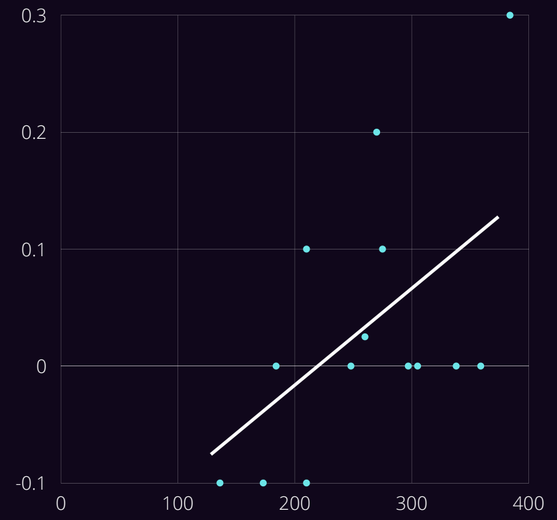
stack1



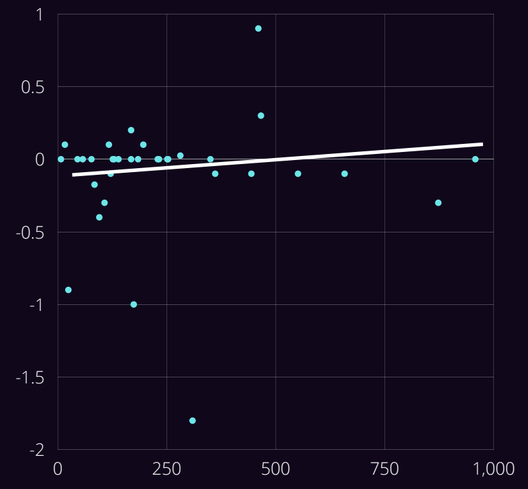
stack2



stack5

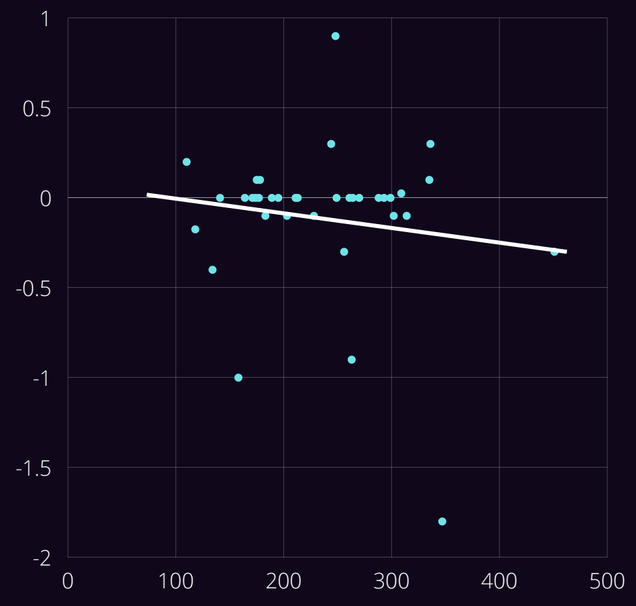


stack9

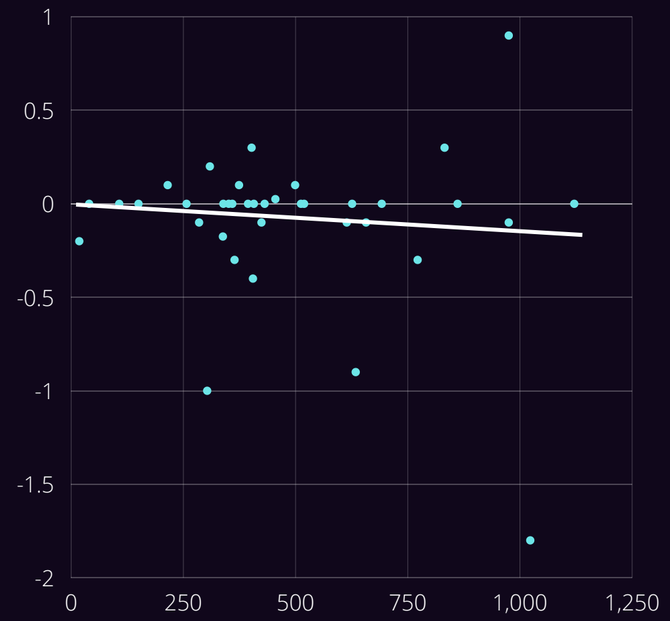


stack10

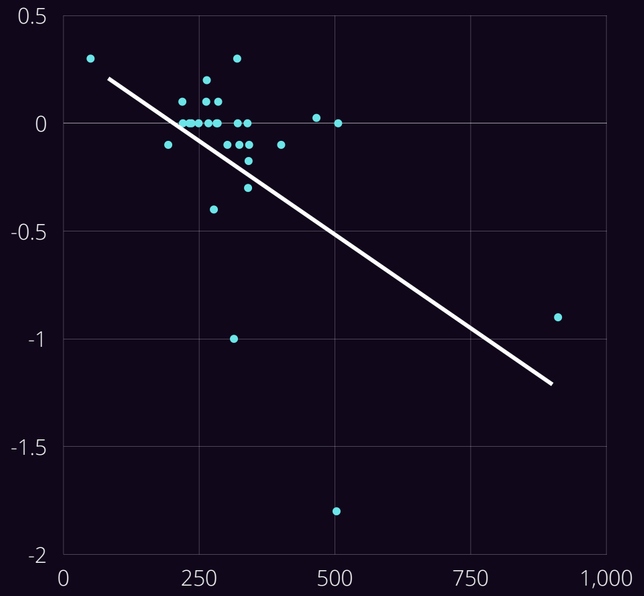
Time Spend on Stack
V.S.
Reduction in Mean Score



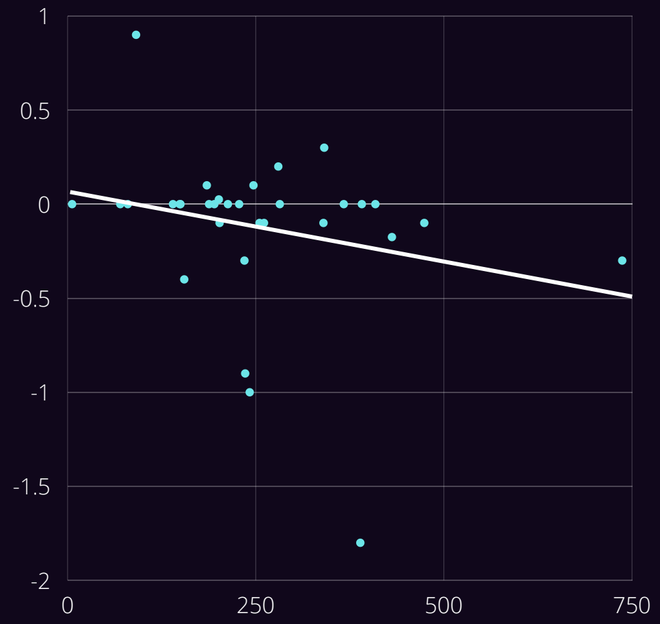
stack3



stack6



stack7



stack8

Findings

- Female avatars have a greater reduction in assessment mean score than male avatars do after playing the game.
- This game has the greatest effect in terms of reducing assessment mean score for players with selected avatar id being caucasian.
- A strong negative linear relationship in avatar age plot indicates that the reduction in mean score tend to decrease as age increases.
- Several stacks show positive linear relationship between time spent on the stacks and the reduction in mean score.

Limitations

- Self-report bias
- Avatar gender & age ≠ users' actual information
- Data potentially outdated
- Missing values

THANK YOU!