To what extent does perceived authorship play a role in the appreciation of algorithmically generated poetry in sonnet and haiku poems?

The researcher I collaborated with wanted to approach the question whether authorship plays a role in the appreciation of algorithmically generated poetry in sonnet and haiku poems. The data file had to be cleaned and re-organized to fit the proper format for the hypotheses design.

I have initially described the sample using graphs and descriptive statistics. To be able to conduct the analysis, a check to see weather any assumptions were violated was performed. This revealed that data met all of the assumptions required to perform the test. I have proceeded further with the analysis, and performed a Two-Way Mixed ANOVA. The repeated-measures factor was represented by appreciation of different poem type (Sonnet appreciation and Haiku appreciation) and the between-groups factor represented by perceived authorship (Poet Authorship, Machine Learning Algorithm Authorship, and No Authorship).

The results reject all three hypotheses along with the main question of the research, therefore poems with poet authorship do not have an effect on sonnet and haiku appreciation, when compared with authorship ascribed to algorithms.

I have also provided statistical interpretation of results and academic reporting, and all of the tables and figures were generated, formatted, named and labeled using APA Style.

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SAMPLE DESCRIPTIVES

A total of 204 participants took part in the experiment, while only 148 managed to fully complete the survey. Each participant was assigned to only one conditions out of 3, classifying each of them into a specific group based on the following conditions: *Poet Authorship*, *Machine Learning Algorithm Authorship* and *No Authorship*.

Figure 1 indicates a notable preponderance of females in the total sample. Of the total participants, 34% were males, 64% were females, and only 1% participants identified as non-binary or third gender.

Figure 1

Gender distribution of the sample
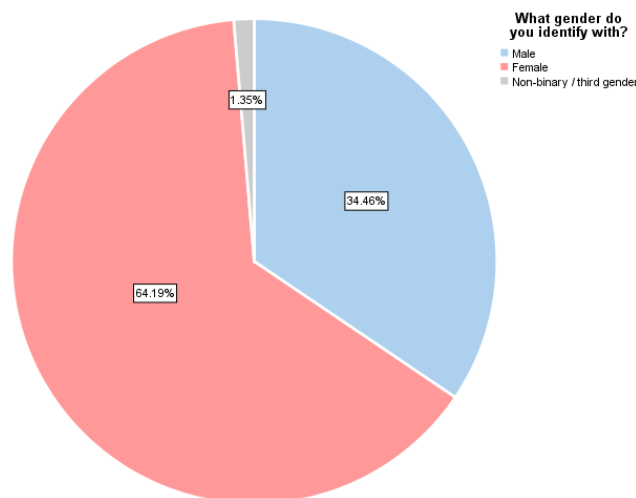
The participants were in the age of 18 to 31, as presented in Figure 2, while their mean age was *M* = 23.18 (*SD* = 2.30), as shown in Table 1.
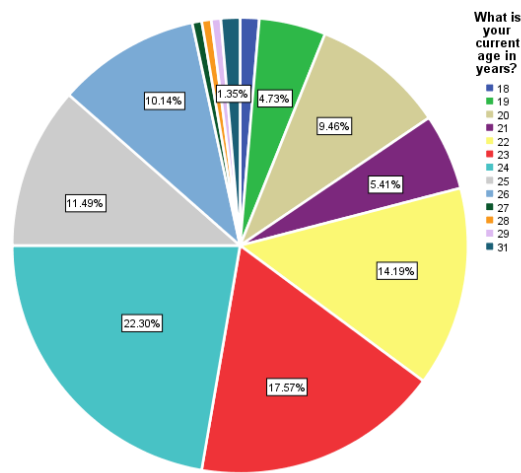
Table 1

Descriptive Statistics for Age

	N	Minimum	Maximum	Mean	Std. Deviation
What is your current age in years?	148	18	31	23.18	2.300
Valid N (listwise)	148				

Figure 2

Age distribution of the sample

Figure 3

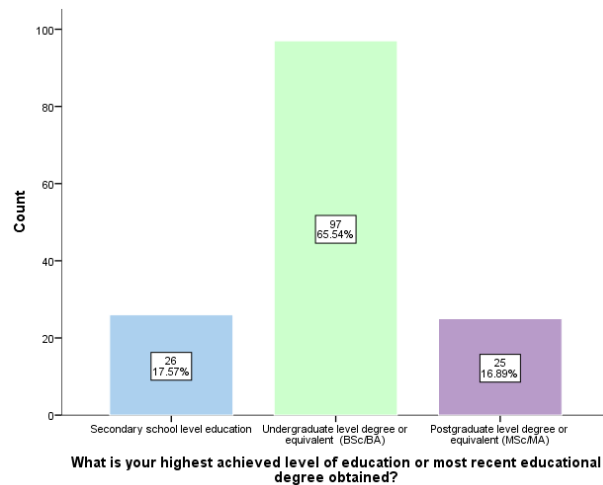*Education level distribution of the sample*

Figure 3 illustrates the distribution of the participants based on their level of education. Of the total participants, 17% had their most recent educational degree reported as secondary level education, 65% were undergraduates or equivalent, and 16% participants were postgraduates or equivalent.

Based on the conditions mentioned before, *Table 2* presents the gender distribution in each group defined by its condition.

Table 2

Gender distribution per condition

Condition	Gender	N
	Male	12
	Female	25
Poet Authorship	Non-binary / third gender	1
	Total	38
	Male	11
Machine Learning Algorithm	Female	29
	Non-binary / third gender	1
	Total	41
	Male	28
No Authorship	Female	41
	Total	69

HYPOTHESES TESTING

Research Question: *To what extent does perceived authorship play a role in the appreciation of algorithmically generated poetry in sonnet and haiku poems?*

H_1**:** *Poems with authorship ascribed to poets will score higher in appreciation compared to poems with authorship ascribed to algorithms.*

H_2**:** *Poems with human or algorithmic authorship ascribed will be rated higher in appreciation compared to poems with no authorship ascribed.*

H_3**:** *Sonnet poems will be rated higher in appreciation compared to haiku poems regardless of authorship.*

To what extent does perceived authorship play a role in the appreciation of algorithmically generated poetry in sonnet and haiku poems?

To investigate whether authorship plays a role in the appreciation of algorithmically generated poetry in sonnet and haiku poems, a ***two-way mixed ANOVA*** was performed with the data of Sonnet Appreciation and Haiku Appreciation as independent variables, and perceived authorship condition as between-subjects dependent variable.

Table 3 presents the layers of the dependent variable, while *Table 4* shows the conditions defining each group.

Table 3

Between-Subjects Factors

		Value Label	*N*
Condition	1	Poet Authorship	38
	2	Machine Learning Algorithm Authorship	41
	3	No Authorship	69

Based on these hypotheses, each of the groups defined by its condition was instructed to express appreciation towards the same sonnet and haiku poems. *Table 4* indicates the means and standard deviations for each group, for both type of poems, addressing the independent variable *Appreciation.*

Table 4

Descriptive Statistics for Appreciation in every condition

	Condition	Mean	Std. Deviation	N
Sonnet Appreciation	Poet Authorship	4.7453	1.05646	38
	Machine Learning Algorithm Authorship	4.2352	1.18227	41
	No Authorship	4.5839	1.11870	69
	Total	4.5287	1.13039	148
Haiku Appreciation	Poet Authorship	4.6444	.88799	38

Machine Learning Algorithm Authorship	4.3240	1.00497	41
No Authorship	4.3706	1.13563	69
Total	4.4280	1.04237	148

Because the design of this study requires both a between-subjects and within-subjects analysis, Table 5 shows the result of the Box's test of Equality of Covariance Matrices through which the equality of variances is estimated for all variables in the analysis, which is non-significant, $p = .437$, meaning that the covariances matrices are equivalent across the groups. In this case, the assumption of the equality of covariance matrices is met.

Table 5

Box's Test of Equality of Covariance Matrices[a]

Box's M	6.010
F	.980
df1	6
df2	194333.511
Sig.	.437

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Condition

Within Subjects Design: Appreciation

Because the *Box's Test* criticism says the test is very sensitive to the departure from normality and also sensitive to the sample size, the Levene's Test of Equality of Error Variances should also be checked.

Table 6 shows the result of the Levene's Test of Equality of Error Variances, and it presents weather the equality of variances holds across both Sonnet and Haiku poem Appreciation. The results are significant for both cases, Sonnet Appreciation ($p > .651$) and Haiku Appreciation ($p > .235$), so the assumption is met.

Table 6

Levene's Test of Equality of Error Variances[a]

	F	df1	df2	Sig.
Sonnet Appreciation	.430	2	145	.651

Haiku Appreciation	1.464	2	145	.235

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Condition

Within Subjects Design: Appreciation

 Table 7 shows the result of the normality of distribution check through *Z scores*, and it presents weather the data is normally distributed across both Sonnet and Haiku poem Appreciation. Based on the sample size criteria, the results are significant for both cases, Sonnet Appreciation and Haiku Appreciation, having strong evidence that the results fall under the accepted intervals CI [-1.96; 1.96], therefore the normality of distribution assumption is met.
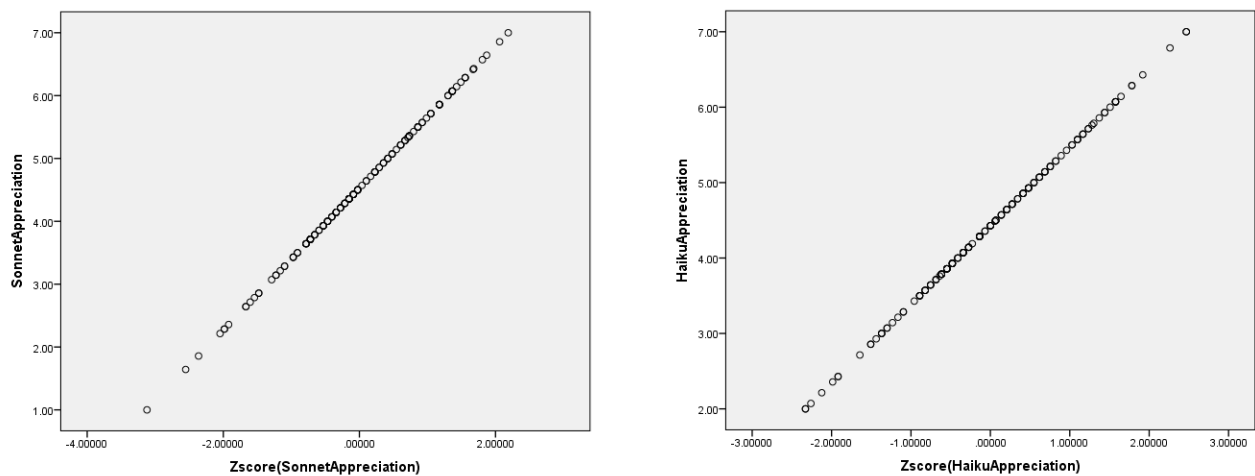
Table 7

Normality of Distribution check – Skewness & Kurtosis

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Sonnet Appreciation	148	-.268	.199	.052	.396
Haiku Appreciation	148	.043	.199	-.140	.396
Valid N (listwise)	148				

Figure 4

Scatter Plot – Z score of Skewness and Kurtosis

Once the assumptions of ANOVA have been established, the analysis can be conducted. *Table 8* shows the main effect of the independent variable *Appreciation* based on type of poem*,* and the Wilk's Lambda result shows a non-significant result, *p* = .497.

Table 8

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Type of Poem	Pillai's Trace	.003	.464[b]	1.000	145.000	.497	.003
	Wilks' Lambda	.997	.464[b]	1.000	145.000	.497	.003
	Hotelling's Trace	.003	.464[b]	1.000	145.000	.497	.003
	Roy's Largest Root	.003	.464[b]	1.000	145.000	.497	.003
Type of Poem * Condition	Pillai's Trace	.010	.700[b]	2.000	145.000	.498	.010
	Wilks' Lambda	.990	.700[b]	2.000	145.000	.498	.010
	Hotelling's Trace	.010	.700[b]	2.000	145.000	.498	.010
	Roy's Largest Root	.010	.700[b]	2.000	145.000	.498	.010

a. Design: Intercept + Condition

Within Subjects Design: Appreciation

b. Exact statistic

Table 9 shows the main effect of the independent variable *Appreciation* based on type of poem*,* and the Greenhouse-Geisser shows a non-significant result, *p* = .497. This means that overall, Sonnet was not more popular than Haiku, or vice-versa. There was also no interaction between *Appreciation* based on type of poem and Condition, indicated by the significance value, *p* > .498.

Table 9

Tests of Within-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Type of Poem	Sphericity Assumed	.389	1	.389	.464	.497
	Greenhouse-Geisser	.389	1.000	.389	.464	**.497**
	Huynh-Feldt	.389	1.000	.389	.464	.497
	Lower-bound	.389	1.000	.389	.464	.497
	Sphericity Assumed	1.174	2	.587	.700	.498

Type of Poem * Condition	Greenhouse-Geisser	1.174	2.000	.587	.700	**.498**
	Huynh-Feldt	1.174	2.000	.587	.700	.498
	Lower-bound	1.174	2.000	.587	.700	.498
Error (Type of Poem)	Sphericity Assumed	121.589	145	.839		
	Greenhouse-Geisser	121.589	145.000	.839		
	Huynh-Feldt	121.589	145.000	.839		
	Lower-bound	121.589	145.000	.839		

Table 10 shows the main effect of the dependent variable *Condition,* and the analysis shows a non-significant result, *p* = .108. This means that the type of authorship condition did not have any effect either.

Table 10

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	
Intercept	5550.666	1	5550.666	3692.129	.000
Condition	6.801	2	3.401	2.262	.108
Error	217.990	145	1.503		

Figure 5

ANOVA Representation
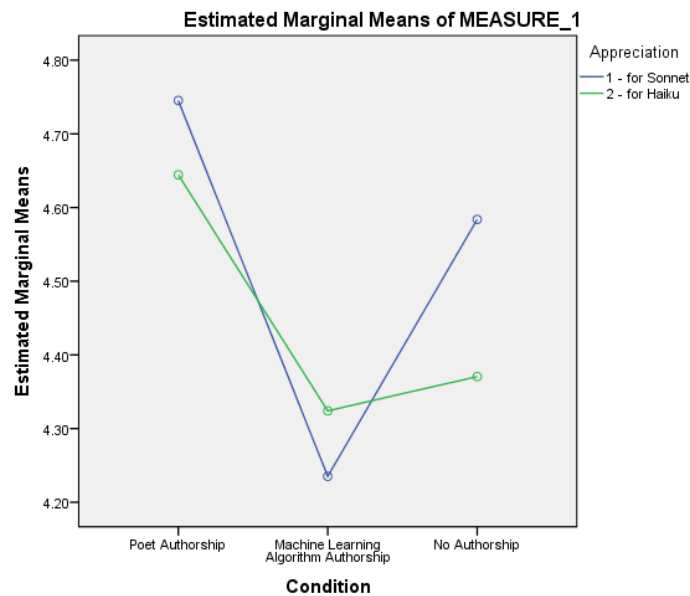
A two-way mixed ANOVA was conducted to investigate weather perceived authorship plays a role in the appreciation of algorithmically generated poetry in sonnet and haiku poems. *Table 9* shows that there was no significant main effect of type of poem, $F(1, 145) = .00$, $p = .497$. At the same time, *Table 10* shows that there was not a significant main effect of the **perceived authority condition**, $F(2, 145) = 2.26$, $p = .108$. Additionally, *Table 9* confirms that there was no significant interaction between perceived authority and appreciation of algorithmically generated poetry, $F(2, 145) = .70$, $p = .498$.

The obtained results reject all three hypothese, therefore poems with poet authorship do not have an effect on sonnet and haiku appreciation, if compared with authorship ascribed to algorithms. Additionally, poems with poet authorship and poems with algorithmic authorship do not have an effect on sonnet or haiku appreciation, when compared to poems with no authorship. Lastly, the results suggest that the type of poem does not have an effect on appreciation either, regardless of authorship.

ANALYSIS REPORT

To approach the question whether authorship plays a role in the appreciation of algorithmically generated poetry in sonnet and haiku poems, a two-way mixed ANOVA was performed with the data of Sonnet Appreciation and Haiku Appreciation as independent variables, and perceived authorship condition as between-subjects dependent variable.

To be able to conduct the analysis, a check to see weather any assumptions were violated was performed. This revealed that data met all of the assumptions required to perform the test.

The results of the overall analysis revealed that there was no significant main effect of appreciation, $F(1, 145) = .00$, $p = .497$. At the same time, there was not a significant main effect of perceived authority, $F(2, 145) = 2.26$, $p = .108$. Additionally, there was no significant interaction between perceived authority and appreciation of algorithmically generated poetry, $F(2, 145) = .70$, $p = .498$.

The results reject all three hypotheses along with the main question of the research, therefore poems with poet authorship do not have an effect on sonnet and haiku appreciation, when compared with authorship ascribed to algorithms. Additionally, poems with poet authorship and poems with algorithmic authorship do not have an effect on sonnet or haiku appreciation, when compared to poems with no authorship. Lastly, the results suggest that the type of poem does not have an effect on appreciation either, regardless of authorship.

To conclude, the results of the analysis suggest that the type of poem does not have an effect on poem appreciation, regardless of perceived authorship.