



HOW TEAM SPORTS PARTICIPATION AFFECTS MENTAL HEALTH AMONGST UNIVERSITY STUDENTS

SUMMARY

In this study, I collaborated closely with a research partner to explore how perceived authorship affects the appreciation of algorithmically generated poetry, specifically in sonnet and haiku forms. To begin, I prepared the dataset, ensuring it was properly organized and formatted for hypothesis testing. This involved initial descriptive statistical analysis to provide an overview of participant demographics and establish foundational data insights.

For the core analysis, I performed a *Two-Way Mixed ANOVA* to examine appreciation levels across three conditions of perceived authorship: Poet, Machine Learning Algorithm, and No Authorship. The analysis assessed participant appreciation for sonnets and haikus, both within each authorship condition and across groups. This methodological approach allowed for a nuanced understanding of how, or if, authorship perception influences literary appreciation in algorithmically generated contexts.

Ultimately, the results showed that perceived authorship had no statistically significant effect on poem appreciation. Poems attributed to human authors were not rated higher than those attributed to algorithms or those with no specified authorship, nor did poem type (sonnet or haiku) impact appreciation levels.

SAMPLE DESCRIPTIVES

Table 1

Descriptive statistics for the sample of participants

SportType	Gender			GHq12diagnosis			Total	
				No presenting condition	Evidence of distress	Psychological distress		
Individual	Male	Frequency	Light	Count		0	2	2
				% within Frequency		0.0%	100.0%	100.0%
			Moderate	Count		1	2	3
			% within Frequency		33.3%	66.7%	100.0%	
			Intense	Count		0	3	3
			% within Frequency		0.0%	100.0%	100.0%	
		Total	Count		1	7	8	
		% within Frequency			12.5%	87.5%	100.0%	
	Female	Frequency	Light	Count		1	3	4
				% within Frequency		25.0%	75.0%	100.0%
			Moderate	Count		0	3	3
			% within Frequency		0.0%	100.0%	100.0%	
		Total	Count		1	6	7	
		% within Frequency			14.3%	85.7%	100.0%	
Total	Frequency	Light	Count		1	5	6	
			% within Frequency		16.7%	83.3%	100.0%	
		Moderate	Count		1	5	6	
		% within Frequency		16.7%	83.3%	100.0%		
		Intense	Count		0	3	3	
		% within Frequency			0.0%	100.0%	100.0%	
	Total	Count		2	13	15		
	% within Frequency			13.3%	86.7%	100.0%		
Team	Male	Frequency	Light	Count		1	0	1
				% within Frequency		100.0%	0.0%	100.0%
			Moderate	Count		2	0	2
			% within Frequency			100.0%	0.0%	100.0%

Female	Total	Intense	Count	4	1	5
			% within Frequency	80.0%	20.0%	100.0%
	Frequency	Light	Count	7	1	8
			% within Frequency	87.5%	12.5%	100.0%
	Moderate	Count	4		4	
		% within Frequency	100.0%		100.0%	
Intense	Count	2		2		
	% within Frequency	100.0%		100.0%		
Total	Total	Intense	Count	1		1
			% within Frequency	100.0%		100.0%
	Frequency	Light	Count	7		7
			% within Frequency	100.0%		100.0%
	Moderate	Count	5	0	5	
		% within Frequency	100.0%	0.0%	100.0%	
Intense	Count	4	0	4		
	% within Frequency	100.0%	0.0%	100.0%		
Total	Intense	Count	5	1	6	
		% within Frequency	83.3%	16.7%	100.0%	
Total	Total	Count	14	1	15	
		% within Frequency	93.3%	6.7%	100.0%	

Table 1 presents and describes the count and percentages of the sample's characteristics considering the proportions of sport type (*Individual sports* or *Team sports*), *Frequency* (*Light*, *Moderate* and *Intense*), and *Psychological Distress Level* (*No presenting condition*, *Evidence of distress*, and *Psychological distress*) as follows:

➤ *Individual sports* group

• *Males*

- The proportion of *light frequency* has the following percentages:
 - 0/2 participants with no presenting condition
 - 0/2 participants with evidence of distress
 - 100% or 2/2 participants with psychological distress
- The proportion of *moderate frequency* has the following percentages:
 - 0/3 participants with no presenting condition
 - 33.3% or 1/3 participants with evidence of distress
 - 66.7% or 2/3 participants with psychological distress
- The proportion of *intense frequency* has the following percentages:
 - 0/3 participants with no presenting condition
 - 0/3 participants with evidence of distress
 - 100% or 3/3 participants with psychological distress

• *Females*

- The proportion of *light frequency* has the following percentages:
 - 0/4 participants with no presenting condition
 - 25% or 1/4 participants with evidence of distress
 - 75% or 3/4 participants with psychological distress
- The proportion of *moderate frequency* has the following percentages:
 - 0/3 participants with no presenting condition
 - 0/3 participants with evidence of distress
 - 100% or 3/3 participants with psychological distress
- The proportion of *intense frequency* has the following percentages:
 - 0 participants with no presenting condition
 - 0 participants with evidence of distress
 - 0 participants with psychological distress

➤ *Team sports group*

- *Males*

- The proportion of *light frequency* has the following percentages:
 - 100% or 1/1 participants with no presenting condition
 - 0/1 participants with evidence of distress
 - 0/1 participants with psychological distress
- The proportion of *moderate frequency* has the following percentages:
 - 100% or 2/2 participants with no presenting condition
 - 0/2 participants with evidence of distress
 - 0/2 participants with psychological distress
- The proportion of *intense frequency* has the following percentages:
 - 80% or 4/5 participants with no presenting condition
 - 20% or 1/5 participants with evidence of distress
 - 0/5 participants with psychological distress

- *Females*

- The proportion of *light frequency* has the following percentages:
 - 100% or 4/4 participants with no presenting condition
 - 0/4 participants with evidence of distress
 - 0/4 participants with psychological distress
- The proportion of *moderate frequency* has the following percentages:
 - 100% or 2/3 participants with no presenting condition
 - 0/3 participants with evidence of distress
 - 0/3 participants with psychological distress
- The proportion of *intense frequency* has the following percentages:
 - 100% or 1/1 participants with no presenting condition
 - 0 participants with evidence of distress
 - 0 participants with psychological distress

HYPOTHESES TESTING

H₁: Participants who are involved in individual sport present a higher psychological distress than participants who are involved in team sport.

Before performing the comparison test, because of the fairly small sample size, the assumption of normality was tested using the Shapiro-Wilk test.

Table 14
Tests of Normality

	Type of sport	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Score	Individual	.151	15	.200*	.938	15	.354
	Team	.225	15	.040	.867	15	.030

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table above presents the *Shapiro-Wilk* test, which did not show evidence of non-normality for the individual sport participants $W(15) = 0.93$, $p = .35$, yet the test has shown a significant departure from normality for the team sport participants $W(15) = 0.86$, $p = .03$.

Given the result, a *U Mann Whitney* test was performed, in order to compare the scores between the individual sport participants and team sport participants.

Figure 1

Distribution curve for psychological distress - individual sports and team sports

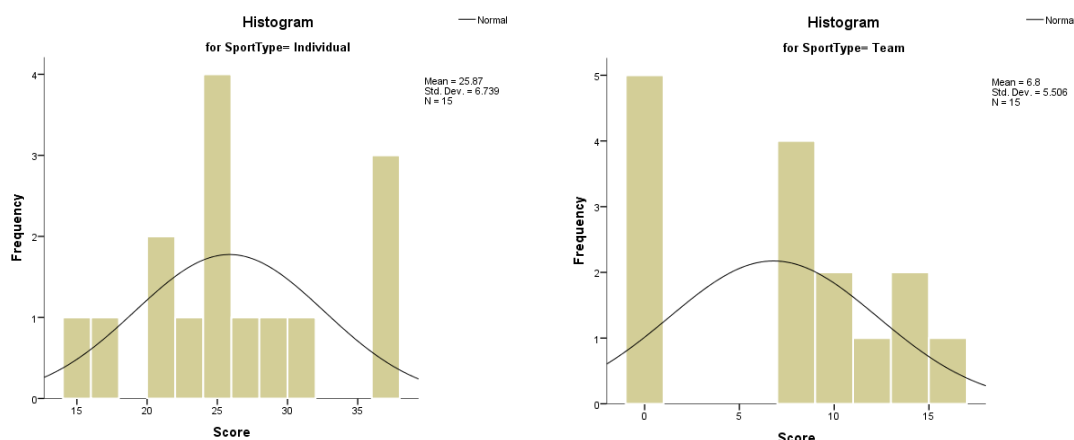


Figure 1 present the distribution curve for the *psychological stress* variable, in both groups.

Table 15

Ranks

	SportType	N	Mean Rank	Sum of Ranks
Score	Individual	15	22.97	344.50
	Team	15	8.03	120.50
	Total	30		

Table 16

Test Statistics^a

	Score
Mann-Whitney U	.500
Wilcoxon W	120.500
Z	-4.663
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000 ^b

a. Grouping Variable: SportType

b. Not corrected for ties.

Table 15 and Table 16 show the results of the analysis, which conclude that the individual sports group scored higher ($M = 22.97$) for the *psychological distress*, compared to team sports group ($M = 8.03$).

The results suggest that there are significant differences when it comes to *psychological distress* between individual sports and team sports, with a $p = .00$.

This could translate that team sports provide a better mental health and less psychological distress than individual sports.

H₂: *Frequency plays a role in the participant's psychological distress.*

Table 17

Descriptive statistics for Frequency and Psychological distress levels

Frequency	Frequency	Percent	Valid Percent	Cumulative Percent
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Light	Valid	No presenting condition	5	45.5	45.5	45.5
		Evidence of distress	1	9.1	9.1	54.5
		Psychological distress	5	45.5	45.5	100.0
		Total	11	100.0	100.0	
Moderate	Valid	No presenting condition	4	40.0	40.0	40.0
		Evidence of distress	1	10.0	10.0	50.0
		Psychological distress	5	50.0	50.0	100.0
		Total	10	100.0	100.0	
Intense	Valid	No presenting condition	5	55.6	55.6	55.6
		Evidence of distress	1	11.1	11.1	66.7
		Psychological distress	3	33.3	33.3	100.0
		Total	9	100.0	100.0	

Table 17 presents descriptive statistics considering the proportions of *Frequency* for every level of *psychological distress* as follows:

- The proportion of *light frequency* has the following percentages:
 - 45.5% or 5/11 participants with no presenting condition
 - 9.1% or 1/11 participants with evidence of distress
 - 45.5% or 5/11 participants with psychological distress
- The proportion of *moderate frequency* has the following percentages:
 - 40% or 4/10 participants with no presenting condition
 - 10% or 1/10 participants with evidence of distress
 - 50% or 5/10 participants with psychological distress
- The proportion of *intense frequency* has the following percentages:
 - 55.6% or 5/9 participants with no presenting condition
 - 11.1% or 1/9 participants with evidence of distress
 - 33.3% or 3/9 participants with psychological distress

Table 18

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Frequency *	30	100.0%	0	0.0%	30	100.0%
GHq12diagnosis						

Table 18 shows what proportion of the observations had no missing values for both *Frequency* and *Psychological Distress levels*. In this sample, there were 0 cases that had a missing value for the mentioned variables.

Table 19

*Frequency * GHq12diagnosis Crosstabulation*

		GHq12diagnosis			Total	
		No presenting condition	Evidence of distress	Psychological distress		
Frequency	Light	Count	5	1	5	11
		% within Frequency	45.5%	9.1%	45.5%	100.0%
	Moderate	Count	4	1	5	10
		% within Frequency	40.0%	10.0%	50.0%	100.0%
	Intense	Count	5	1	3	9
		% within Frequency	55.6%	11.1%	33.3%	100.0%
Total	Count	14	3	13	30	
	% within Frequency	46.7%	10.0%	43.3%	100.0%	

Table 19 presents the crosstab of the analysis, which shows the proportions presented earlier in Table 17.

The sample had 30 participants, in which 11 classified as *light frequency*, 10 classified as *moderate frequency*, and 9 classified as *intense frequency*. There were 14 participants who had *no presenting condition*, 3 participants who reported *evidence of distress*, and 13 participants who presented *psychological distress*.

Table 20

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.593 ^a	4	.964
Likelihood Ratio	.602	4	.963
Linear-by-Linear Association	.231	1	.631
N of Valid Cases	30		

a. 8 cells (88.9%) have expected count less than 5. The minimum expected count is .90.

Table 20 presents the results of a *Chi-Square Test of Independence* that was performed to assess the relationship between *frequency* and *psychological distress levels*.

Based on these results, it can be concluded that there is no significant association between *frequency* and *psychological distress level*, $\chi^2(4, N = 30) = .59, p = .96$.

H₃: *Gender plays a role in the participant's psychological distress.*

Table 21

Descriptive statistics for Gender and Psychological distress levels

Gender		Frequency	Percent	Valid Percent	Cumulative Percent	
Male	Valid	No presenting condition	7	43.8	43.8	43.8
		Evidence of distress	2	12.5	12.5	56.3
		Psychological distress	7	43.8	43.8	100.0
		Total	16	100.0	100.0	
Female	Valid	No presenting condition	7	50.0	50.0	50.0
		Evidence of distress	1	7.1	7.1	57.1
		Psychological distress	6	42.9	42.9	100.0
		Total	14	100.0	100.0	

Table 21 presents descriptive statistics considering the proportions of *Gender* for every level of *psychological distress* as follows:

- The proportion of *males* has the following percentages:
 - 43.8% or 7/16 participants with no presenting condition
 - 12.5% or 2/16 participants with evidence of distress
 - 43.8% or 7/16 participants with psychological distress
- The proportion of *females* has the following percentages:
 - 50% or 7/14 participants with no presenting condition
 - 7.1% or 1/14 participants with evidence of distress
 - 42.9% or 6/14 participants with psychological distress

Table 22

Case Processing Summary

Cases

	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * GHq12diagnosis	30	100.0%	0	0.0%	30	100.0%

Table 22 shows what proportion of the observations had non-missing values for both *Frequency* and *Psychological Distress levels*. In this sample, there were 0 cases that had a missing value for the mentioned variables.

Table 23

*Gender * GHq12diagnosis Crosstabulation*

		GHq12diagnosis			Total	
		No presenting condition	Evidence of distress	Psychological distress		
Gender	Male	Count	7	2	7	16
		% within Gender	43.8%	12.5%	43.8%	100.0%
	Female	Count	7	1	6	14
		% within Gender	50.0%	7.1%	42.9%	100.0%
Total	Count	14	3	13	30	
	% within Gender	46.7%	10.0%	43.3%	100.0%	

Table 23 presents the crosstab of the analysis, which shows the proportions presented earlier in Table 21.

The sample had 30 participants, in which 16 classified as *males*, and 14 classified as *females*. There were 14 participants who had *no presenting condition*, 3 participants who reported *evidence of distress*, and 13 participants who presented *psychological distress*.

Table 24

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.278 ^a	2	.870
Likelihood Ratio	.283	2	.868
Linear-by-Linear Association	.041	1	.840

N of Valid Cases

30

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.40.

Table 24 presents the results of a *Chi-Square Test of Independence* that was performed to assess the relationship between *gender* and *psychological distress levels*.

Based on these results, it can be concluded that there is no significant association between *gender* and *psychological distress level*, $\chi^2(2, N = 30) = .27, p = .87$.