Career Trajectory and Success of Neurosurgeons

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1. Introduction

I have always been fascinated by the potential influence of personal characteristics on professional success. In particular, neurosurgeons' names or facial memorability could play a role in their professional outcomes is thought-provoking.

Building upon this curiosity, the central research question of my study emerges: What is the impact of **name characteristics** and **facial memorability score** on the **career trajectory and success of neurosurgeons in the U.K.?**

2. Background

There are many variables and websites used to collect these variables involved in the research, which are shown below:

Name Characteristics

- **Independent Variable**
- This is defined as specific features associated with a person's name.
- This contains fundamental name characteristics such as letter counts and unique name characteristics such as name incidence.
- This series of variables are collected by the website Namsor and Forebear.

Memorability score

- **Independent Variable**
- The human brain consistently remembers dynamic face identities, with inherent and quantifiable memorability (Needell & Bainbridge, 2022).
- Memorability score is defined as a score reflecting the ease of recalling facial features.
- This series of variables are collected by the website Resmem.

Bibliometric Data

- **Dependent Variable**
- Bibliometric data refers to the academic output of neurosurgeons up until 2022.
- This includes raw data such as h-index and processed data such as normalized h-index.
- This series of variables are collected by the website Scopus.

3. Methodology

Raw Data Collection

1. **Name Characteristics**

Fundamental name characteristics are all manually collected. Unique characteristics are collected using the websites.

2. **Memorability Score**

The front-facing photo is uploaded onto the Resmem website, generating the corresponding score.

3. **Bibliometric Data**

The raw bibliometric data were collected exclusively from the Scopus website using the filters, with all data up to 2022.

→ **Data Processing**

After collecting the raw data manually or from the websites, other processed data can be calculated using Excel's formula. A spreadsheet including all the variables is generated. The figure below shows one example row in the spreadsheet.

First Name	Last Name	Alphabetic order	memorability score
Ashraf	Abouharb	1	0.909

# of publication	duplicates up to 2022	#of publication	non-self citations up	earliest publication	h-index in 2022	normalised h-index	academic age	M-quotient	non-self-citations	citations per year	# of first author	# of first author	# of citations per first
5	0	5	11	2013	2	0.40	9	0.22	2.20	1.22	0	-999	0.00

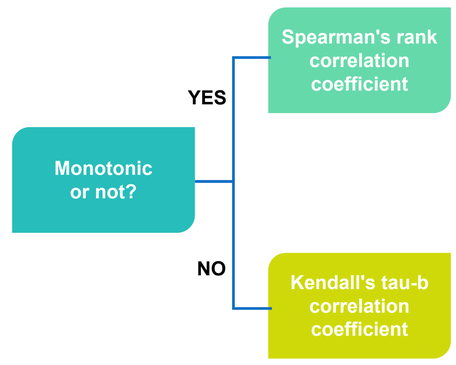
# of letters_First	# of syllables_Fi	# of consonants	# of vowels_FirstNa	C:V_FirstName	incidence_FirstName	Ethnicity	First name gender	First name gender	Gender scale
5	2	3	2	1.5	585636	Indian	0.996303	99.63031	-0.99261

4. Data Analysis

Correlation analysis uses the Statistical Package for the Social Sciences (SPSS).

The relationship between each variable is examined using Spearman's rank correlation or Kendall's tau-b correlation coefficient.

The choice of a correlation coefficient depends on the assumption of a monotonic relationship between the data pairs, which can be done by examining the scatterplot of the variable pairs.



5. Result

After categorizing and further analyzing all the variable pairs using SPSS, a spreadsheet is established to record all the correlation coefficients.

		Memorability score		# of sylla	# of cons	# of vowe	C:V FN		Incidence	Gender p	Gender sc	# of cons	# of Lette	# of sylla	# of cons	# of vowe	C:V SN		Incidence	# of consonant sequence SN	
# of publications with duplicates up to 2022		Spearman	Kendall	Spearman	Spearman	Kendall	Spearman	Kendall	Kendall	Kendall	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	
	Correlation Coefficient	0.062	-0.009	-0.055	-0.017	0.006	-0.027	.069*	0.053	-0.079	-0.034	0.021	0.013	0.027	0	0	-0.003	0.016			
	Sig. (2-tailed)	0.252	0.817	0.287	0.743	0.889	0.608	0.048	0.128	0.127	0.402	0.568	0.744	0.475	0.992	0.998	0.943	0.68			
duplicates up to 2022		Kendall	Kendall	Kendall	Spearman	Kendall	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Spearman	Kendall	Kendall	Spearman	Kendall	Kendall			
	Correlation Coefficient	0.031	-0.055	-.102*	-0.067	-0.039	-0.046	.089*	0.046	-0.061	-0.037	-0.004	-0.023	0.004	-0.027	0.009	0.03	0.026			
	Sig. (2-tailed)	0.472	0.214	0.03	0.194	0.407	0.378	0.031	0.266	0.139	0.441	0.932	0.653	0.932	0.555	0.866	0.473	0.58			
#of publications up to 2022		Spearman	Kendall	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall			
	Correlation Coefficient	0.062	-0.008	-0.053	-0.012	0.006	-0.019	0.068	0.053	-0.053	-0.035	0.021	0.013	0.027	0	0	-0.002	0.016			
	Sig. (2-tailed)	0.257	0.825	0.302	0.756	0.872	0.608	0.051	0.128	0.131	0.387	0.569	0.74	0.475	0.994	0.999	0.951	0.686			
non-self citations up to 2022		Kendall	Kendall	Spearman	Spearman	Kendall	Spearman	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Spearman	Kendall	Kendall	Kendall	Kendall			
	Correlation Coefficient	0.014	-0.027	-0.076	-0.027	-0.027	-0.007	.139**	0.066	-0.06	-0.035	0.03	0.02	0.075	-0.024	0.052	-0.008	0.05			
	Sig. (2-tailed)	0.7	0.473	0.14	0.597	0.5	0.887	0.007	0.056	0.082	0.38	0.41	0.606	0.146	0.534	0.152	0.823	0.209			
h-index in 2022		Spearman	Kendall	Spearman	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall			
	Correlation Coefficient	0.033	-0.032	-0.074	-0.028	-0.035	0.008	.100**	.079*	-0.069	-0.038	0.029	0.021	0.039	-0.01	0.023	-0.003	0.03			
	Sig. (2-tailed)	0.549	0.4	0.153	0.587	0.389	0.822	0.005	0.026	0.05	0.349	0.448	0.6	0.313	0.808	0.531	0.938	0.451			
normalised h-index		Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall			
	Correlation Coefficient	-0.067	-0.026	0.022	-0.009	-0.053	0.045	-0.001	0.025	-0.005	0.001	0.033	0.041	0.025	0.022	0.026	-0.041	0.014			
	Sig. (2-tailed)	0.067	0.488	0.58	0.806	0.18	0.225	0.979	0.474	0.88	0.973	0.372	0.301	0.515	0.573	0.47	0.244	0.735			
academic age		Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall			
	Correlation Coefficient	0.031	-.087*	-.128**	-.077*	-.082*	-0.007	.087*	0.034	-.088*	-0.071	0.016	-0.047	0.071	-.080*	.127**	-0.041	0.066			
	Sig. (2-tailed)	0.403	0.022	0.001	0.049	0.042	0.859	0.013	0.34	0.013	0.084	0.663	0.231	0.063	0.042	0.001	0.247	0.101			
M-quotient		Spearman	Kendall	Spearman	Spearman	Kendall	Kendall	Kendall	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall			
	Correlation Coefficient	0.019	0.025	0.03	0.034	0.02	0.006	0.043	.107*	-0.029	-0.002	0.019	0.055	0.005	0.033	-0.041	0.024	0.008			
	Sig. (2-tailed)	0.723	0.51	0.565	0.512	0.606	0.862	0.219	0.039	0.41	0.959	0.598	0.16	0.902	0.401	0.262	0.486	0.841			
non-self- citations per paper		Spearman	Kendall	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall			
	Correlation Coefficient	-0.04	-0.058	-0.089	-0.056	-0.052	-0.01	.095**	0.068	-0.049	-0.049	0.044	0.037	.081*	-0.042	.106**	-0.028	0.069			
	Sig. (2-tailed)	0.458	0.117	0.085	0.146	0.185	0.784	0.006	0.05	0.158	0.219	0.232	0.348	0.031	0.281	0.004	0.416	0.082			
citations per year		Spearman	Kendall	Spearman	Spearman	Kendall	Spearman	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall			
	Correlation Coefficient	0.013	0	-0.031	0.001	0	-0.012	.113*	0.068	-0.046	-0.019	0.031	0.042	0.042	-0.004	0.028	0.002	0.038			
	Sig. (2-tailed)	0.815	1	0.544	0.989	0.993	0.818	0.029	0.05	0.187	0.632	0.404	0.28	0.269	0.923	0.446	0.959	0.334			
# of first author publications		Spearman	Spearman	Spearman	Spearman	Kendall	Kendall	Kendall	Kendall	Spearman	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Spearman	Kendall			
	Correlation Coefficient	0.055	-0.06	-.117*	-0.057	-0.03	-0.01	0.065	0.04	-0.092	-0.061	0.022	0.014	0.027	0.009	-0.016	-0.037	0.03			
	Sig. (2-tailed)	0.307	0.244	0.023	0.272	0.468	0.789	0.069	0.264	0.076	0.238	0.554	0.722	0.489	0.825	0.668	0.477	0.459			
# of first author citations		Kendall	Spearman	Spearman	Spearman	Kendall	Spearman	Kendall	Kendall	Kendall	Spearman	Kendall	Kendall	Kendall	Spearman	Kendall	Kendall	Kendall			
	Correlation Coefficient	0.027	-0.101	-.138**	-0.089	-0.059	-0.002	0.054	0.05	-0.057	-0.079	0.02	0.016	0.019	-0.01	-0.007	-0.013	0.016			
	Sig. (2-tailed)	0.471	0.051	0.008	0.086	0.146	0.964	0.129	0.153	0.103	0.129	0.601	0.679	0.611	0.84	0.848	0.719	0.685			
# of citations per first author publication		Spearman	Spearman	Spearman	Spearman	Kendall	Kendall	Kendall	Kendall	Kendall	Kendall	Spearman	Kendall	Kendall	Spearman	Kendall	Spearman	Spearman			
	Correlation Coefficient	0.007	-.136**	-.147**	-.124*	-.080*	-0.002	0.042	0.055	-0.036	-0.071	-0.039	0.008	0.011	-0.003	0	-0.016	-0.023			
	Sig. (2-tailed)	0.892	0.008	0.004	0.016	0.045	0.961	0.236	0.121	0.305	0.081	0.449	0.841	0.831	0.934	0.998	0.758	0.653			

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 1: Summary of Analysis Results for 221 Variable Pairs. *This figure presents the analysis type, correlation coefficient, significance level (2-tailed), and sample size (N) for 221 variable pairs. 17 independent variables are highlighted in green and 13 dependent variables are highlighted in orange. In the figure, the term "number" is abbreviated as "#" for brevity.For each dependent variable in the spreeadsheet: First row indicates the type of analysis conducted for each independent variable. Second row presents the correlation coefficient obtained from the SPSS analysis. Third row represents the significance level.*

All the statistically significant relationships in the spreadsheet are identified and highlighted in yellow. There are very weak but significant negative correlations between 11 variable pairs and very weak but significant negative correlations between 13 variable pairs.

For these 24 pairs of variables, name characteristics and facial memorability scores significantly impact neurosurgeons' career success.

6. Conclusion

- The analysis revealed several statistically significant relationships.
- Weak positive and negative associations were found between variable pairs.
- The associations found do not imply causation. Further research is needed to explore the underlying mechanisms behind these relationships.
- Other factors may play a role in determining neurosurgeons' career trajectory and success.

7. Acknowledgements

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