

Debate

AN ASSOCIATION BETWEEN TONGUE-ROLLING PHENOTYPES AND SUBJECTS OF STUDY OF UNDERGRADUATES

A Further Comment

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The findings of Medyckyj & Cook (1983) in Manchester concerning the heterogeneity of tongue-rolling phenotypes with subject of study and type of residence differed from those of Azimi-Garakani & Beardmore (1979) in Swansea. Our own data, collected at Aberdeen, tend to support the latter's observations.

A total sample of 1110 students was examined by one observer (LMB). The categorization of tongue-rolling ability was that adopted by Azimi-Garakani & Beardmore and, while the initial separation into area of study and type of residence was not precisely the same as that of the other workers, it proved possible to create the broad subject groups which they describe. No sex differences were found in any subgroup, so pooled male and female data were used throughout.

Referring to choice of subject, the results of our study (Table 1) were very similar to those of Azimi-Garakani & Beardmore. Heterogeneity between the subject groups was significant (though less so than in the earlier paper) and the rank order of 'roller' phenotype frequencies was the same, although actual frequencies were always higher: perhaps this reflects ethnic differences. Students reading medicine, law and divinity were excluded from this part of the analysis. By contrast, the results of Medyckyj & Cook are non-significant. The results of paired comparisons in the different surveys are shown in Table 2, which includes corrected χ^2 values for the Swansea study. Again our results resembled closely those of the latter.

As regards place of residence (Table 3), our findings, with a significant excess of non-rollers among hall-resident arts-based students, were the opposite of those of Azimi-Garakani & Beardmore. Differences for science-based students were not statistically significant but showed the same trend. To avoid the possible effects of external factors (e.g. parental or financial pressure) the data were re-allocated on the basis of preferred rather than actual type of residence, but as the last two rows of Table 3 show, this did not result in any major change in phenotype frequency differences.

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Table 1. Roller phenotypes for the Swansea, Manchester and Aberdeen studies

Study and subject group	R	S	H	Total 'R'	r	'R' total	χ^2_3
Swansea							
Life sciences	169	9	1	179	45	0.799	16.117***
Applied/physical sciences	209	17	4	230	78	0.747	
Social/economic sciences	182	9	3	194	88	0.688	
Arts	151	10	2	163	89	0.647	
Manchester							
Life sciences	123	3	2	128	49	0.723	0.493
Applied/physical sciences	172	13	0	185	62	0.749	
Social/economic sciences	194	19	3	215	72	0.750	
Arts	225	18	3	246	84	0.746	
Aberdeen							
Life sciences	172	10	2	184	35	0.840	9.275*
Applied/physical sciences	160	6	0	166	36	0.822	
Social/economic sciences	197	23	1	221	67	0.767	
Arts	150	17	1	168	60	0.736	

R, roller; S, shallow roller; H, hemi-roller; r, non-roller.
 *0.02 < *P* < 0.05; *****P* < 0.001.

Table 2. Paired χ^2 values for roller phenotype frequencies in four subject groups

Subject and study group	Physical/ applied sciences χ^2_1	Social/ economic sciences χ^2_1	Arts χ^2_1
Life sciences			
Swansea	2.00	7.96***	13.60****
Manchester	0.40	0.43	0.34
Aberdeen	0.84	4.10*	7.26***
Physical/applied sciences			
Swansea		2.52	6.61***
Manchester		0	0.01
Aberdeen		1.39	3.74*
Social/economic sciences			
Swansea			1.02
Manchester			0.01
Aberdeen			0.69

*0.02 < *P* < 0.05; ***0.001 < *P* < 0.01; *****P* < 0.001.

Table 3. Distribution of roller phenotypes according to type of residence

Phenotype	Arts-based			Science-based			Total		
	Hall	Not hall	χ^2	Hall	Not hall	χ^2	Hall	Not hall	χ^2
Swansea									
'R'	144 (0.716)	25 (0.556)	4.43*	145 (0.829)	62 (0.785)	0.69	289 (0.769)	87 (0.702)	2.25
r	57 (0.284)	20 (0.444)		30 (0.171)	17 (0.215)		87 (0.231)	37 (0.298)	
Manchester									
'R'	77 (0.740)	385 (0.749)	0.03	56 (0.800)	257 (0.726)	3.30	133 (0.764)	642 (0.740)	0.47
r	27 (0.260)	129 (0.251)		14 (0.200)	97 (0.274)		41 (0.236)	226 (0.260)	
Aberdeen (actual)									
'R'	180 (0.700)	292 (0.800)	8.18***	119 (0.804)	283 (0.832)	0.57	299 (0.738)	575 (0.816)	9.19***
r	77 (0.300)	73 (0.200)		29 (0.196)	57 (0.168)		106 (0.262)	30 (0.184)	
Aberdeen (preferred)									
'R'	220 (0.712)	252 (0.805)	7.37***	142 (0.798)	260 (0.839)	1.31	362 (0.743)	512 (0.822)	9.20***
r	89 (0.288)	61 (0.195)		36 (0.202)	50 (0.161)		125 (0.257)	111 (0.178)	

* $0.02 < P < 0.05$; *** $0.001 < P < 0.01$.

Thus our results in most respects agree with those of Azimi-Garakani & Beardmore (1979). As far as choice of subject is concerned we cannot explain the major differences of their and our findings on the one hand, from those of Medyckyj & Cook (1983) on the other. Numbers seem adequate in all three surveys and the discrepancies seem too large to be explicable on the basis of methodological differences. Nevertheless, our findings differ markedly from those of Azimi-Garakani & Beardmore in the association of tongue-rolling phenotype with type of residence, but we think ours the more reliable because of the greater numbers of arts-based non-hall residents in our sample.

Despite the aberrant findings of Medyckyj & Cook, we believe that there is now a reasonably secure basis for postulating an association between tongue-rolling and personality (at least as evidenced by subject choice and type of residence). The way forward is probably as much in the domain of the psychologist as of the human biologist.

References

- AZIMI-GARAKANI, C. & BEARDMORE, J.A. (1979) An association between tongue-rolling phenotypes and subjects of study of undergraduates. *J. biosoc. Sci.* **11**, 193.
- MEDYCKYJ, M. & COOK, L.M. (1983) An association between tongue-rolling phenotypes and subjects of study of undergraduates: a comment. *J. biosoc. Sci.* **15**, 107.