

What Does Our Face Tell Us about Our Political Attitudes?

A Geometric Morphometrical Investigation among Male University Students



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Introduction

Recent studies demonstrated that the human face provides valid cues for personality (e.g. Fink, Neave, Manning & Grammer, 2005) as well as intelligence (e.g. Zebrowitz & Rhodes, 2004). The aims of the present study were to detect a possible relationship between facial shape and self-reported political attitude and to identify specific facial features that may carry such information using the *geometric morphometric* (GM) toolkit.

Method

106 male caucasian university students recruited during 2009 in Vienna were asked to fill out a questionnaire with a total of 62 items (of which 44 were finally processed) taken from existing scales, addressing different facets of political attitude. Additionally, all participants were photographed under standardized conditions and with neutral facial expression. Subsequently, 67 homologue landmarks and semi-landmarks were digitized on the photos resulting in a total of 14,204 landmark coordinates (see Figure 1). These coordinates were aligned to their average shape using *generalized least-squares Procrustes analysis* (GPA; Rohlf & Slice, 1990). *Two-block partial least squares analysis* (2B-PLS) was used to statistically investigate the relationship between the 44 attitude variables and the 67 facial landmarks by constructing mutually orthogonal sets of linear combinations (latent variables) of the two sets of variables (attitude items and shape coordinates) that covary the most between these two sets.

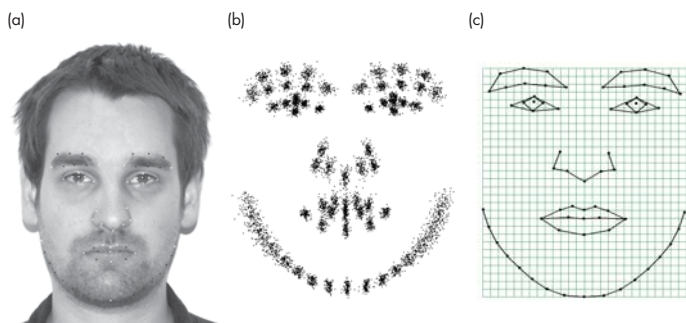


Figure 1. (a) An example face with 67 predefined landmarks. The white dots indicate classical landmarks that can be identified unambiguously; the black dots are semi-landmarks that lie on curves. (b) All 106 landmark configurations superimposed by the GPA. (c) Average (consensus) configuration over all 106 participants.

Results and discussion

The first pair of latent variables accounted for 48.79 % of the total covariation between attitude and facial shape. A randomization test revealed that this amount was marginally significant ($p = 0.096$, 999 permutations). No other pair of linear combinations accounted for a significant amount of the total covariance. The correlation between the first pair of latent variables was 0.55 and significant ($p = 0.029$, 999 permutations).

This result indicates, that there is some sort of relationship between political attitude and facial shape, however the pattern of this relationship may only exist for a minority of the participants.

Figure 2 visualizes the results of the 2B-PLS. At the bottom are the landmark configurations for the extreme positions on the first pair of latent variables. The displacement bars in the top section of Figure 2 represent the relative contributions of every single questionnaire item. Large deviations from the baseline can be interpreted as large contributions to the first set of linear combinations of attitude variables and shape.

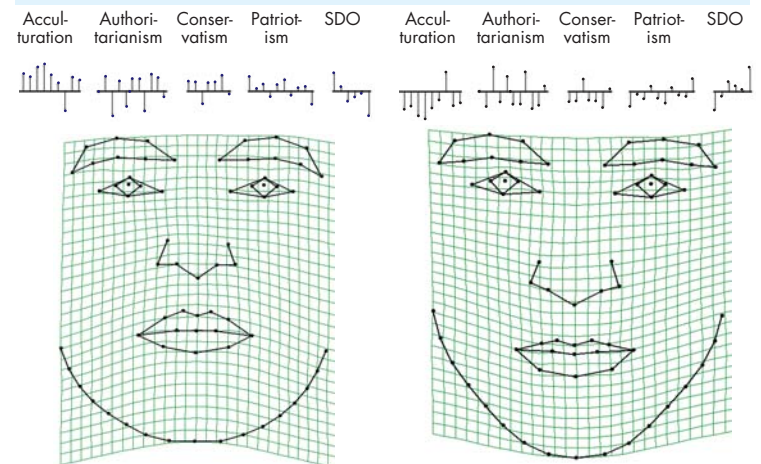


Figure 2. Landmark configurations (as deviations from the consensus configuration, see Figure 1c) and the correspondent displacement bars for the first pair of latent PLS variables. Displacements to the top of the baseline indicate approval to the items in the sense of the attitude scales written above. Larger displacements indicate larger contributions to the covariation between the variables.

The face on the left represents a person that reports himself as relatively tolerant towards immigrants of other ethnic groups (approval to *acculturation*), yet as more *conservative* than others, in the sense of relying on traditional values and norms. The graphs for *authoritarianism*, *patriotism* and *social dominance orientation* (SDO) are harder to interpret. It can be said, that these participants are relatively trustful in the government and have some desire for a strong leader, though at the same time not willing to give up certain democratic basic rights (e.g. the right to demonstrate).

The configuration on the right represents the opposite end of this dimension, with relatively low tolerance towards other ethnic groups and more approval to curtail some democratic rights (e.g. the possibility for minor democratic parties to be in the government) in comparison to other subjects. At the same time, these participants report themselves as less trustful in the current government and less relying on traditional values.

Concerning facial shape, the major differences can be seen in the shape of the jaw-line and its size in relation to the total face. Also the relationship between upper and lower lip differs along the first dimension of latent variables. Overall, it can be said, that the face on the left looks more "masculine" while the face on the right shows more female features, compared to the average facial configuration.

Conclusion and limitations

By using GM it was possible to detect a relationship between self-reported political attitude and facial shape and to identify specific facial characteristics that constitute this effect. However, this relationship seems to occur only for participants with a specific pattern of political attitude.

The use of 2D images for anthropometric analysis of 3D objects (male human faces) has several disadvantages and maybe a source of errors at different stages of the survey. Furthermore, some of the questionnaire items used seem to be highly ambiguous, as tests for reliability of the original scales indicate.

References

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