

Possible Relationship between the Facial Pattern and Personality Factors

JOHN D. ATHERTON, Ph.D., F.D.S., D.D.O.

PHILIP LEY, Ph.D., B.A., Dip. Psych.

The relationship of the mandible to the maxilla is of prime importance in determining the characteristic features of a dentition. The mandible is related to the maxilla by its "form," that is, its size and shape and, just as important, by its "posture," the position in which it is balanced against gravity by muscle tonus. Evidence suggests that the teeth and alveolar bone behave in a passive manner and merely fill in the intervening space between the two bones. The distance that the mandible is spaced from the maxilla therefore has a profound effect on such features as the overbite² and, for that matter, the lip posture.³

It is hypothesized in this investigation that the personality of an individual might influence the posture of the mandible.

It seemed a possibility at the onset of this investigation that the mandible balanced as it is between gravity and muscle tonus would be subject to the influence of certain personality factors. Thus it was possible to envisage a subject with a positive tendency to neuroticism with a mandible carried nearer to the maxilla than average. Another factor which was hypothesized and might have a similar effect would be the extraversion/introversion factor. Should such a situation exist then the occlusion would be affected also. In this study the personality traits of extraversion and neuroticism are measured and correlated with angular and linear measurements which demonstrate the relationship of the mandible to the maxilla.

A positive correlation between either of these personality factors and the

vertical dimension of the lower face might also have interesting implications on the aetiology of temporomandibular joint disorder.

The literature relating the facial form to personality extends back almost as far as literature itself. Aristotle¹ considered that the temperamental characteristics known to be possessed by animals are also possessed by persons who have facial features resembling particular animals. The well-known example of this is the attribution of tenacity to the prognathic mandible reminiscent of the bulldog. The arts of phrenology and physiognomy enjoyed a considerable vogue at different times during the eighteenth and nineteenth centuries, only to be shown fallacious by the application of statistical methods to the examination of the theories of these pseudosciences. The nearest study to the particular problem described here is that of W. H. Sheldon⁵ who used a photographic technique to correlate ability with facial measurement. Sheldon found a low correlation between measurements in width and certain features of the personality. The relationship of the mandible to the maxilla in the manner to be described here was not examined. More recently G. H. Sheldon⁴ has found an increase in the frequency of deep overbite and anterior open bite in emotionally disturbed children.

METHOD

Sixty school children aged between ten and fifteen years referred to the orthodontic department were randomly selected for this study. Of these children sixteen had a normal overbite and over-

jet (Class I), thirty-one had an increase in overjet (Class II, Division 1), five had retroclined incisors and an associated deep overbite (Class II, Division 2), and eight had a reversed overjet (Class III).

Each child was given a test for the personality factors of extraversion and neuroticism using the Junior Eysenck Personality Inventory. It was thought that these two factors would be the most likely to influence the mandibular posture. A lateral cephalogram was taken of each child at the usual distance of five feet.

Angular and linear measurements designed to express the relationship of the mandible to the maxilla were made from the radiographs. The angles, measured directly from the planes marked on the films with a fine pencil, were: mandibular—maxillary planes angle, S-N-Pog, A-N-B, PNS-ANS-Pog, and S-N-ANS.

The upper face height (Nasion to Anterior nasal spine) and the lower face height (Anterior nasal spine to the most inferior point on the chin profile) were measured and the ratio of these two measurements calculated.

The angular measurements above and the face height ratio were correlated with the extraversion and neuroticism scores using Kendals Tau. (Table 1).

An analysis of variance was used to investigate the relationship between the type of malocclusion and the two personality factors.

RESULTS

The results (Table 1) showed that the relationship of the mandible to the maxilla was not related to the two personality factors investigated. A chance finding was a low negative correlation of the angle S-N-ANS to the neuroticism factor. It must be presumed from this that a greater prominence of the

TABLE I

Angle	Extraversion	Neuroticism
Mand.-Max.	—0.017	+0.117
S-N-Pog	+0.109	—0.101
A-N-B	+0.107	—0.005
PNS-ANS-Pog	—0.095	+0.112
S-N-ANS	+0.115	—0.277*
Upper face ht./		
Lower face ht.	+0.004	+0.021

Correlations for sixty orthodontic patients of the personality factors extraversion and neuroticism and measurements designed to express the relationship of the mandible to the maxilla. (* Significant at .01)

base of the nose is associated with a less neurotic personality.

An analysis of variance showed no significant correlation between the type of malocclusion and the two personality factors.

DISCUSSION

That there is no relationship between the position of the mandible and the personality factors of extraversion and neuroticism, if disappointing to the investigators, comes as no surprise in the light of previous work. The relationship measured was the sum of the combined influence of the "form" and "posture" of the mandible to the maxilla. It must therefore be concluded that both the form (size and shape) and the posture (orientation in space) are independent of these two personality factors.

It follows that it is unlikely that the type of malocclusion is related to these factors and this is shown separately in the investigation.

The correlation between the angle S-N-ANS and neuroticism was totally unexpected. No explanation can be given for this finding.

This investigation does not rule out the possibility that other personality factors may influence the posture of mandible, although from the extremely low correlations shown here this seems unlikely. A further study using a larger

sample is to be undertaken to test this possibility.

*Dental School and Dept. of Psychiatry
University of Liverpool
Liverpool, England*

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