Abstract

This study is based on evaluative longitudinal data of facial development in a group of children from 6 to 12 years. The research used three-dimensional models of the faces of 18 girls and 15 boys that were scanned at yearly intervals. These models were used to follow development of the face and its particular areas including analysis of variability (PCA). Developmental changes were observed for each gender separately as well as for the development of sexual dimorphism. Results were visualized by using superimposed color maps of average faces of a particular age group and maps depicting the statistically significant differences in individual areas.

The presented data exhibited growth in the face of both genders, while slightly bigger changes in the form of the face were observed in the boys’ samples. For girls and boys the most intensive growth was found in the direction of the width and height of the entire face and the nose, especially in the direction of length. These changes took place throughout the whole studied period of growth, yet more intensive growth was evident for girls beginning at age 10 years and for boys from 11 years onward. Shape changes also occurred with age for both genders: the face gradually narrowed, the cheeks flattened and a more retruded position of the forehead occurred. These changes were more evident for boys.

Except for in the category of 12 year-olds, the study found that sexual dimorphism increases with age. Compared with the 11 year-olds, the differences in dimorphism were slightly less noticeable. Boys’ faces were generally bigger than in girls, with the smallest difference apparent in the protrusion of the boys’ cheeks. Boys’ faces throughout the observed period were relatively narrower and more convex: their foreheads lay backwards more, while the area of eyebrow ridges, nose and chin were more prominent.

The results show that the growth trajectory of girls and boys are different. Size changes are more intense for boys, whose gains are greater. Shape changes were more intense for girls. Overall, differences in the period from 6 to 12 years are negligible. It can be assumed that more distinct differences will be noticeable at a later age.