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Patterns and prediction of orthodontic treatment course

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ABSTRACT

Most attempts at the identification and prediction of treatment-related changes and outcome in orthodontics thus far have relied upon single biometric parameters instead of employing a systemic and ecological approach. The concept of facial harmony and the availability of sophisticated multivariate statistics offer new chances for a deeper understanding of the mechanisms of change. A longitudinal study has been conducted on approximately 500 youths aged 9-11 years, on average. Numerous parameters of cephalometric analysis, study casts, growth, treatment regimen and patient co-operation were assessed at the onset of treatment (T0) and after 1 year (T1) to determine treatment-related changes under therapy with removable appliances. Exploratory cluster analyses were based on five fundamental cephalometric parameters (SNA, SNB, ML-NSL, NL-NSL, NS-Ba) that establish an operational approach to harmonious facial relations (Segner and Hasund, 1991). As a first step, analyses were restricted to 281 Class II division 1 patients selected for good co-operation by an expert rating by the first author on a three-point rating scale. They all were treated with bionators either with anterior or posterior traction. Both subgroups were studied separately. Based on cluster analytic procedures, different patterns of change were identified for both types of appliance. A slight tendency toward harmonization of the initial skeletal relations was observed throughout all subgroups, with reactions being most obvious in the maxilla. The clusters produced for either appliance groups were then screened for additional predictors of group membership by means of discriminant analysis. The findings are discussed in terms of the suitability of the methodological approach chosen.

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