The connection between acoustic features and adolescent personality with different ages

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The education and development of personality are an important issue concerned by whole society. For schools, the development of students' personality is a topic of continuous concern. For companies, it is also extremely important to find employees with suitable personalities. Traditional paper-based testing methods rely on the cooperation of the experimenter and consume a lot of time. So in recent years, the research of automatically predicting personality has attracted researchers' attention.

In previous studies, researchers used methods such as machine learning and deep learning to predict personality through acoustic features and explored the contribution of acoustic features to personality prediction. However, a person's acoustic features and personality will change with age. Therefore, it is necessary to consider the change of age by using acoustic features to predict personality. But, the age distribution of experimenters was not considered when predicting personality in previous studies. In particular, adolescents are the main period for personality developing. At the same time, their acoustic features also change with growing.

Therefore, in this study, we constructed a personality classification model to study the contribution of acoustic features to the personality classification of adolescents at various ages. We extracted 43 elementary school students, 40 junior high school students, 36 high school students, and 40 college students, a total of 159 people's dialogue acoustic features and tested their personality. Then, through machine learning, different acoustic feature sets are used to train the personality classification model to verify the contribution of acoustic features to the personality of each age group.

Based on our study’s result, different acoustic features have different contributions to personality classification, and the degree of contribution is also related to age. At the same time, we found that the younger the experimenter has lower accuracy of personality classification. We think that in childhood, children’s vocal cords and vocal organs are still developing, and there are uncertain factors such as language ability and acoustic characteristics. We need to combine features other than acoustic features to classify the personality of adolescents.