The existence of undiscovered species off the Brazilian coast, and awareness of the importance of dietary habits on our quality of life promote sensory research with children, especially in regard to school meals. The practical application of discriminant analyses as tools to study groups based on their perception of a fish product aids in the understanding of socio-demographic or regional factors influencing perception and facilitates planning for future changes in eating behavior. Thus, knowledge of the variables that affect children’s consumption of fish products can contribute to making correct decisions in program policies for school meals. The objective of this study was to evaluate the acceptance of breaded fish (*Engraulis anchoita*) by public school students aged 5-18 years (*n* = 830) from two cities in the state of Rio Grande do Sul, Brazil. First, the validation of a structured facial scale with 7 points was performed, followed by the evaluation of new facial expressions proposed for the scale. By using multivariate analyses, the authors sought to discriminate against groups formed based on the acceptance of the breaded fish. The final objective was to develop a predictive model that was applicable to different levels of acceptance. The new facial scale was validated and applied, and the results showed that the main discriminating variable for the acceptance of breaded fish was age. According to the linear model and the descriptive statistics, an inverse relationship exists between the acceptance of breaded fish in school meals and the age of the children.