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# SCHOOL MEAL ACCEPTANCE IN 8-12-YEAR-OLD CHILDREN

## INTRODUCTION

According to Finnish legislation, schools provide meals free of charge to children aged 7–18. The meal should cover 1/3 of daily nutritional requirement. However, benefiting from the free school meal requires that the meal is eaten.

The aim of this study was to evaluate the factors underlying disliked and liked school meals by collecting hedonic ratings of meals from children eating the school lunches, and comparing their ratings with descriptive sensory data of the meals provided by a laboratory panel.

## METHODOLOGY

A total of 97 children (49 boys, 48 girls), 43 third graders, (8-9 years) and 54 sixth graders, (11-12 years) participated. A separate panel (n=17) described sensory characteristics of the main dishes using a check-all-that-applies method (CATA).

Fifteen main dishes from the 6-week school meal plan, consisting of 30 main dishes, were rated. Each meal was evaluated in a classroom after the lunch break on the same day as it was served for lunch. A photo of the meal was projected on a screen to remind the children of the experience.

The children were asked to check their immediate emotion when seeing the meal, among seven options. The main dish was rated using 7 categories (1=really bad, 7=really good), hunger state with 7 categories, and contextual factors using a just-about-right scale (JAR) with 7 categories. Demographic data, attitude towards school meals (4 items) and food neophobia scores (FNS) were collected separately.

## RESULTS

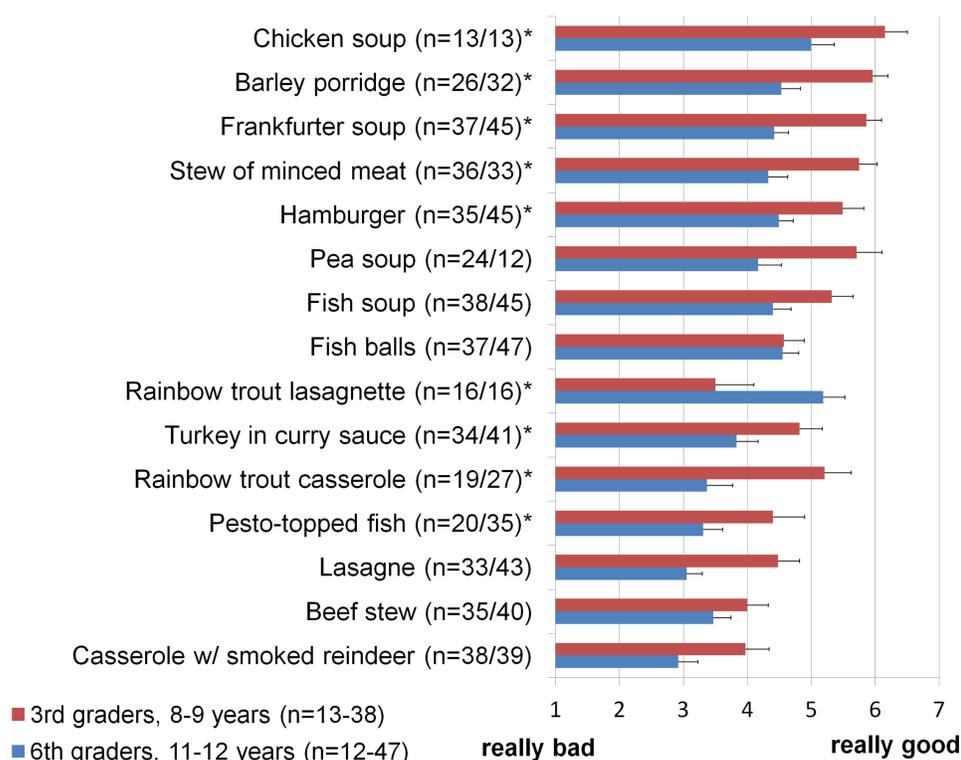


Figure 1. Mean hedonic responses (+SEM) for 15 main dishes. (\*p>0.05. n=responders, who rated the meal, varied daily due to absences)

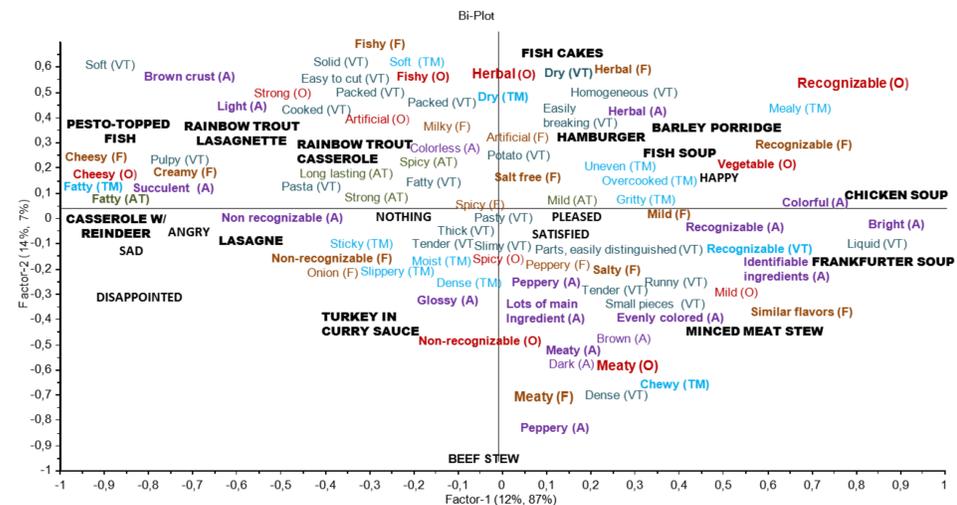


Figure 2. Descriptive words and checked emotions (X-matrix) combined with hedonic ratings of main dishes (Y-matrix) in a PLS-model. (A = appearance, VT= visual texture, TM= oral tactile texture, O=odor, F=flavor, AT=aftertaste)

The most-liked main dish was chicken soup and the least liked main dish was casserole with smoked reindeer (Fig.1). The third graders rated most meals higher than the sixth graders. Differences between the two grades were present in 9 of the dishes. Well-liked dishes were described as colorful, recognizable based on their appearance, odor and flavor (Fig. 2). Disliked main dishes were described with cheesy flavor and odor, fatty, creamy and non-recognizable appearance.

Table 1. Significant predictors for liking of school meals in stepwise linear regression model, all meals pooled.

3rd graders	$\beta$	R <sup>2</sup>	$\Delta R^2$	6th graders	$\beta$	R <sup>2</sup>	$\Delta R^2$
Hunger state	0.33	0.16		Attitude to school meals	0.31	0.22	
Temperature of main dish (JAR)	0.17	0.22	0.06	Temperature of main dish (JAR)	0.23	0.30	0.08
Food Neophobia Score	-0.20	0.26	0.04	Hunger state	0.24	0.34	0.04
Attitude to school meals	0.17	0.29	0.03	Saltiness of main dish (JAR)	0.13	0.36	0.02
Serving time (JAR)	-0.16	0.32	0.03	Noise (JAR)	0.09	0.37	0.01

Meal acceptance was predicted with stepwise linear regression, different models for the two grades (Table 1). Of the variation in acceptance of third graders, 32% was predicted by hunger, temperature of main dish, FNS, general attitude to school meals and serving time. Of the variation in acceptance of sixth graders, 37% was predicted by attitude, temperature of main dish, hunger, saltiness, and noise level in canteen.

## CONCLUSIONS

Colorful dishes, recognizable based on their sensory characteristics, were given the highest hedonic ratings, while fatty, creamy, and cheesy dishes were given lower ratings. Younger children were, in general, more favorable towards the dishes. For the third graders hunger was the most important predictor of meal acceptance, while general attitude towards school meals predicted best the sixth graders' meal acceptance. Thus, understanding and tackling the origin and development of negative attitudes to school meals in teenagers is critical. Moreover, proper serving time (to allow feelings of hunger) and appropriate serving temperature need attention.