

School milk consumption in Germany – which product attributes are important for children and parents?

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BACKGROUND

- milk products: important part of balanced diet
- milk consumption declines, quite often becomes insufficient with age
- especially girls do not consume enough milk or milk products
- reason: preferences and needs change over time
- (new) products have to meet these changes
- to support milk consumption the EU School Milk Scheme was developed: 250ml school milk per pupil and school day is subsidized

OBJECTIVES

- how do preferences for milk products differ between parents, youths and children?
- how do preferences for product attributes differ between parents, youths and children?
- could new products contribute to higher sales of school milk?

METHODS

Pair comparison (children, 10-14 years)

- principle: two products are always compared with each other, the preferred one is chosen
- products: flavoured milk, drinking yoghurt, yoghurt and curd

Choice Experiment for milk products (youths, 15-18 years and parents)

Theoretical guideline:

- consumers choose the product that gives the maximum utility
 - product utility arises from product attributes (e.g., type of product, fat content, price)
 - attributes might have different levels
- In this study:
- six attributes: product, price, fat content, sweetening agent, calcium content, lactose free (the last two just for parents)
 - two to three levels per attribute
 - respondents choose one of three alternatives
 - 32 different choice experiment questions for the parents, 27 for the youths available
 - division into: 8 groups of parents (4 questions per parent), 9 groups of youths (3 questions per youth)

Figure 1: Example Choice Experiment Question

Please check the option that you would most likely purchase.			
Product attribute	Novel milk 250 ml	Novel yoghurt 150 ml	Conventional milk 250 ml
Price in cents	40	30	35
Fat content	0.3 %	1.5 %	3.5 %
Sweetening	sweetener	sugar	sugar
Calcium content	200 mg/100 ml	160 mg/100 ml	120 mg/100 ml
Lactose-free	no	yes	no
I'd choose.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I would not choose any of these products , because

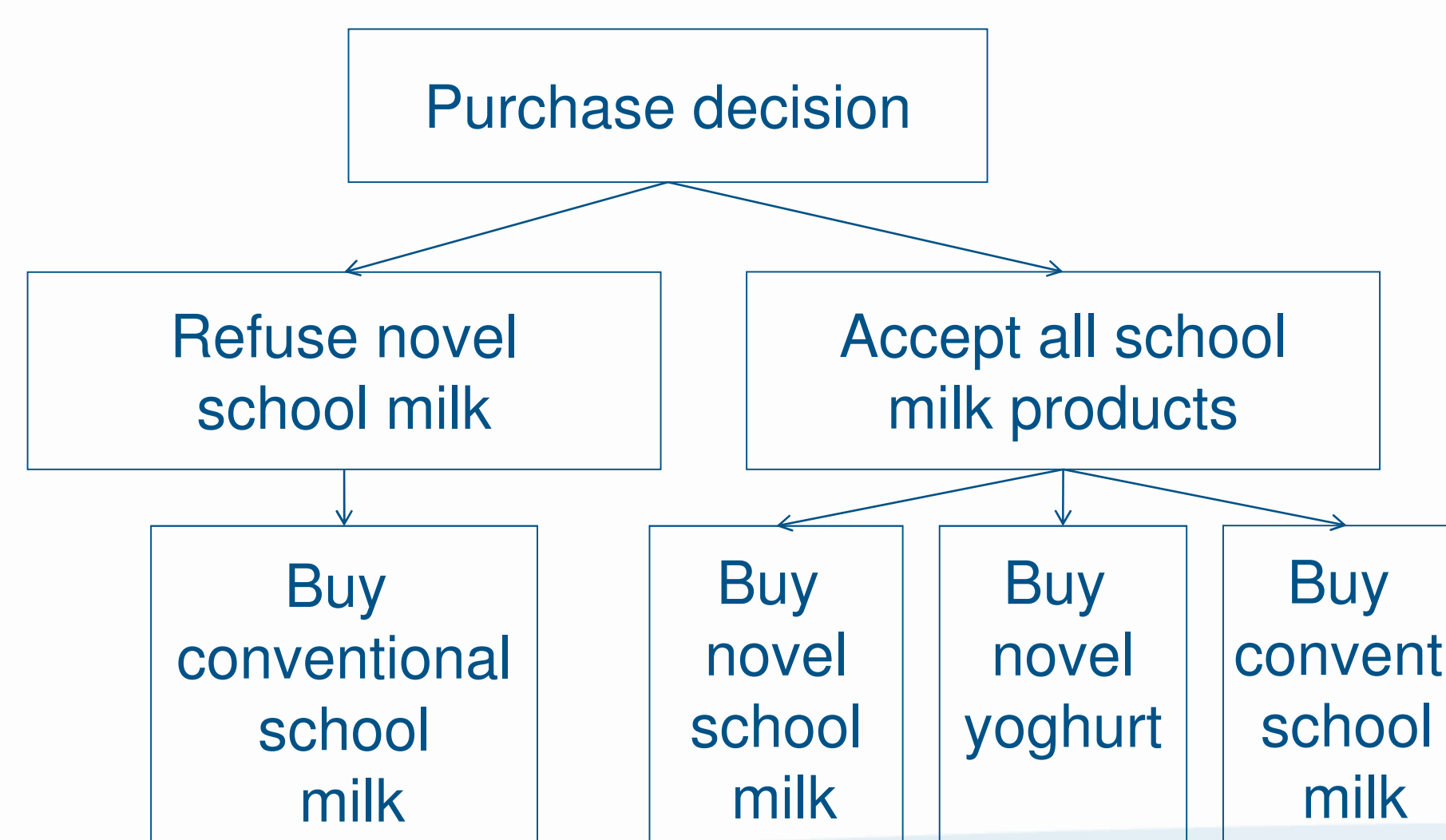
METHODS cont.

Total product utility: sum of all single utilities arising from different attributes

$$U_{ni} = \sum_{k=1}^K (\beta_{nk} * X_{nk}) + \epsilon_{ni}$$

U = utility, n = individual, i = alternative, k = number of attributes, β = relative weighting of the attribute, X_{nk} = vector describing the attributes embedded in alternative i, ϵ_{ni} = random component

Figure 2: Nested Logit Model: Decision tree



DATA

- online surveys in Germany in 2010
- 1000 parents of school children, 500 children (10-14 years), 509 youths (15-18 years)
- equally distributed regarding age, gender and regions

RESULTS

Pair comparison (children, 10-14 years)

- flavoured milk is most preferred
- drinkable products are preferred over those that are consumed with a spoon

Figure 3: Relevance of selected product attributes (children and youths)

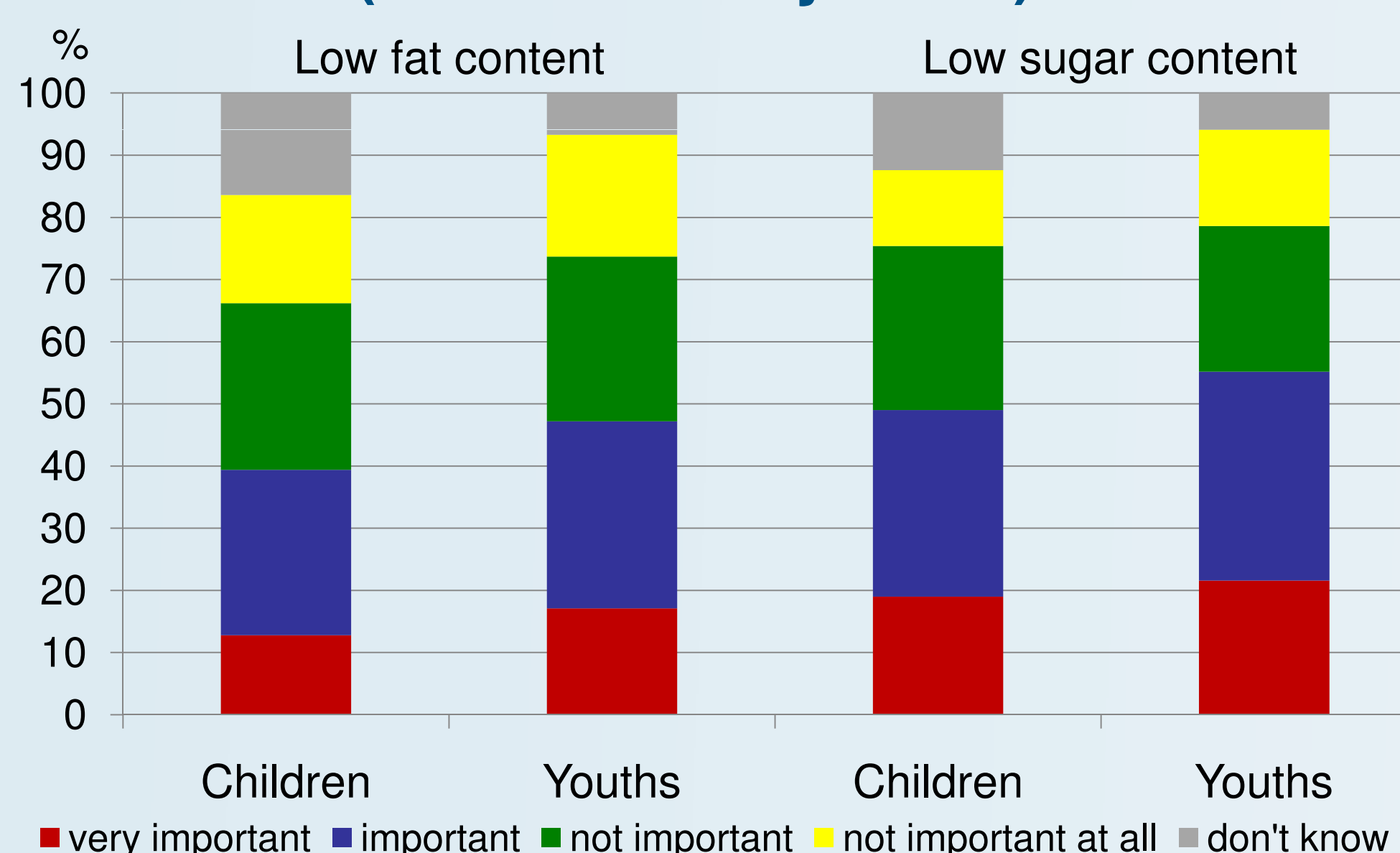
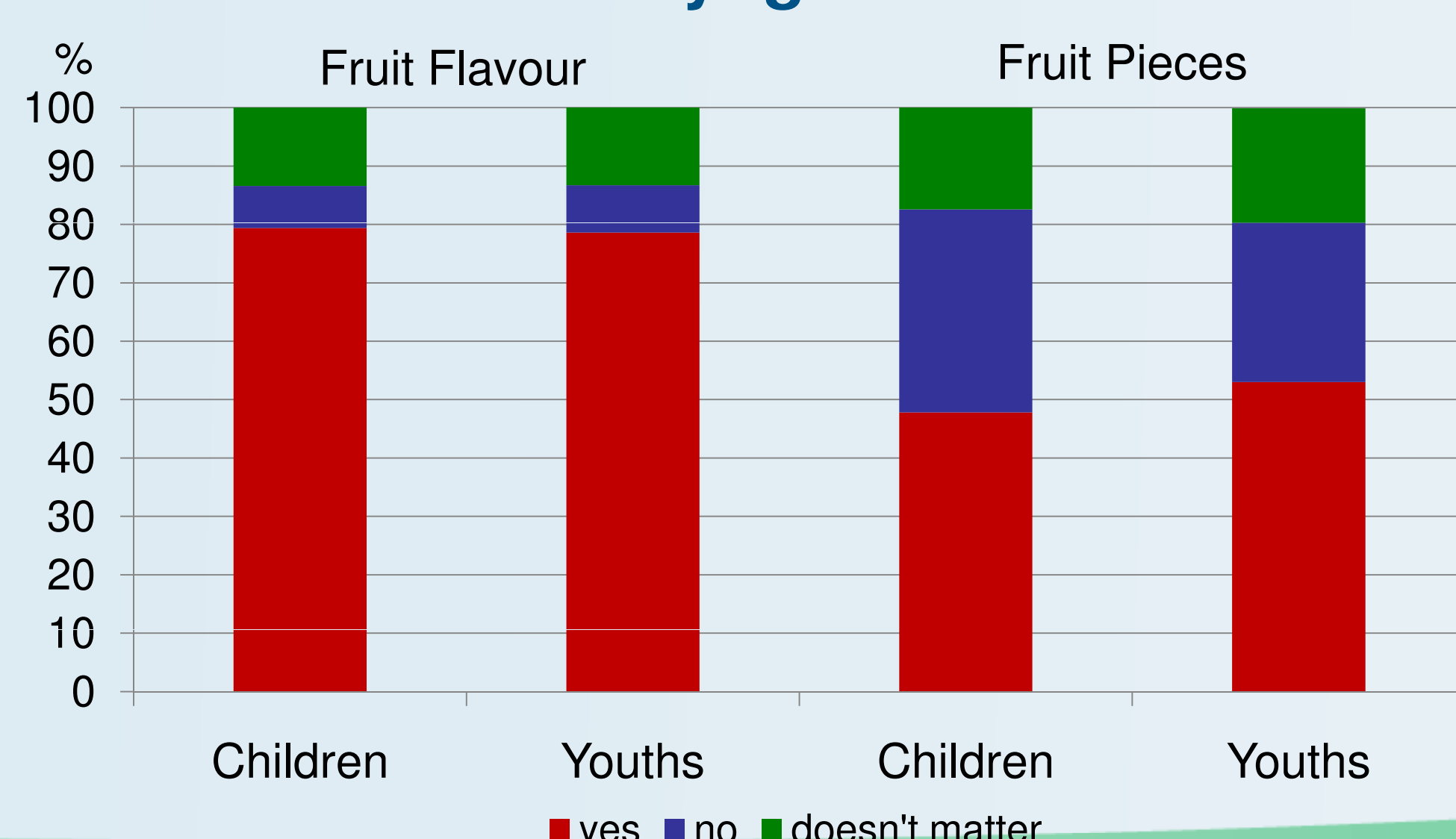


Figure 4: What children and youths would like to have in their yoghurt



RESULTS cont.

Figure 5: What children and youths would like to consume at school

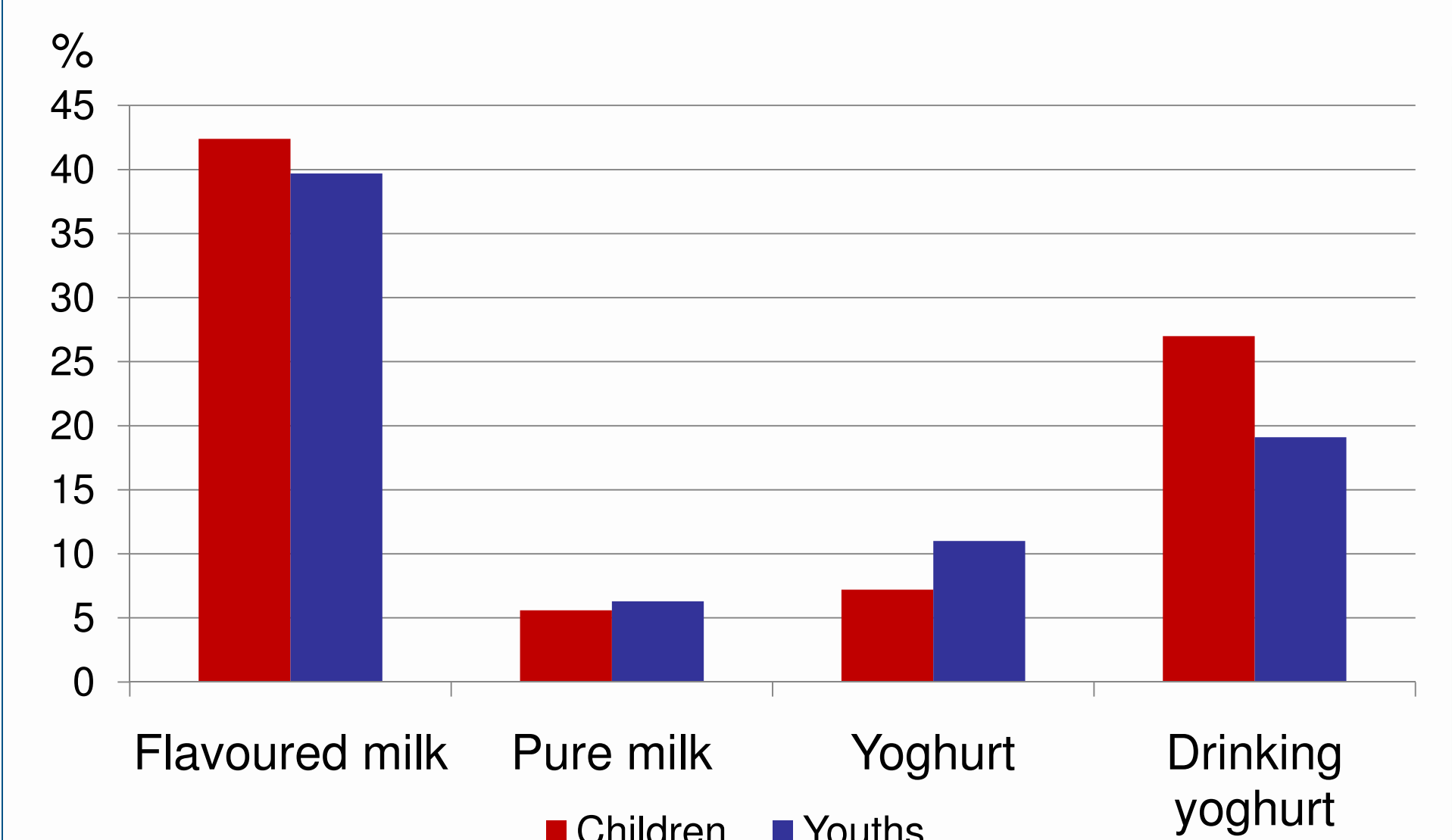


Table 1: Results of Nested Logit Model Estimation (youths and parents)

Parameter		Parents	Youths
<i>Utility from school milk</i>			
Constant of novel school milk utility	-	0.199***	0.776***
Constant of novel yoghurt utility	-	0.152**	0.256**
Price	categorical	-0.034***	-0.086***
Fat content	categorical	-0.067***	-0.050
Sweetening agent	dummy	-0.379***	-0.280***
Calcium content	categorical	0.005***	-
Lactose content	dummy	0.071	-
<i>Whether to take novel school milk</i>			
Constant	-	0.805***	1.358**
Overweight	dummy	0.664**	0.752***
Agree: Supplementary calcium intake to dairy products is useful	dummy	0.418***	-
Agree: Supplementary vitamins to dairy products are useful	dummy	0.600***	-
Fat-reduced milk products are more healthy	dummy	0.901***	-
Immigration background	dummy	-0.501***	-
Completed vocational training	dummy	-0.490***	-
Take care of healthy nutrition	dummy	0.507**	-0.500***
Low fat content is important	dummy	-	0.556**
Low sugar content is important	dummy	-	0.788***
Low price is important	dummy	-	-0.440**
Like milk products	dummy	-	1.009***
Would like to eat milk products daily	dummy	-	-0.672**
IV-Parameter			
Non-Refusers		0.009	-0.017
R ²		0,224	0,244

-: not significant/not asked in the respective group;
* significance level = 0.1; ** significance level = 0.05;
*** significance level = 0.01, standard error in parentheses shown in bold print: distinct differences

SUMMARY + CONCLUSIONS

- increasing fat content and price as well as artificial sweetener result in lower expected utility for parents and youths in general
- flavoured milk is preferred by children, youths and parents for consumption in school

For increasing school milk consumption it is important to

- offer a large variety of different milk products especially with respect to different product attributes
- focus on drinkable products for consumption in school