

Reasons for serving of foods and parental dimensions of food likes and dislikes in Swedish families with children aged 2-17

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Received March 1, 1996; Accepted February 6, 1997

Abstract

The aims were to explore dimensions of food likes and dislikes in Swedish parents (56 mothers and 40 fathers) of children age 2-17 and to study what factors are considered important by the primary food decision maker (gatekeeper) when deciding what foods are to be served in the family. The results are based on an ad hoc questionnaire in which the parents were asked to mention three liked and three disliked foods and to describe them using 22 attribute pairs, and on an interview with the gatekeeper. Factor analyses of those attributes were performed on liked and disliked foods separately. There were 7 meaningful orthogonal factors for liked and 6 for disliked foods. Six factors were the same for both types of foods: Health, Taste, Familiarity, Eaten by self and others, Contents and Economy. The additional factor found for liked foods was Smell/appearance. Individual mean factor ratings were calculated in order to analyse dimensional differences between the liked and disliked foods. The liked and disliked foods were differentiated mainly by their taste. The following factors were considered important by the majority of gatekeepers, when choosing what foods to serve: The food looks appetizing, that there is food variety, that it is nutritious, fresh, home-made, healthy and that the ingredients are fresh. In order to gain additional information about factors affecting individual food choice, studies should be made of gatekeepers in important choice situations; at home, when planning shopping and in the store.

Introduction

It is a common observation that humans consume a wide variety of foods but the factors motivating their acceptance or rejection are far from clear. According to Rozin (1), the cultural belonging of the individual is the most important factor influencing individual food choice. However, there is considerable individual variation within cultures in the foods that are accepted or rejected. The most important factor accounting for differences in food choice within a culture is considered to be taste and other sensory aspects of food (2). Price, availability and convenience are also important factors (2-4). Health beliefs have been found to influence food choice, especially among

older people (2), but food consumers in general consider nutritional aspects as only one among several factors influencing their food selection (5). Variety, on the one hand, and familiarity on the other, have been shown to stimulate choice (1,6,7).

Ethical concerns, e.g. that the food is packaged in an environmentally healthy way, was demonstrated by Steptoe and co-workers (8) to be one of the motives underlying the selection of foods. Among Swedish consumers, the interest in organic foods is growing (9), which illustrates that they are becoming more interested in where the foods come from and how they are produced. Further, Swedish consumers have been shown to perceive domestic foods as being of better quality than imported foods (10). These results are in accordance with the results from a study by Santich (11), indicating that purity and naturalness are important factors influencing food habits and preferences in Australian women. Further, Santich (11) found that degree of liking, cost and perceived nutritional value are important influential factors. Bell and co-workers (12), who reported a strong correlation between personal food beliefs and food selection, found the constructs "good for me", "health promoting", "tasty", "expensive", "convenient" and "nutritious" very common within personal food belief systems.

The factors accounting for within-cultural variations in individual food

choice are not completely understood. The factors determining what foods are served at family meals are even less well understood. An important factor that should be considered when conducting

Table 1. Questionnaire items.

- | | |
|-----|--|
| 1. | Unfamiliar to me
– Familiar to me |
| 2. | Modern – Traditional |
| 3. | Foreign – Swedish |
| 4. | Child food – Adult food |
| 5. | Food for "dinner parties"
– Everyday food |
| 6. | Healthy – Unhealthy |
| 7. | Makes me thin – Makes me fat |
| 8. | Like – Don't like |
| 9. | Expensive – Cheap |
| 10. | Good – Not good |
| 11. | Nutritious – Non-nutritious |
| 12. | Smells bad – Smells good |
| 13. | Looks disgusting – Looks good |
| 14. | Good for me – Bad for me |
| 15. | Is served at home
– Is not served at home |
| 16. | Tastes good
– Doesn't taste good |
| 17. | Friends eat it
– Friends do not eat it |
| 18. | Good for my teeth
– Bad for my teeth |
| 19. | Contains much sugar
– Contains little sugar |
| 20. | Contains much salt
– Contains little salt |
| 21. | Contains much preservatives
– Contains little preservatives |
| 22. | Filling – Not filling |

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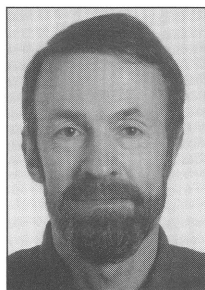


Table 2. Importance (% of respondents) of various reasons for choosing the foods to be served in the family (as reported by the gatekeeper).

	Important	Unimportant
That the food is liked by other family members	96	4
Which foods the children like	93	7
Which foods I like	75	25
Which foods my spouse likes	75	25
That the food looks appetizing	98	2
That the food is nutritious	100	0
That the food is healthy	96	4
That the food is free from preservatives	68	32
That there is food variety	97	3
That the ingredients are fresh	96	4
That the food is fresh	81	19
That the food is homemade	90	10
Easy to cook	76	24
That the food is cheap	54	46
That the food is domestic	72	28
That the food is organically produced	40	60
What the children have eaten earlier during the day	77	23
What I've eaten earlier during the day	54	46
What my spouse has eaten earlier during the day	43	57
That the food is familiar to us	43	57

studies on factors influencing food choice at family meals is the concept of "gatekeeper" (13). The gatekeeper in the family is defined as the primary food decision maker and studies have shown that the gatekeeper's decisions are greatly influenced by other family members', especially their spouses' food likes and dislikes (14,15). In other words, there is a mutual interaction between the gatekeeper and other family members. This interaction is presumably of importance for the gatekeeper's decisions about what foods to serve in the family.

Food habits do not necessarily persist unaltered throughout life but some kind of a foundation for healthy food habits may be built in childhood. By studying the factors influencing food choice in gatekeepers we may learn more about factors influencing food choice in children. The gatekeeper is responsible for the presentation of foods, and thus, by controlling exposure, influences the food choice of the children (3). Children have also been shown to adopt the food habits of respected others (16) which may be a more direct influence by the gatekeeper.

The research reported below was designed to investigate what factors are considered important by the primary food decision maker (gatekeeper) when deciding what foods are to be served in Swedish families with children age 2-17, and to study what factors prompt the gatekeeper to introduce new foods and how family members react to each others' food likes and dislikes. Further, dimensions of food liking/dislikes in Swedish parents of

children age 2-17 were explored. In our previous studies (17,18), we have demonstrated that parents seldom serve their children foods that the parents dislike. This finding suggests that the dimensions of parental food likes and dislikes may have implications for what foods the children are exposed to at home.

Methods

Subjects

Subjects were 96 parents, 56 mothers and 40 fathers participating in a study on determinants of food habits in Swedish families (19,20). They were recruited from two towns, Uppsala (university town, population of 180,000) and Enköping (industrial town, population of 34,000), both located in central Sweden, in order to achieve an adequate variation of socio-economic factors. Random selection of 370 children (stratified for age and town, 185 from each of the towns) ranging in age from 2 to 17 years was performed on the basis of local taxation registers. Invitation letters were sent to the parents who were asked to fill in a form concerning demographic data and to sign a consent form indicating the willingness of all family members to participate. The procedure was described to include a 1-2 h interview in the home and a few questionnaires concerning food habits, mealtime practices and attitudes towards foods. Eighty-seven families (24%) were willing to participate. No reminders were sent, since the intention was to include only 60 families. The final sample was selected in

the following manner. There were to be twelve "target" children (6 from each town) in each of the following five age groups 2-5, 6-8, 9-11, 12-14 and 15-17 years. Those twelve families that replied first in each of the five age groups were contacted by telephone. Three families discontinued their participation in a late phase of the study and were not replaced. Thus, the final sample included 57 families.

Procedure

The results are based on a family interview (of which only the gatekeeper data will be presented below) and an *ad hoc* questionnaire concerning foods that the parents liked/disliked. The questionnaire consisted of 6 pages and the parents were asked to name one food on each page (totally three that they liked and three that they disliked). On each page, there were 22 seven-point rating scales on which the parents were asked to describe the position of each food that they named. Attribute pairs, of which most were bipolar but some were unipolar (e.g. good-not good), were used to anchor the scale endpoints (Table 1). Each of the 22 scales were scored from 1 to 7 (very, fairly, slightly, neither, slightly, fairly, very). The questionnaires were administered during a family interview that took place in the families' homes.

The appointment for the interview was made by phone a few weeks beforehand. All family members were asked to be at home at the time of the interview. The interview was based on structured *ad hoc* interview guides with open-ended response alternatives. (Complete guides can be requested from the first author). The first questions aimed at identifying the gatekeeper in the family. The gatekeeper then responded to questions concerning factors that are considered important when deciding what everyday foods are to be served in the family, factors that lead the gatekeeper to try new foods and how family members react to each other's likes and dislikes. In 88% of the families, the mother was identified as the gatekeeper. The father was the gatekeeper in 5% of the families and in 7%, both parents shared this task.

The attributes of the scales and the list of the reasons for choices were decided on the basis of a review of the available literature (1,2,11,12,15,21).

Statistical analyses

Descriptive statistics, two-tailed t-test (paired), chi-square test and principal component analysis were used. Briefly, principal component analysis groups variables that vary together. The first

factor is the single best combination of variables which accounts for the largest proportion of the total variance, the second factor represents the best combination accounting for the greatest proportion of the residual variance, and third and higher factors account for successively smaller proportions. Exploratory principal component analyses were first performed separately for each of the liked and disliked foods, using the principal factoring method (varimax rotation). In interpreting the factors, loadings ≥ 0.30 were considered as salient.

Results

A chi-square test did not show any statistically significant differences between the different child age groups with respect to any of the variables studied. Child age will therefore be disregarded in the analyses.

Important reasons for choosing what to serve

Reasons that were considered important by the gatekeeper when choosing the foods to be served in the family are presented in Table 2. The five factors considered most important by a majority of the gatekeepers were: that the food is nutritious, that the food looks appetizing, that there is food variety, that the food is healthy and that the food is liked by the other family members. That the food is organically produced was not considered important by the majority of the gatekeepers.

How often and why new foods are served in the family

New foods were served often in 23% of the families, sometimes in 36% and rarely in 41% of the families. None of the gatekeepers reported never serving new foods. The seven most frequent reasons why new foods were served were as follows: Eaten something new abroad or at a friend's place (45%), read about the new food in a magazine (43%), seen an exciting recipe (38%), advertisement (e.g. on TV, magazine) (35%), someone recommended it (21%), it's fun to "explore" (14%), and I like cooking (10%). The figures add up to more than 100% as it was possible to state more than one reason (26 different reasons were reported).

Reactions when a new food is rejected by family members

We asked the gatekeepers how they would react if they had bought or prepared an exciting "new" food and someone in the family refused to eat it. In 19 (33%) of the families, the gatekeeper said that she/he

Table 3. Items included in the factors for the Liked foods.

Factor name	% ¹	Scale End-Points	Loading
1. Health	(19)	Unhealthy – Healthy *	.86
		Makes me fat – Makes me thin *	.73
		Non-Nutritious – Nutritious *	.85
		Bad for me – Good for me *	.79
		Bad for my teeth – Good for my teeth *	.60
2. Contents	(13)	Contains much sugar – Contains little sugar	.77
		Contains much salt – Contains little salt	.65
		Contains much preservatives	
		– Contains little preservatives	.77
3. Familiarity	(9)	Unfamiliar to me – Familiar to me	.53
		Modern – Traditional	.88
		Foreign – Swedish	.70
4. Taste	(9)	Don't like – Like *	.60
		Not good – Good *	.84
		Doesn't taste good – Tastes good *	.76
5.	(7)	Child food – Grown up food	.75
		Filling – Not filling	.77
6. Eaten by self and others	(6)	Is not served at home – Is served at home *	.75
		Friends do not eat it – Friends eat it *	.77
7. Economy	(5)	Food for "dinner parties" – Everyday food	.82
		Expensive – Cheap	.74
8. Smell/appearance	(5)	Smells bad – Smells good	.66
		Looks disgusting – Looks good	.85

* The ratings for these items were reversed before calculating individual factor ratings.

¹ % of explained variance

would serve the same food again after some time and 4 gatekeepers (7%) said that they would try another variant of the same food the next time. Fifteen (26%) said that they wanted the person who refused to eat the food to taste it but that the particular food would never be served again. Nine of the gatekeepers (16%) reported serving another food to the person who refused to eat, and the rest (10%) stated that they would serve the food again if other family members liked it. Thus, in 50 % of the families, the new food would be served again later in one form or another.

Principal component analyses

For each of the foods, there were 8 factors with eigenvalues above 1. The scree-test (22,23) indicated that extraction of 4 or 5 factors would be optimal for both liked and disliked foods. Analyses were performed with orthogonally and obliquely rotated 5- and 8-factor solutions. The intercorrelations between factors were generally low. In terms of interpretability and meaningfulness, the orthogonal 8-factor solution was chosen as the best for both liked and disliked foods. As the factor solutions were quite similar among the 3 liked and the 3 disliked foods, respectively, we decided to combine the ratings for the three liked foods and the ratings for the three disliked

foods into one total measure for each. Thus, we added the "tastes good-tastes bad"-ratings for all three liked foods and divided the sum by three. The results presented below are based on principal component analyses of the total measures for the liked and disliked foods.

The factors resulting from the analyses are presented in Tables 3 and 4. Factor 5 for the liked foods and Factors 5 and 8 for the disliked foods did not seem meaningful and were thus excluded from further analyses. The factors extracted for the liked foods were similar to the factors for disliked foods.

Liked foods: The first factor reflects health aspects (Table 3) and Factor 2 mirrors the food contents. The emphasis in the third factor is on the familiarity of the food. Factor 4 is formed by variables reflecting taste aspects. Factor 6 can be seen as reflecting acceptance of the food by family and others, while Factor 7 concerns price and situational aspects. The last factor reflects sensory qualities other than taste. The extracted factors explained 73 % of the total variance. The variance explained by each factor is presented in Table 3.

Disliked foods: As was the case for the liked foods, the first factor reflects health aspects (Table 4). Factor 2 mirrors the

Table 4. Items included in the factors for the Disliked foods.

Factor name	% ¹	Scale End-Points	Loading
1. Health	(18)	Unhealthy – Healthy *	.85
		Makes me fat – Makes me thin *	.77
		Non-nutritious – Nutritious *	.84
2. Taste	(14)	Don't like – Like *	.95
		Not good – Good *	.94
		Doesn't taste good – Tastes good *	.91
3. Familiarity	(11)	Unfamiliar to me – Familiar to me	.55
		Modern – Traditional	.88
		Foreign – Swedish	.70
4. Eaten by self and others	(8)	Is not served at home – Is served at home *	.56
		Friends do not eat it – Friends eat it *	.75
5.	(7)	Child food – Grown up food	.66
		Bad for me – Good for me*	.66
		Filling – Not filling	.70
6. Contents	(6)	Looks disgusting – Looks good	.70
		Smells bad – Smells good	.37
		Contains much sugar – Contains little sugar	.74
		Contains much salt – Contains little salt	.61
		Contains much preservatives	
		– Contains little preservatives	.75
7. Economy	(5)	Food for "dinner parties" – Everyday food	.65
		Expensive – Cheap	.89
8.	(5)	Good for my teeth – Bad for my teeth *	.83

* The ratings for these items were reversed before calculating individual factor ratings.

¹ % of explained variance

taste of the food, Factor 3 the familiarity and Factor 4 the acceptance of the food by family and others. Factor 6 mirrors the food contents and Factor 7 concerns price and situational aspects. The extracted factors explained 74% of the total variance. The variance explained by each factor is presented in Table 4.

Individual mean factor ratings

In order to investigate how the subjects described liked and disliked foods and whether there were any differences between them, we calculated individual factor ratings. The ratings for the variables included in each factor were summed and the sum was divided by the number of variables included. These individual factor ratings varied from 1 to 7. The ratings for some of the variables were reversed (as indicated in Tables 3 and 4) in order to make all the variables "go in the same direction". For example, in Factors 3 and 4 for the liked foods, if the food is unfamiliar then it is more likely that it is not served at home. The individual mean

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factor ratings for liked and disliked foods are presented in Table 5.

There were significant differences between liked and disliked foods with respect to the individual factor ratings for all the factors (t 's 174–183=13.61–62.36, $p<0.0001$). However, the numerical differences were very small for Health and Familiarity. The largest numerical difference was found for Taste.

Differences between mothers and fathers

No statistically significant differences were found between mothers and fathers with respect to individual mean factor ratings either for liked or for disliked foods.

Differences between food groups

The liked and disliked foods were categorised into 5 food groups (meat, fish, vegetables, organ meats and other) in order to investigate whether some of the food groups were more common within liked than disliked foods or vice versa. As compared to the other food groups, meat was more often reported as a liked food and organ meats more often as a disliked food by both mothers and fathers. There were no statistically significant differences between mothers and fathers with respect to which food groups they liked or disliked (chi-square test).

Discussion

When interpreting the data on gatekeeper reasons for choosing what foods to serve, it should be taken into account that such reasons most likely vary depending on what types of events the foods are chosen for. The reasons for choosing everyday foods probably differ from the reasons for choosing foods for dinner guests. In the present study, the gatekeepers were questioned about their everyday food choice as this is the most important from a health point of view.

The gatekeepers reported that it is important that the food is easy to prepare, fresh and cheap when they choose which everyday foods to serve their family. These findings confirm the results from earlier studies indicating that price, availability and convenience are important factors in determining food choice (3). Also, the gatekeepers' decisions about what foods to serve are to a great extent influenced by their spouses' and children's food preferences. This finding is in accordance with findings from earlier studies (17). That the food is of domestic origin was also considered important by the gatekeepers. This supports the results from an earlier Swedish study indicating

Table 5. Individual mean factor ratings for liked and disliked foods.

Factor	Liked foods			Disliked foods		
	Mean	Range	SD	Mean	Range	SD
Health	4.96	3.13–6.87	0.78	4.40	1.67–7.00	1.04
Taste	6.61	5.56–7.00	0.38	1.87	1.0–4.11	0.62
Familiarity	5.37	3.44–7.00	0.81	5.77	3.11–7.00	0.87
Eaten by self and others	5.73	3.00–7.00	0.91	3.06	1.00–5.83	0.94
Contents	5.11	2.67–7.00	1.00	4.49	3.50–5.75	0.52
Economy	3.84	1.00–6.17	1.04	5.6	2.50–7.00	1.09
Smell/appearance	6.26	4.33–7.00	0.71	*	*	*

* No such factor was found for the disliked foods

that consumers prefer domestic foods to imported ones (10). That the food is organic was not perceived important which contradicts the findings from an earlier Swedish study (9). It seems that whether the food is organic or not becomes more important when studying specific foods or food groups. This probably depends on the fact that the organic alternatives are only available in certain food groups.

The fact that the price of the everyday foods was considered important by the majority of the gatekeepers, may also prompt the gatekeepers to choose conventionally produced foods as they are often cheaper than the organic foods. The fact that the gatekeepers stated it to be important that the food is cheap and easy to prepare mirrors the life-style of many people today. They spend more time outside their homes and do not devote much time to cooking. Also, the number of unemployed is growing which worsens the economic situation in many families which may contribute to increased price concerns.

The questionnaire data concerning foods that the parents liked/disliked indicated that the liked and disliked foods were mainly differentiated by their taste. This is in accordance with results from several earlier studies (3,21,24,25). The fact that the small numerical differences for the other factors were found to be statistically significant is probably due to the large number of subjects, and the small variances (Table 5). *Santich, Bell et al* and *Steptoe et al* (8,11,12) have studied reasons underlying the selection of food and have documented the same factors as those found in the present study.

We found the same factor structures for liked and disliked foods, the main factor differentiating them being taste. Liked foods were, obviously, eaten more often than the disliked foods. However, preferences and consumption do not always agree. That is, people might prefer one food but actually consume another, because it is cheaper, or considered healthier or for some other reasons (3). That is why it is not surprising that the liked and disliked foods were differentiated mainly by their taste. All the other attributes might describe both liked and disliked/less liked foods (cf. 3). Also, results by *Kronld* and *Lau* (2) indicate that of all the reasons found to influence individual food selection taste is the most influential one. However, as the respondents in our study did not rate the importance of the attributes but only used them to describe the liked and disliked foods, our data do not permit any conclusions concerning the relative importance of the attributes for their liking and dislikes of the foods.

Nevertheless, individual factor ratings close to 4 (Economy for the liked foods, Eaten by self and others and Health for the disliked foods) may suggest a high degree of indifference to these factors. Thus, whether the liked foods are expensive or not is probably not that important. Further, whether the disliked foods are eaten by others or not or whether they are healthy or not, would probably not change the way consumers feel about those foods.

Our finding that the disliked foods were eaten relatively seldom confirms the results from our previous studies (19,20), indicating that parents rarely serve their children foods that the parents don't like. Exposure has been shown to increase liking and acceptance of a new food (26-29). Thus, findings suggest that children get very few chances at home to learn to like the foods that their parents dislike. The dimensions of parental food likes and dislikes may have implications for what foods the children are exposed to at home. Our finding that the disliked foods are seldom eaten by self and others gives some support to this. The extent to which parental dislikes limit children's learning to like new foods, needs further exploration.

Our reactivity to new foods is, apart from sensory affective factors and anticipated consequences, an important aspect of food selection. Humans show interest in new foods but this interest often seems to be coupled with fear (neophobia) (1). This appears as a desire for variety and at the same time a preference for familiar foods. In the present study, analysis identified a factor termed Familiarity. There was a very small numerical difference between the liked and disliked foods with respect to this factor. This can probably be explained by the research method used. It is obvious that people, when asked which foods they don't like, report foods that are familiar to them. However, new foods were reported to be served sometimes or often in the majority of families. None of the gatekeepers reported never serving new foods. Fifty percent tried serving a new food again if it was refused by someone in the family when served for the first time. This suggests that the gatekeepers have understood the well-known fact that exposure increases acceptance of a food and that this gives their children a chance to learn to like new foods. Still, 26 percent of the gatekeepers said that they would never serve the new food again, if someone in the family refused to eat it.

The main reason for trying new foods at home was that the gatekeeper had tried the new food abroad or at a friend's place. This is not surprising as findings from earlier studies show that experience enhances

preference and that the likelihood of eating a new food increases if one has tasted it at least once (26,29-31). Also, observing a familiar person serve and eat a new food increases the subject's willingness to try the new food (32). Our results suggest that advertisements, recipes in food stores, in magazines and on TV are efficient ways to stimulate consumers to try new foods. The food should also be easy to prepare and it should not be too expensive.

The results indicate that useful information is gathered by posing questions like whether new foods are generally accepted in the family, how the gatekeeper usually reacts if someone in the family refuses to eat the food being served, and which foods are liked by the other family members. These findings are, however, preliminary and the issues should be studied further. Also, when people are faced with a list of factors and questioned about the importance of these for their food choice, we probably get an over-estimation of their importance.

The parents were allowed to choose freely the foods they liked and disliked. This procedure resulted in quite a heterogeneous group of foods. This made it difficult to assess differences between the liked and disliked food groups with respect to other dimensions besides taste. To enable this kind of analysis, one should present the participants with a pre-determined list of foods. This was, in fact, considered but we came to the conclusion that we did not have enough knowledge about what foods were liked and disliked by the study population to be able to make that kind of a list. In future studies, the knowledge about the liked and disliked foods gained from the present study should be used.

The heterogeneity of the foods rated by the parents makes the interpretation of the results more difficult and restricts the generalisability of the results. However, the purpose was to develop an instrument for studying dimensions of liking and dislikes for foods. We were able to reduce the original 22 variables to 7 meaningful factors for the liked foods and 6 for disliked foods. However, as there were only 96 participants and as many as 22 variables, the factor analysis should be regarded as explorative. Thus, the factor structure found in the present sample should be cross-validated.

Food choice is a complex phenomenon, influenced by a multiplicity of factors. The method used here is far from complete and thus, further studies employing other types of research methods and examining other aspects of food choice are needed. Further, the reasons for food choice vary

from situation to situation and the dimensions of liking and dislikes of foods certainly vary depending on which foods are rated. In order to gain additional information about factors affecting individual food choice, studies should be made of gatekeepers in important choice situations; at home, when planning shopping and in the store.

Acknowledgements

This research was supported by grants from the Swedish Council for Forestry and Agricultural Research.

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