What did you have for lunch yesterday?

John Balding
HEC Schools Health Education Unit
University of Exeter

The emphasis on 'school dinners' in this issue has prompted a search of the appropriate section of the Health Related Behaviour Questionnaire data bank. The 'diet' section of the Questionnaire not only analyses the pupils' food intake over the previous 24 hours, but also asks them what kind of lunch (if any) they ate. This article discusses some aspects of this important area of the Questionnaire study.

Nearly four years ago, soon after the introduction of Version 8 of the Health Related Behaviour Questionnaire, I wrote an article entitled *School Dinners – How good are they?*[1] In it, I discussed an analysis of the nutrition content, quantity, and overall quality of the lunches eaten by 662 4th-year pupils in Yorkshire, Derbyshire, and Worcestershire, which compared these parameters according to the sex of the pupils and also according to whether they ate a lunch prepared for them by the school. I included the following comment:

> *From this summary, it appears that boys and girls select differently within what is available, and, whereas a school meals service may be potentially excellent, young people might be able to choose more wisely than perhaps they do now.*

Since the diets recorded in the questionnaire signified *choices* rather than *availability*, the title of this article was, perhaps, misleading. My conclusion, at that time, was that the boys' lunchtime diet was likely to be considerably improved if they had a school lunch, whereas the girls' diet did not seem to be disadvantaged if they did not – in fact, there was some evidence that their vegetable fibre intake might be improved if they ate a packed lunch or went home. Could they have made 'wiser' choices from within the menu? The initiatives recorded elsewhere in this issue reflect the widespread feeling that the catering service could do more to enhance 'healthy' choices, and that it should be persuaded to do so; all the signs are that school lunch menus are being looked at extremely critically by many influential individuals, and that changes are on the way or even already here. It is clear that 'healthy' messages in classrooms need to be supported by those offering the choice.

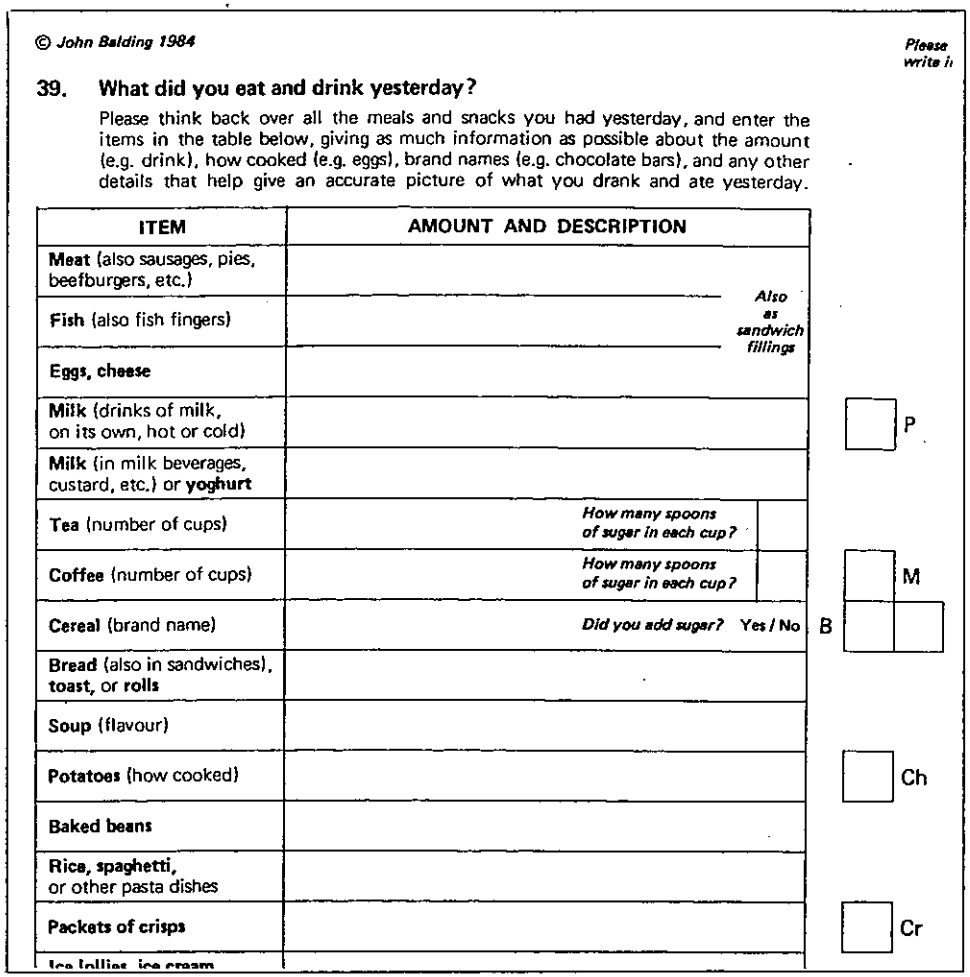
An important curriculum area

I am sure that the remarkable work reported from Stockport in Sheila Vinson's article is not unique. I can say this with some confidence, since users of our Questionnaire service are invited to tell us how the results were used in their school. Invariably the topic of 'diet' comes high in the list of areas where the results stimulated new courses, or reinforcement or re-timing of existing ones. This is easy to understand, when we reflect upon the potential of even a young person to make dietary decisions, and the power which the school has, in its canteen service, to signal 'healthy' messages and support what are seen to be 'wise' decisions.

However, the high importance attached to our 'diet' component has made us extremely sensitive to the quality both of the questions we ask the pupils, and the way in which the responses are coded for analysis. Fig. 1 shows a part of the Version 10 Questionnaire diet enquiry.

Quantifying and qualifying

Any diet analysis is bedevilled by numerous uncertainties. The most obvious one is *amounts*. When a pupil writes 'Apple pie', we do not know if it was a large or a small helping. Another is *content* of complex dishes: 'Stew' as an entry leaves much to be desired! *Preparation* of foods may also be significant: were 'Potatoes' mashed or roast, for example? *Quality* of raw materials may affect the nutritional content – old potatoes have far less Vitamin C than new ones. This list of imponderables could be extended. There-



© John Balding 1984

Please write in

39. What did you eat and drink yesterday?

Please think back over all the meals and snacks you had yesterday, and enter the items in the table below, giving as much information as possible about the amount (e.g. drink), how cooked (e.g. eggs), brand names (e.g. chocolate bars), and any other details that help give an accurate picture of what you drank and ate yesterday.

ITEM	AMOUNT AND DESCRIPTION	
Meat (also sausages, pies, beefburgers, etc.)		
Fish (also fish fingers)	*Also as sandwich fillings*	
Eggs, cheese		
Milk (drinks of milk, on its own, hot or cold)		P
Milk (in milk beverages, custard, etc.) or **yoghurt**		
Tea (number of cups)	*How many spoons of sugar in each cup?*	
Coffee (number of cups)	*How many spoons of sugar in each cup?*	M
Cereal (brand name)	*Did you add sugar?* Yes / No	B
Bread (also in sandwiches), **toast**, or **rolls**		
Soup (flavour)		
Potatoes (how cooked)		Ch
Baked beans		
Rice, spaghetti, or other pasta dishes		
Packets of crisps		Cr
Ice lollies, ice cream		

Figure 1. A part of the diet analysis question in the Health Related Behaviour Questionnaire.

Figure 2. The 'lunch' question in the Health Related Behaviour Questionnaire.

38. What sort of lunch did you have yesterday?

In school – served over counter	1	Circle ONE number only
In school – your own packed lunch	2	
Outside school – e.g. fish & chips, burger from shop	3	
Outside school – your own packed lunch from home	4	
At home	5	
Did not have any lunch	6	

fore an effective dietary question must seek to reduce vagueness as far as possible. It must also try to prompt the memory, so that apparently insignificant snacks and nibbles are also brought to light.

At the sharpest end, the respondent can be asked to keep a diary and to note amounts, or even weigh them. This is the tactic adopted by several surveys, not only for diet but for habits such as smoking and television watching. Such an option is not available to us, since the Questionnaire is a single-lesson exercise; even if it were, it would not necessarily follow that the diary method is the 'best'. To what extent does keeping a note of what one eats (or drinks, or smokes) affect one's behaviour?

The Version 8 diet enquiry divided the previous day into five periods. From the data, information was derived about the amount of food consumed at breakfast, at mid-morning break and lunchtime combined, and after school. A 'total' amount was derived by taking all these values together, and there was also a judgment of the quality and balance of the day's food intake. Measures of the number of portions containing significant quantities of protein, carbohydrate, vegetable fibre, and Vitamin C, were also recorded, together with other information relating to the number of sweets, dairy items, etc.

An improved diet question

In the course of the work with Version 8, some reservations began to be felt about a judgment, from 'Minimal' to 'Very substantial', being placed on amounts of food consumed. It was felt that such labels did not do justice to individual cases, and these were later suppressed, leaving only a numerical scale. There was also a growing suspicion that pupils, particularly the less able, were under-recording items. The question does make a considerable demand on memory – could *you* write down everything you ate and drank yesterday? Therefore, when Version 10 was being developed, it was decided to offer a prompt-list of food items, as shown in Fig. 1. Other modifications were made, in the way the data was analysed. We do not derive 'quantity' figures for the different mealtimes, or for the day as a whole; instead, we have included separate questions about the lunch eaten on the previous day, and the breakfast eaten that morning (Fig. 2). Information about nutrient intake, and consumption of sweets, crisps, etc., is derived as before.

The school lunch enquiry

After this digression, which was necessary to show the attention given to this area of the Questionnaire enquiry, it is time to see what our more recent 'school lunch' study tells us. In this enquiry, a group of 2174 4th-year boys and 2332 4th-year girls, who completed the Version 10 Questionnaire since the summer of 1984, have been examined. The group consists of the 'lunch' categories shown in Table 1.

Table 2 shows the mean number of servings of protein, Vitamin C, and fibre-containing foods, the mean number of servings of chips, and the mean 'nutrient deficiency' level, broken down by 'lunch' categories. It is important to appreciate that these values refer to the

pupils' recorded intake *from mid-morning break on the previous day until breakfast* on the morning of the Questionnaire, and do *not* refer just to lunchtime intake. The following comments may be made.

Protein Mean levels were in all cases higher for the boys. The girl 'no-lunchers' recorded a noticeably lower protein measure than did any other category.

Vitamin C Mean levels were in all cases higher for the girls. For the boys, the 'Takeaway' lunch category showed a lower mean number of servings than did any other category, and for both sexes the highest value occurred in the 'Packed lunch' group.

Fibre The girls had the higher mean figures for number of servings. The lowest mean was recorded by those boys having a 'Takeaway' lunch.

Chips It is not surprising to find the 'School lunchers' of both sexes scoring the highest means! However, these means of 0.53 for the boys and 0.49 for the girls do not support the theory that 'all children' have chips in the school canteen. In fact, when it is borne in mind that some of this group are likely to have had chips with their dinner, it follows that they are unlikely to have had them for their lunch too – of the 2051 boys in the sample who responded to this part of the Questionnaire, only 30 had recorded two or more helpings during this period, and of the 2280 girls only 29 had two or more helpings.

The 'No lunchers' form an interesting, though rather small, group. The mean servings of 0.22 for both boys and girls suggests that only about one in four or

Table 1. An analysis of the type of lunch provision selected by the 4th-year pupils in the study. (Percentages.)

Type of lunch	*Boys*	*Girls*
School lunch over counter	36.2	35.3
Packed lunch eaten in school	22.9	29.5
Lunch bought at Takeaway etc.	16.1	7.1
Packed lunch eaten outside school	4.1	5.9
Meal at home	14.7	12.6
No lunch at all	6.0	9.6
Number in sample	2,174	2,332

Type of lunch	Servings								Nutrient deficiency		Lunch type for whole sample (%)	
	Protein		Vitamin C		Fibre		Chips					
	Boys	*Girls*	*Boys*	*Girls*	*Boys*	*Girls*	*Boys*	*Girls*	*Boys*	*Girls*	*Boys*	*Girls*
School lunch over counter	2.13	1.92	0.83	0.96	1.76	1.84	0.53	0.49	0.72	0.65	36.2	35.3
Packed lunch eaten in school	2.11	1.91	0.92	1.13	2.03	2.25	0.28	0.23	0.64	0.49	22.9	29.5
Lunch bought at Takeaway, etc.	2.03	1.78	0.66	0.84	1.44	1.72	0.39	0.38	0.86	0.68	16.1	7.1
Packed lunch eaten outside school	2.23	1.75	0.74	1.12	1.67	2.01	0.28	0.27	0.71	0.54	4.1	5.9
Meal at home	2.11	1.92	0.78	0.94	1.68	1.92	0.25	0.21	0.75	0.55	14.7	12.6
No lunch at all	2.05	1.51	0.83	0.83	1.58	1.55	0.22	0.22	0.78	0.91	6.0	9.6
Mean value	2.11	1.86	0.81	1.00	1.75	1.95	0.38	0.34	0.73	0.62		

Table 2. The type of lunch provision for the 4,506 4th-year boys and girls in the study, broken down by servings of four different dietary items and a measure of nutrient deficiency.

five had chips during this period, and these servings were, presumably, after school. The same argument would seem to apply to those having a packed lunch (mean servings of chips 0.28 and 0.23 for boys and girls).

Of all the boys studied, 36.0% had one or more servings of chips, and the figure for the girls is 32.7%. It should again be noted that all these figures are for a weekday in term time.

Nutrient deficiency By selecting the four nutrients protein, carbohydrate, fibre, and Vitamin C, it is possible to create a table in which the absence (or effective absence) of any of these is recorded. This 'Nutrient deficiency' category therefore refers to the mean number of nutrients *absent* from the recorded diet; the lower the mean score for this item, the more balanced the diet appears to be. We are aware of difficulties in interpreting what constitutes a satisfactory presence of any nutrient, and do not suggest that our analysis would find favour with all nutritionists. But the comparative figures do suggest that the girls are, on average, eating a more balanced diet than the boys, the exceptions being the 'No lunchers'. Among the boys sampled, the 'Takeaway' group showed the highest mean deficiency rating and therefore the diets exciting the greatest concern.

It is worth repeating the fact that these dietary analyses *are not analyses of what was eaten for lunch alone,* but refer to the intake over an interval of one weekday. The relationship between the lunchtime diet and the day's intake is likely to reflect many factors, of which dietary decisions are only one. What decides whether a pupil has a school canteen lunch, or a packed lunch, or goes to the fish-and-chip shop, or has no lunch at all? All sorts of influences will play their part.

Summary

I have dwelt at some length upon the difficulties of designing, and processing, a satisfactory 'diet' enquiry. However, as a *comparative* instrument, I believe that the Health Related Behaviour Questionnaire allows some interesting conclusions to be drawn from the data.

Comparison between the 4th-year boys and girls gives the following mean values for declared intake during the 24-hour period:

	BOYS	GIRLS
Protein servings	2.11	1.86
Vitamin C servings	0.81	1.00
Fibre servings	1.75	1.95
Servings of chips	0.38	0.34
Nutrient deficiency	0.73	0.62

which suggests that the boys in the sample consumed about 10% more protein than the girls, and that the girls took in about 25% more Vitamin C, and about 10% more fibre, than the boys. Chips seemed to be a little more popular with the boys, and the lower value of 'Nutrient deficiency' suggests that the girls' diet was better balanced. The greater intake of protein by the boys might reflect their greater need, as indicated by the dietary table in the *Manual of Nutrition*[2]. However, the fact that the girls seem to be 'ahead' on Vitamin C and fibre may indicate more 'wholesome' food choices.

Table 2 permits further relationships between 'lunch' and other nutritional dimensions to be explored. It is, for example, interesting to see that the 'Packed lunchers' seem to have a more satisfactory overall fibre intake than do those taking a school lunch. Conversely, the 'No lunchers' appear to do rather less well than most of the other 'lunch' categories in the fibre area, but the boys do not seem to be severely disadvantaged with regard to protein or Vitamin C.

Other investigations made here in the Unit suggest that the type of lunch taken could be linked with other behaviours reflecting the young person's lifestyle. A school embarking on a lunch 'intervention' programme would be well advised to bear this in mind.

References

1. Balding, J. W., School Dinners – How good are they? *Monitor* No. 59 (Spring 1982), p. 6.
2. Buss, D. & Robertson, J. (eds.), *Manual of Nutrition.* HMSO, 1982.