Proceedings of the Nutrition Society (2012), **71 (OCE2)**, E195 doi:10.1017/S0029665112002522

Summer Meeting hosted by the Irish Section, 16–19 July 2012, Translational nutrition: integrating research, practice and policy

Development and validation of the Young Person's Food Atlas

E. Foster and A. J. Adamson

Human Nutrition Research Centre, Institute of Health and Society, Newcastle University, NE2 4HH, UK

Age appropriate food photographs were developed for children of pre-school (18 m to 4 yrs), primary school (4 to 11 yrs) and secondary school (11 to 16 yrs) age. The foods selected ($n = 104$) and portion sizes depicted ($n = 2050$) were derived from intakes recorded during the National Diet and Nutrition Surveys carried out in Great Britain[1,2]. As children rarely consume all of the food served to them and so may never see the amount of food they actually consumed it was necessary to produce tools for estimation of the amount of food served and the amount leftover. Seven weights from the 5th to 95th centile of weight served were calculated as equal increments on a log scale. The decision to present the portion sizes on a log scale was made because of evidence from visual perception research. The just noticeable difference (JND) is defined as the minimum difference between two stimuli that leads to a change in experience. Weber's Law asserts that as the magnitude of a stimulus increases, the JND increases[3], so for example the difference between 5 g and 10 g of baked beans is much more noticeable than the difference between 105 g and 110 g.

Estimates of food portion sizes using the food photographs were validated against 4-day weighed intakes (WI) along with in-school / nursery observations. Interviews were conducted the day after completion of the WI with parents and for children aged 4 to 16 years, also with the child themselves. Interviews were completed for 103 pre-school children, 112 primary school children and 95 secondary school children.

The ratio of the estimated weight of food consumed to the 'actual' weight consumed was calculated along with the limits of agreement using the method of Bland and Altman[4].

			Mean ratio	Limits of Agreement	
Age group	**Respondent**	***n* of estimates**	**Est wt: Act wt**	**lower**	**upper**
Preschool	Parent	103	1.12	0.73	1.73
Primary	Child	112	1.02	0.62	1.67
	Parent	95	0.97	0.66	1.42
Secondary	Child	95	0.97	0.66	1.42
	Parent	94	0.97	0.64	1.46

Parents of pre-school children showed a tendency to over-estimate daily intake using the food photographs compared with the weighed food diary (by 12% on average). The limits of agreement (within which 95% of estimates lie) were from an under-estimate of 27% to an over-estimate of 73% of the actual weight of food consumed. Primary school children showed a slight tendency to over-estimate food intake using the photographs (2% on average) whilst their parents showed a slight tendency to under-estimate (3% on average). Parents of primary school children were more precise in their estimates using the food photographs than children as evidenced by the narrower limits of agreement. Secondary school children and their parents both under-estimated the weight of food consumed by 3%, on average however the limits of agreement are narrower for estimates made by children themselves, from an under-estimate of 34% to an over-estimate of 42%, indicating that secondary school children are as accurate and precise as their parents in estimates of portion size using the Young Person's Food Atlas.

The Young Person's Food Atlas provides a viable alternative to the weighed intake in this age group and is available free of charge via the Department of Health publication orderline. http://www.orderline.dh.gov.uk/ecom_dh/public/home.jsf

This work was funded by the Food Standards Agency

1. Gregory J & Lowe S. *National Diet and Nutrition Survey: young people aged 4 to 18 years*. London: HMSO, 2000.
2. Gregory JR, Collins DL, Davies PSW *et al.* (1995) National Diet and Nutrition Survey: children aged $1\frac{1}{2}$ to $4\frac{1}{2}$ years. Volume 1: Report of the diet and nutrition survey. HMSO:London.
3. Macmillan NA & Creelman CD (2004) Detection Theory: A User's Guide. New York: Cambridge University Press.
4. Bland JM & Altman DG (1986) Statistical methods for assessing agreement between two methods of clinical measurement. *Lancet* **8**, 307–310.