No more playing aeroplanes at dinner

Julia Stuart

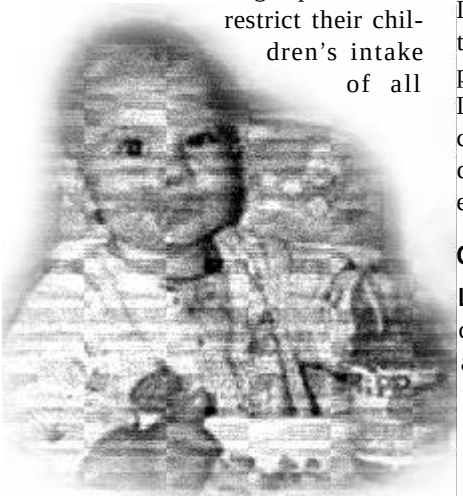
Children can learn to eat almost every food that's good for them, given time, patience and encouragement. So long as parents (and other relatives) are sensible about what they offer and non-directive about how they offer it, young children will end up eating a balanced diet, reaching their optimum weight level and thriving on the experience.

Bringing these hopes, research findings and parental techniques to New Zealand recently was American professor Leann Birch. Sponsored by the Confectionary Manufacturers of Australasia, she and dietician colleague Glen Cardwell travelled through the country speaking to health professionals with a presentation which included the appealing message that a little chocolate can be good for you, and that banning sweets entirely from children's diet can create a 'forbidden fruit' dynamic which is self-defeating in the long run.

Asked what her lecture series covered, Professor Birch said it explored her research looking at why children eat what they do. 'We've been looking at parents' feeding practices, what predicts those and the consequences of using restrictive feeding practices, and coercive feeding practices. We ask – do they work, what are the long-term effects of those practices, are they linked to weight outcomes?'

They've been getting good audiences, with many dieticians and nutritionists, and also researchers, academics and parent educators. The audiences are fairly sophisticated, she says. 'They're not looking for a quick fix. It's the journalists who want the headlines.

'People are very interested in what constitutes restrictive feeding practices. We're not looking at parents who restrict their children's intake of all



food, but situations where the parent controls access to the restricted food and the child knows that.'

So how did she get into this field of work?

> Banning sweets entirely from children's diet can create a 'forbidden fruit' dynamic which is self-defeating in the long run

LB: I got my PhD in developmental psychology and did my dissertation research in cognitive development in school-age children, looking at multiple activity. Then I realised I didn't want to do that; there was so much distance between what you could observe and what people wanted to infer about what was going on inside people's heads. So I took a new job at the University of Illinois, in the Human Development Department of the Department of Agriculture. This was in 1976, and I was interested in one or two things. I was interested in circadian rhythms – now a big area but rather complicated. The other area was why children eat what they do. I picked that because I've always been interested in nutrition, and I thought it was a simple perceptual kind of problem, and I've always been interested in perception and cognition. Once I started doing the work it's taken off in several other directions.

Q: What set you on this path?

LB: I was interested in what were the characteristics of food that children are responding to when they decide to eat it or spit it back at you. We gave children aged two to five samples of food, including fruits and various snacks, to taste and got preferences back from them. That was innovative; we were actually getting data directly from children instead of asking mothers. Children don't have any trouble communicating to you what they like and don't like.

We found there were two dimensions to children's preferences. The first was sweetness – infants come into the world with a preference for sweet things, they don't have to be taught to like it.

The other were more complex experience/exposure dimensions. Children really show a preference for things that are familiar. And familiarity is not a characteristic of food, it's a characteristic of the child.

That sent my research off in another direction, how it is really one's

experience of food that turns out to be so important. I've spent a lot of years looking at how various aspects of children's experience of food and eating shape the development of preferences, and control food intake.

The family environment is just so important. It also includes infant feeding method, whether an infant is breastfed or formula fed, how new foods are introduced into the family, parents' beliefs about feeding and the practices they've used, and the extent to which the parents have controlled the child's eating compared with giving the child some moving space.

To this point, we've stuck to Western feeding practices, working with middleclass American children. We've had some conversations with nutritional anthropologists about how feeding practices might be linked to child outcomes in other cultures. My sense is that what would be constant is that what parents do has an impact on eating preferences, but what's done isn't going to be the same.

Q: Are young humans going to eat 'sensibly' if left to their own devices?

LB: Recently we took another look at the work Clara Davis did in the 1930s. (You couldn't do it now!) She observed children, many of whom were in hospital wards, and every day at all of their meals they were offered a variety of foods and allowed to self-select their diets. She was interested in whether feeding children in this way would let them be well, grow healthy and so on, because it was very much at variance with the cultural patterns of the time.

'She found they did do well, and that's what really led to the claim that if you turn children loose in the supermarket, they'll be fine. But if you look closely at what Clara Davis were offered, it was very different from what you'd find in the supermarket today. They were very simply prepared fruits, vegetables, meats, grains, no added sugar or salt, just processed really minimally… things like cooked bone marrow. The children did very well but it would have been hard for them to go wrong unless they had only eaten one or two things for a very long time.

Professor Leann Birch

The meals the children concocted were a dietician's nightmare. On a particular day they might eat eggs and not much of anything else, or combinations that we would think would be weird. But over time they did very well.

Q: So how have you revisited her research?

LB: About seven to eight years ago we reviewed a number of studies with preschoolers, looking at children's ability to regulate energy intake over the course of the day. We found that if children were left much to their own devices they could do a fair job of consuming a constant amount of energy over the course of the day. Individual meals might be really erratic, and most parents have seen that happen.

> If parents understand that children are neophobic, and that positive and pleasant experiences are important with new food, not coercive ones, a lot of things will be accepted

But we also saw a lot of individual differences in the way children did this, and we wanted to see what was driving them - why some children regulated really well and others didn't. This led to a student dissertation looking at children ability to respond to internal cues of hunger and satiety, and that led us to look at parenting practices, developing the idea that in regulating the food environment parents can redirect children from attending to internal cues of hunger and fullness to attending to all those other social and environmental cues that we all use as adults when we eat. Eating in adults is not really driven by repletion, there's a lot of other cultural and social factors. *(See sidebar – paper summary)*

Q: When given a choice and a range, will modern children feed themselves all the right food groups, or do they need guidance?

LB: They require some guidance. There used to be a theory that you had nutrient-specific hungers, that if you needed iron you would eat meat or whatever, but we have no data to support that. Children don't have to learn to like things that are sweet and salty, so what we need to do is present other foods and try to encourage them to learn to like these things, because they're not going to like them initially. You just have to be patient and persistent in presenting them. If parents understand that children are neophobic, and that positive and pleasant experiences are important with new food, not coercive ones, a lot of things will be accepted. If they have a better understanding of portion size, what amount children are likely to eat, and they aim for that, then it helps them to build children's preferences and acceptance patterns to a point where there's room for a lot of different things in the diet.

You can't sit back as a parent and wait for that to happen, because it won't. You could say it's the child's responsibility to eat and it's the parent's responsibility to offer things that allows the child to make a set of reasonable decisions.

Q: What have you found about why food becomes a battleground?

LB: Children learn very early on that a whole lot of power struggles are going to go on in their lives. They also learn that the GI tract is one place where they can really take con-

trol, whether we're talking about the input end or the output end, toilet training and all that.

Parents do end up being jerked around by children. I think their anxiety level is very high these days, particularly when we're talking about middleclass parents who are concerned about their children's health, both short- and long-term. One of the things that we need to do is allay the anxiety of parents; there's a number of ways to do that.

One is to make sure that parents understand what are appropriate portion sizes for children; adults often over-estimate them and children may be given two, three or four times what they actually need to consume.

Then parents get anxious when children don't eat those quantities. So if we can give them better ideas about what's appropriate in terms of portion sizes, that really does help. It's pretty straightforward information.

There's also a 'I've put my love and passion for you into providing that meal for you and you aren't eating it all' sort of rejection. The message is, you must consume all of this before I'll feel comfortable.

So the child's hunger cues say stop, but the parents say go on. So the child is getting a very clear message, don't pay attention to your internal cues, pay attention to how much is on your plate and what I'm telling you to do.

In a world like ours where there is so much food available all the time, teaching children to be attentive to the external environment rather than internal cues of satisfaction and fullness is a bad idea.

Work we've been doing that finds that children, by the time they're five, are pretty responsive to portion size. If you offer them larger portions they eat more. So do adults. Younger preschoolers, three-year-olds, cannot be so responsive – they tend to eat what they're going to eat regardless of portion size.

If children have the opportunity to self-serve in a family situation, they give themselves portions which are very highly correlated with what they eat and are very close to reference portions.

> Girls who are restricted tend to have more trouble controlling their own intake

There is evidence that they do know at some level how much they need, and we're pursuing that now; there's a whole bunch of questions there about whether that differs with the experience children have had with portion size, feeding patterns, body weight, and individual characteristics.

Q: Have you come up with any link between childhood feeding habits, obesity and later disease, either diabetes or eating disorders?

LB: We haven't been looking at the development of Type II diabetes but at overweight. Diabetes doesn't usually appear till early adolescence and our children aren't that old yet. But one focus of this longitudinal project is the emergence of dieting behaviour which I think is a precursor of a lot of disordered eating.

> Out cultural patterns have been changing more slowly than the food environment

What we're seeing is that children at age five don't diet and children at seven don't really diet – at least, our children don't though they talk about it. But at five years old, children know what diets are, why people diet and their knowledge levels are very tightly related to what their mothers are doing.

By age seven, we're seeing that mother's reported levels of body dissatisfaction and weight concern are related to their seven-year-old daughter's own levels of weight concerns and body dissatisfaction.

It's difficult – and it's scary. It's hard to know to what extent children are talking big and to what extent they are feeling these things and acting on them.

We're trying to use some protocols where we actually have the children eat and we see what's going on. We're getting dietary data, so if they tell us they're dieting we can see whether they're eating more fruits and vegetables – which we think would be a good thing – or whether they are skipping meals, doing things we definitely would not think are healthy.

Mothers who diet themselves tend to be more restrictive with their daughters. Girls who are restricted tend to have more trouble controlling their own intake. They tend to overeat even when they're not hungry. Probably – and this is the step we haven't yet seen – they start to use self-restriction and actually start to diet. Our children are now aged nine and ten so we're at the point where we may start to see some of this.

Q: Is obesity becoming an issue in the study?

LB: Yes. About 30 per cent of our children have been at or above the 86th percentile. And of course weight status is a very good predictor of dieting.

Q: Can you see why that's happened?

LB: It's got to be a combination of lower activity levels and greater intake, just that imbalance. We know it doesn't have to be that great but if it's chronic over time people are going to put on weight.

One problem is that our measurement tools for looking at activity levels and for looking at food intake are not very precise. People always want an answer – is it activity, is it food intake – and the answer is, it's both.

Q: Is three square meals a day still realistic? Is the grazing pattern just as valid or is there a nutritional reason to encourage one or the other?

LB: My sense is that there are a lot of different patterns in different cultures that work. If you eat three square meals and wander round the city you're probably going to be tempted to eat three not-very-square snacks throughout the day. That does get us into trouble.

Out cultural patterns have been changing more slowly than the food environment. So we still have this notion that we should be eating the traditional meals, but we've added all these other opportunities.

For preschoolers, the recommendation these days is three meals and three snacks a day. And a substantial portion of their intake should come from snacks.

Q: So what happens when they leave home?

LB: That's why you have to let them develop their own self-control or they really have problems. Suddenly all that pressure, coercion, restriction is gone - all bets are off, then they can be really in trouble.

There may be food deviation between 18 and 25, when they've got that extra freedom and then they come back and you start following a more balanced and healthy lifestyle.

Parental cues on food have potential long-term effects

Pressuring a child to 'eat up all your dinner' may end up in a child over-riding her normal feelings of appetite, hunger and satiety and responding instead to external and emotional cues. This is a major finding of research by Carper, Fisher and Birch which looked at five-year-old girls' eating habits and how their parents encouraged or discouraged their food intake.[1]

Research over the last decade has found that adult prompts to eat increase the likelihood that children will ignore their own feelings of fullness as a guide to stop eating. Restrictive feeding ('eat your dinner or you can't have pudding' and similar comments) may also discourage self-control, and children end up increasingly eating restricted foods whenever they are available, even when they are not hungry. Carper, Fisher and Birch note that 'highly controlling approaches to child feeding may have unintended effects on children's eating, by diminishing the extent to which children learn to use their own hunger and satiety cues to initiate and terminate eating.'

Their research involved interviews with five-year-old girls and questionnaires completed by their parent(s). The families were living the USA, and were mostly white middleclass couples in which the fathers (97 per cent) or both parents (63 per cent) were in employment. The girls were interviewed during two one-day 'camp' sessions and their parents provided written information separately in a two to three hour session. Questions covered 'restriction' items – 'Does your Mommy ever let you have snacks?' and 'pressure' items such as 'Does your Mommy make you eat all of the food on your plate?'

The researchers found considerable discrepancy between the girls' and parents' accounts of food restraints. Only a quarter of parents indicated that they pressured their daughters to eat, but nearly two-thirds of the girls said they were under parental pressure. Parents who reported more pressure in child feeding also tended to report greater levels of restriction, and their daughters felt the same combination of behaviours but to a greater extent. Among girls as young as five, one-third were reporting parental dietary restraint ('You've had enough to eat now' or 'no you can't have a snack now') even while their parents were saying they didn't use restrictive practices.

The researchers felt that the relationships they observed were in some cases reminiscent of infant feeding problems reported in the 1980s.[2] These found that a mother's pressure to eat and infant food refusal may become cyclic and ultimately result in the infant's failure to thrive. However, in this age group they had the opposite effect. 'Parental pressure to eat can be interpreted as explicit 'coaching' to continue to eat in the presence of food but the absence of hunger,' say Carper et al. 'Daughters may thus become increasingly responsive to external cues in eating, especially in the presence of palatable food, and these influences are apparent in girls by the age of five.'

The link between eating behaviour and parental food restriction was less evident. 'Although their responses may be relatively accurate predictors of their behaviour, they may also reflect girls' increasing ability to 'talk the talk' of dieting and weight control which has become normative among older girls, adolescents and adult women.

'Other research from our laboratory indicates that at least some five-year-old girls have already acquired a great deal of information about dieting and weight control,' they noted, this being especially evident if the mothers are current or recent dieters.

'For adults, high levels of dietary restraint and disinhibition can have adverse psychological and health outcomes, but little is known about the developmental origins of these behaviours,' the paper concludes. 'Our findings support the perspective that children's perceptions of pressure in child feeding may have unintended effects on the development of young girls' self-control of food intake, but encouraging the development of restrained and disinhibited eating.'

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1 Carper JL , Orlet Fisher J and Birch LL. Young girls' emerging dietary restraint and disinhibition are related to parental control in child feeding. Appetite (2000); 00:1–10.

2 Chatoor et al. A developmental approach to feeding disturbances... Zero to Three, February 1985, 12–16.

Q: Is that balance an inner experience or are you taught it?

LB: If you don't eat well you don't feel well. Children do learn about the physiological consequences of eating certain foods. They form preferences, they feel pleasantly full, they may develop aversions to foods if they feel sick after they've eaten them.

A lot of this doesn't work in young children because they operate on such a short time-frame, but older children do learn the short-term consequences of healthy eating, like trying to play three hours of tennis on one orange juice. In the case of our daughter, it took feeling really light-headed and feeling sick before she finally learned to anticipate what she needs to do.

Children have to learn to anticipate in a lot of things in life, and to learn to eat in an anticipatory way.... think about diabetic children, a challenging example where they really have to plan, especially in sport.

Q: What about peers?

LB: That's something we can turn to our advantage. A number of years ago when we were looking at whether the measures we used to get preferences from children were an indicator of what they actually ate, we'd get preferences for some snacks and then put them in a cocktail party type situation and see what they actually ate...what we saw was it was really a mess – one child would say, 'gee I'd like some more of those peanut butter things' and they'd all go and eat them! So it was clear there were some peer things going on, so I thought we might as well study it.

I did some work in preschools where we assessed children preferences for vegetables, and then we'd take the child who was in the minority and seat them with three to four other children who had the reverse pattern, serve them both vegetables at once and see what vegetable they chose after they'd watched everybody else choose the thing they didn't like.

> Everything that we know about weight control suggests that families need to be involved

By the end of the week, we saw the children choosing, trying or even eating significant quantities of the thing they said they didn't like. It seemed to be something that could be used to at least get the child trying things they said they didn't like. So we'd say to the parent, try this.

Q: If you get in your surgery a mother who is concerned about her child's obesity, is there a menu of things you can offer them to try, or is there one sure-fire way of dealing with it?

LB: There's a variety of different ways that depend on the social, emotional and cultural issues that might be going on. The first thing is, the doctor should check to see where that child is with regard to the growth stages and see if it really is an issue.

Then you probably should act. There should be recommendations both in ways to increase activity and to manage the diet. Everything that we know about weight control suggests that families need to be involved. So there need to be some readings about how much the parents were really concerned and committed to making some of the lifestyle changes that need to be made. It's not a quick-fix, it means making long-term changes for the whole family.'

Q: Is there a case for the family physician to be proactive, when they see a child coming in for other reasons e.g. immunisation, and noting that the child seems a bit thin or a bit overweight, to suggest changes?

LB: The clearest indication for a child becoming overweight is to have obese parents. So they should be able to see that coming. If doctors see the children climbing too quickly through the height-weight curves then they should recognise the problem. If physicians want to get involved, that's great.

Our experience in the US is that physicians are reluctant to suggest that there may be a problem because they don't know how to approach it, how to take the next step. The children's hospital here may have a list of websites. 'Prevention is really the way to go, because none of the treatment we have seems to work very well.