

Food Chaining – notes for presentation

Slide 1 Food Chaining

This presentation was originally given at the Dietitians in Autism educational meeting on the 31st January 2015 by Emma Mills from Brain & Body Nutrition.

The theme of the meeting was Difficult Feeding Behaviour and Nutritional Consequences and this presentation is about Food Chaining.

I am not an expert in Food Chaining but I have read the original book and this presentation aims to highlight those areas that I found particularly relevant to those of us working with autistic children.

Slide 2 Quotation

So let's start with this particularly good quotation from one of the contributors to the book.

It states that.....

“One of the most common myths about eating is that it is easy and instinctive”

.....which is probably why it causes so much anxiety to parents when things start to go wrong at mealtimes.

In fact.....

“Eating is actually the most complex physical tasks humans engage in”

This sentiment is something we should always try to relay to parents so that they can learn to appreciate how differently their child experiences food and eating.

Slide 3 What is Food Chaining?

So what exactly is food chaining?

Well it's very similar to food exchanges in that it's a treatment approach that is based on foods that are already liked, building upon successful eating experiences.

Unlike food exchanges that are linear, food chaining branches off in many different directions depending on whether the child accepts or rejects a new food.

So, as with food exchanges, food chaining starts with core foods that are then matched to foods with similar sensory characteristics or variants of the original with sauces often used to 'mask' new flavours.

Slide 4 Core Foods

Core foods are those which are eaten reliably at home, in school and at other people's houses which will obviously be individual to each child.

These core foods are then categorised according to their sensory properties, such as colour, shape, taste, texture, smell and not forgetting temperature which can also be a key factor.

New foods to try are then matched according to these properties, as with food exchanges.

Slide 5 Flavour Mapping

This process is termed **Flavour Mapping** in the book and categorises foods according to **taste** (sweet, salty, sour, bitter) and

texture (crunchy, soft, does it have a uniform texture or does the texture change as you chew ?)

...not forgetting that sometimes there can be a reliance on **fluids** which can have huge implications for nutrition and dental health.

Slide 6 Food Exchanges

So let's go back to core foods and setting up food exchanges by taking a look at a couple of examples which I have used successfully with my clients.

One child ate lots of gammon which we categorised as pink, firm, salty, hot and rounded which I matched to cooked prawns which are pink, firm, hot and round and can be made salty by the addition of salt or soy sauce. This pinky, fishy food also seemed to help him accept salmon having only eaten white fish up until then.

Another child liked mozzarella cheese which is white, soft, mild and cold which I matched to halloumi cheese which is white, soft-ish, mild and cold. Once accepted, more soft cheeses were also accepted over time.

Slide 7 Example

So to see how food chaining takes food exchanges a step further, take a look at this example taken from the book.

The core food is McDonald's chicken nuggets.

It is interesting to note that fast foods are often core foods as they are uniform and predictable with little discernible variation compared with home cooked meals which can vary considerably each time you make them.

so initially

- different brands of chicken nuggets are tried until one or some are accepted
- these can then be dipped in different sauces until a wider range of flavours are accepted

I think this is a brilliant idea as there are so many different sauces that can be tried and the amount tried can build up gradually with the child in control of the dipping

Eventually a battered chicken nugget can be tried as this is a new texture.

Gradually other variants would be tried such as **homemade breaded chicken strips** then **breaded chicken pieces of different shapes** and then **breaded fish** and things like **breaded pork tenderloin**.

All of these newly accepted foods can then be tried with different sauces to build up a greater range of flavour and texture combinations.

Slide 8 Food Chaining Rating Scale

The book uses a food chaining rating scale which breaks down all the possible reactions that a child can have to a food.

It starts at **1** with **gagging or vomiting upon touching, smelling or even seeing the food** and goes up to **10** when the child **chews and swallows the food and accepts it at any time**.

The rating scale is recommended to chart progress and evaluate change over time.

I certainly think that it could be useful to reassure parents and show them that some foods already have high scores as they can often lose sight of what the child **is** eating and focus more on what they are rejecting.

Slide 9 Sensory Hierachy

The book also refers to the sensory hierarchy, which we have covered previously at the sensory processing disorder meeting, which essentially works to **desensitise** the child to a new food so that they are more likely to accept it.

It is crucial that a child moves SLOWLY through the sensory hierarchy in order to help them EXPAND their TOLERANCE of different foods.

This means **tolerating**....

being in the same room as the food

the **sight** of the food

the **smell** of the food

the **feel** of the food in your **hands** (with or without cling film)

the **taste** of the food (even a single lick)

biting the food (front teeth, spitting out)

chewing the food (moving food to back and sides of mouth, spitting out)

and eventually **swallowing** the food (even tiny, tiny pieces)

Slide 10 Challenging Foods

The book also highlights known challenging foods which certainly resonated with my own experiences.

The texture and consistency of some **meat** can often make children feel unsafe eating them...they can fill the mouth space and take a lot of effort to chew and breakdown.

Although for social reasons this can be problematic in some families there is little nutritional concern to children avoiding certain meats and easy to eat alternatives can be tried such as braised meat, finely minced meat and pate, as well as other protein foods such as fish and chicken.

Unfortunately, fruits and vegetables are often rejected because of their sensory features. They can have multiple textures that change throughout the process of biting and chewing plus juices squirting out is unpredictable and therefore not acceptable to many.

The nutritional hazard to avoiding fruits and vegetables is massive and so alternatives must be tried on an ongoing basis.

I have had some successes with vegetable dips (blitz together tinned, cooked beans, frozen peas and broad beans with olive oil, salt, pepper and fresh herbs until really, really smooth) and thick, blended vegetable soups. In both cases bread, crackers or toast can be dipped in.

Fruit smoothies and real fruit milkshakes can also work well if blitzed thoroughly and poured through a fine sieve.

Tinned fruit can often be more readily acceptable because it is more uniform in terms of appearance and texture.

Slide 11 Food Chaining and Autism

So let's now look in a bit more detail about food chaining and autism.

Sensory Processing Disorder is a huge part of feeding difficulties with children who have autism and the book covers this in great detail. As previously mentioned, we have also covered this in a previous meeting so I will not go into detail here but copies of the presentations by the feeding specialist SALT and OT are available on request from Dietitians in Autism.

Children with autism don't always eat out of hunger....so be aware....the book gives an example of a child that drank lots from a spill-free cups but they discovered that he liked the feeling of resistance that he got from the valve and combined with the predictable taste of the juice it was a safe and pleasurable experience that had little to do with thirst or hunger.

Obviously displacement of solid foods and dental health were the main concerns but they needed to understand what exactly was going on with this child before they could try any changes.

Slide 12 Food Chaining and Autism

The rigidity and order that a lot of children with autism exhibit in terms of them noticing minute changes to food packaging, recipe alterations could in fact be a missed opportunity.

These children have a huge capacity to learn about food which can help them engage more in food related activities rather than it always be about eating and all of the pressure that can come with that.

For example, **counting** the number of plates, knives, forks on the table

the number of potatoes peeled to make mash

the number of orange segments in a tin

A parent in the book stated that children with autism classify foods into those they will eat and those they will not !! So try to classify foods in more positive ways like...

foods that come from animals

foods that are plants

foods that grow above the ground, below the ground, on trees

foods that are matching colours

Measuring and transferring foods from different containers, weighing them, comparing volumes will encourage handling food and desensitise sensory issues.

Food trips to open days at farms, food factory visits and farmers markets all encourage a greater understanding of where food come from and introduce lots of other information and processes to learn about.

Children with autism often lack the ability to predict what a new food is likely to taste or feel like so we need to teach them the **art of prediction**.

Offer lots of descriptive detail about every type of food they encounter whether they eat it or not. The book uses the example of a carrot....it is a vegetable that is grown from a seed in the ground. The orange part is the root which grows below the ground and the green leaves grow above the ground. We eat the orange bit of the carrot and it is crunchy and sweet. It is safe to be eaten raw which will make it more crunchy and hard but cooking makes it softer. It is a vegetable but can be used to make carrot cake.

Use lots of visual aids and positive reinforcement to encourage the child to take part in this activity.

You must make it clear that the child does not have to eat any of the foods discussed just take part in the activity.

Slide 13 Practical Advice

The book does offer lots of practical advice but much of it wasn't especially new to me so I have not included many of them in this presentation. Some of the key points worth a mention though are...

Give **advance warnings** about meals....Selina SALT often talks about using the words **first** and **then** to help with mealtimes...for example, first you can watch your TV programme then we will have a biscuit with some blackcurrant juice

Give **food choices**

Not every meal needs to be part of the food chaining...this takes the pressure off parents and child

No grazing...time meals and snacks wisely

Motivate your child to succeed with **rewards** and **privileges**

Recommend parents to only cook **very small portions** initially to avoid excessive waste

Slide 14 Recommendation

I would highly recommend reading this book as I have found it extremely helpful.