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Mindful Eating

PSYCHODIETETIC PROGRAMME

Katarzyna Wojtkowska
Julia Barlińska

SECONDARY SCHOOL

TEACHER'S MANUAL

Adapted by:

Tess Capper
Michelle McKinley
Jayne Woodside

Authors: Katarzyna Wojtkowska & Julia Barlińska

Adapted by: Tess Capper, Michelle McKinley, Jayne Woodside

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The educational program "Mindful Eating" was developed by a multi-disciplinary team EIT Food School Network: University of Warsaw, Queen's University of Belfast, University of Helsinki, University of Reading, AZTI, Grupo AN.

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Mindful Eating Educational Programme

We are happy to present you with the first EIT Food School Network educational programme on Mindful Eating. The programme is designed to enhance mindfulness of the eating process among pupils at three different levels of education: preschool, primary school aged 10-12, and secondary school.

The Mindful Eating educational programme aims to increase pupils' ability to identify signals coming from the body (hunger and satiety) and to experience sensations associated with eating. It also aims to motivate pupils to actively reduce food wastage.

The programme has been developed under an international grant from EIT Food, a body of the European Union, and the project "The EIT Food School Network: Integrating solutions to improve eating habits and reduce food wastage." It was developed by a multi-disciplinary team that includes researchers from four countries: Spain, Finland, the UK, and Poland. In Poland, the project was led by the Faculty of Psychology, University of Warsaw, where the Mindful Eating materials were developed. These were then reviewed by educators and nutrition experts in Poland and other participating countries.

What is Mindful Eating?

As is the case with many scientific concepts, there is no universally agreed concise definition of Mindful Eating. In the Mindful Eating Programme, the idea of Mindful Eating is grounded in three theoretical approaches.

The first approach defines mindful eating (ME), as pure awareness of physical and emotional states associated with eating, devoid of any judgement or evaluation. Mindful Eating programmes based on this definition focus on raising awareness of bodily sensations experienced while eating, especially physiological sensations of hunger and satiety, in order to train participants in differentiating those sensations from psychological sensations that draw people to eating, such as boredom or anxiety. Research in ME proves that eating mindfully makes it more pleasurable and facilitates the sensation of satiety, thus helping people to maintain a stable, healthy body weight [1].

The second approach defines mindful eating as intuitive eating (IE). IE is understood as the practice of consciously choosing to eat foods that enhance the functioning of our bodies. Programmes grounded in this approach do not divide foods into "good" and "bad", nor do they propagate the idea of a healthy diet as a restrictive diet. Instead, the programmes focus on teaching people how to expand the experience of eating beyond the awareness of sensations of hunger and satiety to other signals coming from the body (all senses, body temperature etc.) and the surroundings (food packaging, meal presentation, the influence of distractions on one's appetite). In this way, IE develops the ability to self-regulate i.e. differentiate hunger from satiety, to know when to eat and how much [2].

The third way to define mindful eating is to define it as caring about food at various stages of its preparation – 1) planning food, 2) shopping, 3) storing food, 4) cooking, 5) eating, and 6) dealing with waste. This perspective on mindful eating reaches beyond the level of individual experience, making us think about food in global, environmental terms, with the focus on reducing food wastage (FW).

Our Mindful Eating educational Programme is based on a hybrid definition of Mindful Eating, which integrates the following elements of the three approaches to mindful eating described above: teaching participants to recognise physiological sensations of hunger and satiety (ME), to identify a greater variety of bodily sensations (IE), and to raise environmental awareness of food wastage (FW).

While scientific approaches to Mindful Eating provided the theoretical framework for our programme, its structure was also dictated by various needs and capabilities of its participants – children and adolescents of different ages. The project goals, class content, and specific exercises were designed differently for various age groups, for example, the topic of food wastage is present only in the programme for secondary school pupils. Similarly, the programme for pre-schoolers focuses exclusively on sensations coming from the stomach. These differences are a result of numerous consultations with educators at different educational levels, dietitians, and mindfulness experts in all four countries involved in the project; these consultations aimed to direct self-awareness opportunities for children of different ages. This being said, it needs to be stressed that the following lesson scripts only address three lesson slots due to the general overload of classes in educational institutions, therefore, the scripts should only be treated as an introduction to eating mindfully. In other words, the programme sets general foundations for the pupils' acquisition of competence in Mindful Eating, and teaches basic skills and abilities, which need to be repeatedly and patiently practiced later.

What are the effects of teaching Mindful Eating?

The Mindful Eating educational programme is an opportunity for educational institutions to enrich their curricula with elements of nutrition science and psychology. In order to prevent obesity among pupils, it is crucial that children, especially the youngest, and their parents have knowledge about healthy eating habits [4] [5]. Preschool and primary school are periods of a child's rapid psychophysical development, and a healthy diet is the source of all nutrients necessary for their healthy growth and development [6] and adequate functioning of their systems and organs [3]. It also influences their sense of well-being and their behaviour [7]. Scientific research confirms that healthy eating is also correlated with children's ability to study and learn [5]. There are correlations between fat consumption and intelligence [8][9], between the shortage of polyunsaturated fatty acids and children's

difficulties with reading, spelling, and memory tasks [10], and between unhealthy eating and emotional and social functioning of children (trans fats in crisps and sweets correlate with a upsurge of aggression and irritation) [11].

Eating is not just a way to eliminate hunger. It satisfies various psychological and social needs, and is an important factor in our healthy physical development and mental stability [12] [7]. Unhealthy diets lead to overweight and obesity, which is a growing psychological and social problem, globally [4]. Therefore, it is important to look for methods to reverse this dangerous trend. Being overweight not only lowers the quality of our lives but it may also be the cause of shorter life span and various health problems. According to research on European adults, overweight and obesity are responsible for 80% of cases of Type 2 diabetes, over half (55%) of all cases of high blood pressure (hypertension), and more than one-third (35%) of all cases of coronary artery disease.

Obesity in childhood increases the risk of being overweight in adulthood by 94% [4]. It has been demonstrated that obesity at the age of six carries a 25% risk of obesity in adulthood, and at the age of twelve predicts obesity in adulthood with 75% accuracy [12]. For those reasons, it seems necessary that preschool educators begin to incorporate into their teaching the topic of healthy eating habits grounded in the Mindful Eating model.

Teaching Mindful Eating offers multiple benefits in terms of physical and mental health and the amount of food we consume. If we know that adults benefit from practicing mindful Eating, then teaching it to children promises to be an effective method of obesity prevention. This is because Mindful Eating has been shown to decrease the levels of bad cholesterol and other fats (triglycerides), and lower blood pressure¹, body weight, and levels of C-reactive protein (a marker of inflammation)² [13]. As for psychological benefits of Mindful Eating programmes, their focus on awareness has lowered participants' habits of obsessive dieting, bulimic and depressive tendencies, and dissatisfaction with one's body image [14]. Finally, we have

¹ Fifty-two days after completion of the programme among adult women.

² Observed over a period of twelve weeks in a group of obese patients.

noted a decrease of food portions consumed by programme participants due their ability to recognise satiety faster [14].

Overall, Mindful Eating fills the gap in traditional interdisciplinary projects in obesity prevention and treatment in children and adolescents by offering a new psychological perspective of Mindful Eating [15]. From this perspective, the key element in teaching people how to eat healthily and moderately is self-regulation: learning how to identify sensations of hunger and satiety. Since studies show that problems with self-regulation in early childhood predispose children to be overweight in the early stages of puberty [16], children should learn how to eat mindfully as early as possible.

Mindful Eating programmes have shown positive results in eliminating participants' tendencies to eat under the influence of emotions e.g. binge eating or dieting [17]. Since mindfulness and mindfulness-based interventions have been rapidly developing for over 20 years, data gathered on psychological benefits of Mindful Eating [18] proves the mindfulness method to be efficient in improving individual well-being and social relations in the school environment [19].

What is mindfulness?

Mindfulness is a mind-set in which, in an open, non-judgmental, and engaged way, we focus our attention, thoughts, feelings, and sensations on the present moment. The philosophy of mindfulness is rooted in diverse Eastern and Western meditative traditions, which date back two and a half millennia. The main idea behind mindfulness is to be consciously present in the here-and-now of what one is doing at a given moment. It is important that this experience be completely devoid of judgement and thoughts about the past or the future. Being lost in thought is unavoidable, but the core of the mindful mind-set is to recognise when and where our thoughts wander and always to return to the present moment. In order to develop the ability to be mindful to the here and now, one ought to engage in a specific activity – whether it is breathing or eating – with one's attention and

senses wholly focused on the activity, without trying to achieve any goal in the process. For instance, if you are drinking tea, just feel how it goes down your throat, its temperature, taste and aroma. Studies show that if we try to be mindful to simple activities such as drinking tea in this way for at least a couple of minutes a day – although 20-40 minutes brings the best effects – the results of such meditation are highly beneficial for our health, mental balance, social relations, and the functioning of our brain.

What is food wastage and why is it an issue?³

Food wastage is a serious problem of our times. Nearly one-third of the world's food is being wasted. While many people have nothing to eat or eat the cheapest products, millions of kilograms of uneaten food end up in landfills. According to 2006 Eurostat data [20], Europe wastes 88 million tonnes of food on a yearly basis, with the UK, Germany, France, the Netherlands and Poland being the biggest food wasters. The Waste and Resources Action Programme (WRAP) report shows that 250,000 tonnes of household food that goes to waste each year in the UK is still edible, and would make up 650 million meals [21].

The products we throw away most often are fresh vegetables and salads, drinks, fresh fruit, and bakery (e.g. bread) [20] [21].

In order to tackle the issue of food wastage, we need to understand its causes and recognise the negative effects it has on society, economy and environment. It is only by addressing the causes that we can actually find ways to prevent food wastage that could be easily applied in households, food factories, warehouses, and shops.

Food is most often wasted for the following reasons [20]:

- Food rotting
- Overlooking expiry date
- Serving too large portions

³ The material was prepared in cooperation with the SOS Food Bank in Warsaw.

- Over-shopping
- Unplanned shopping
- Buying food in bulk
- Improper storage
- Buying low quality products
- Lack of ideas for how use products

How does food wastage affect the environment?

One of the most important consequences of food wastage is climate change. The food industry contributes to the greenhouse effect by emitting methane and carbon dioxide at all stages in the food production chain - agriculture and farming, transportation, processing of primary products, and finally food distribution and consumption. The further down the chain the product is, the greater the chance of its wastage i.e. at the household level. One tonne of wasted food produces four and a half tonnes of greenhouse gas.

Food wastage affects the environment in other negative ways. It exploits water reserves, causes soil degradation due to land cultivation, and negatively influences the world's biodiversity. Food wastage is also the wastage of natural resources such as oil, energy, and water; the latter being most affected by the wastage of fruits and cereal products. One cheese sandwich thrown away means wastage of 90 litres of water. One litre of milk wasted = thousand litres of water wasted. In Europe, the loss of water as result of food wastage currently reaches the level of 27 cubic metres per person, per year.

The problem of food wastage has negatively influenced various aspects of our lives. The good news is that, surprisingly, little is needed to minimise it. Since most wastage occurs at the household level, households are where we should begin implementing changes to address the problem of food wastage. The best way to do that is by educating people about how to waste less by raising their awareness of wastage and thus building a responsible society and reducing one of the world's biggest environmental problems.

What can we do reduce the problem of food wastage?

Everyday household activities in relation to food should be divided into three stages: before shopping, while shopping, and after shopping. Each stage is an opportunity to think about what we do with food and reduce wastage.

1) Before shopping

- Plan meals for at least two to three days ahead
- Check if you have the ingredients to cook those meals
- Check expiry dates of products in the fridge and cupboards
- Create a shopping list
- Eat a meal, so that you don't buy more than you planned (don't shop hungry)

2) While shopping:

- Follow your shopping list strictly
- Do not buy products on sale
- Chose products with longer expiry dates
- Chose undamaged products (no rot, no broken packages)
- Put products that require cooling and freezing into your cart last and always carry a thermal bag with you
- Buy single bananas and wonky vegetables and fruit

3) After shopping:

- Store products properly
- Pay attention to storage conditions provided by the manufacturer on the packaging. Some foodstuffs need to be put in the fridge or freezer, but many may be safely stored at room temperature.

The fridge is the place for food that needs to be stored in low temperatures:

Highest shelf – already cooked meals (leftovers), jams, and preserves

Middle shelf – cold meats, dairy products (cheese, yoghurt, butter) and salads

Lower shelf – raw meat, fish, seafood. Store them only for one to two days. Raw meat should not be stored next to other products

Drawers – specific fruits and vegetables (salad, broccoli, raspberries, blueberries). Some of the fruits and vegetables that we should not store in the fridge are tomatoes, cucumbers, courgettes, exotic fruits and bananas

Door shelves – mustard, ketchup, eggs, milk

Freezer – Freezing is an excellent way to prolong the life of a product but not all products should be frozen. Products that should not be stored in this way are: 1) watery fruits and vegetables (watermelon, oranges, cucumber, and radishes), 2) cooked rice, pasta, potatoes, 3) hard-boiled eggs, 4) products that have been defrosted once already or are not fresh 5) mayonnaise and sour cream.

Finally, there is a time limit for how long each product may be stored in the freezer:

- Bread – 3 months
- Fruits – 8-12 months
- White fish (e.g. cod) – 6 months
- Oily fish (e.g. salmon) – 4 months
- Poultry (chicken and turkey) – 8-9 months
- Minced poultry – 7-9 months
- Minced red meat – 2-3 months
- Cooked meat, soup – 3 months

Room temperature is for storing such products as bread, honey, herbs, and coffee, dry products such as flour, sugar and pasta, dried fruit, and fresh

fruits and vegetables such as potatoes, tomatoes, bananas, oranges, lemons, and avocados.

Last but not least, follow these general rules:

- Be creative and cook meals using only what you have in the fridge
- Process, preserve, freeze
- Pay attention to expiry dates
- Serve smaller portions
- Share with others

All of these rules are easy to follow and there are no costs involved. Small changes in our activities related to food and our awareness of how we shop, cook and eat may have profound effects on the problem of food wastage and our environment.

LESSON SCRIPTS for different educational levels

The Mindful Eating educational programme is designed for pupils at three educational levels: preschool, primary school, and secondary school. Depending on the educational level, the programmes differ with regard to their contents, intensity and duration: from 45 minutes total for pre-schoolers to 3x45 minutes for secondary school pupils. The goals of each of the version of the programme are also tailored to the needs and maturity of their participants.

MINDFUL EATING EDUCATIONAL PROGRAMME			
EDUCATIONAL LEVEL	PRESCHOOL	PRIMARY SCHOOL	SECONDARY SCHOOL
GOALS	1) Developing mindful eating		
	2) Enhancing the ability to recognise cues coming from the body		
	3) Increasing the ability to differentiate between the states of hunger, being half full, full, and too full		
		4) Increasing of the ability to differentiate between physiological and psychological sources of hunger	
			5) Increasing awareness of the problem of food wastage in daily life
TEACHING EFFECTS	<ul style="list-style-type: none"> • Pupil can differentiate physiological sensations of hunger and satiety • Pupil learns how to identify the sensations of being hungry, half-full, full, and too full • Pupil recognises sensations related to food (e.g. different tastes, temperature, bite sizes, texture, and spiciness) • Pupil is aware that the effort to focus on the meal improves the quality of the eating experience • Pupil is equipped with basic knowledge of mindful eating which he/she can use and perfect in the future 		
		<ul style="list-style-type: none"> • Pupil differentiates between physiological and psychological sources of hunger 	
			<ul style="list-style-type: none"> • Pupil has the awareness of the problem of food wastage when making shopping lists, shopping, preparing meals and eating
LONG-TERM GOALS AND TEACHING EFFECTS	1) Increased self-regulation in relation to eating		
	2) Prevention of overweight, obesity and eating disorders		
	3) Popularization and consolidation of the healthy habit of eating vegetables		
	4) Sensitivity to the problem of food wastage		
	It is highly recommended that parents be invited to participate in the project, be it by distributing brochures and information during parent-teacher conferences or via email.		

All materials needed to implement the “Mindful Eating” programme are available for download and printing online from the Institute for Global Food Security, Queen’s University Belfast or EIT Food School Network website:

- <https://www.qub.ac.uk/Research/GRI/TheInstituteforGlobalFoodSecurity/EITFood/>
- <https://www.foodunfolded.com/series>

Programme participants: PRESCHOOL – children aged 3-6:

Structure and timing:

- a) Lesson 1 (approx. 20 minutes)**
 - Regulating hunger and satiety. Exercise: How can your tummy feel?
- b) Lesson 2 (approx. 20 minutes)**
 - Mindful eating. Exercise: What do you feel in your mouth?
 - » focus on taste (salty, sweet, bitter, sour, umami).
- c) Lesson 3: Our display (approx. 20 min)**
 - children are given A4 size colouring pages titled “TUMMY”, representing the four stages of satiety, and colour them in. The finished pages are then arranged into a display on the wall.
- d) Lesson 4 (approx. 20 minutes – extended version)**
 - Mindful eating. Exercise: What do you feel in your mouth?
 - » paying attention to temperature, size of bites, texture, and spiciness of the food.
- e) Exercises during lunch each day (for 2 weeks)**

- Before the meal:
 - » Hunger-satiety regulation → How does your tummy feel? Presentation of pictures and choice.
 - » Hunger-satiety regulation → How does your tummy feel when it wants to eat?
 - » Hunger-satiety regulation → How does your tummy feel when it wants to stop eating?
- After the meal:
 - » Hunger-satiety regulation → How is your tummy? Presentation of pictures and choice.

Depending on the age and needs of the children, the lessons can be carried out individually or combined.

Equipment: computer, projector or educational board to show the posters, colouring and writing tools.

Programme participants: PRIMARY SCHOOL – pupils aged 8-11:

Structure and timing:

- a) Lesson 1 (45 minutes)** – Regulation of hunger-satiety mechanism
- b) Lesson 2 (45 minutes)** – Mindful Eating – “What do we feel when we eat?”
- c) One exercise during lunch, every day, for two weeks**
 - Before the meal:
 - » Regulation of hunger-satiety → “How does your stomach feel?” Pupils are shown pictures and chose images

- » Regulation of hunger-satiety → “How does your stomach feel when it wants to eat? How does your stomach feel when it wants to finish eating?”
- After the meal:
 - » Regulation of hunger-satiety → “How does your stomach feel?”
Pupils are shown pictures and chose images

Teaching methods: The sessions are meant to be a fun activity. The forms used are mini-lecture, a cartoon, exercises, and discussion. During the lesson, three posters can be displayed that demonstrate:

- 1) **Various physiological states** (hunger, being half-full, full, and too full),
- 2) **The state when you start and stop eating** (stomach empty and half-full),
- 3) **Mindful eating** (inspiring curiosity and engaging senses in the sensations arising from the process of eating).

Equipment: computer, speakers, projector or educational board to show the animated cartoon.

Programme participants: SECONDARY SCHOOL – pupils aged 14–18:

Structure and timing:

- a) **Lesson 1 (45 minutes)** – Regulation of hunger-satiety mechanism
- b) **Lesson 2 (45 minutes)** – Mindful Eating – what we feel when we eat?
- c) **Lesson 3 (45 minutes)** – Food wastage prevention
- d) **One individual homework exercise** per week (two weeks)

Please note, depending on your capacity and time, lessons can be split into more units or the class can be divided into smaller groups to deepen the experience.

Teaching method: The lessons take the form of a workshop. The forms used are mini-lecture, a cartoon and/or TED talk, exercises, and discussion. During the lesson, three posters can be displayed that demonstrate:

- 1) **Various physiological states** (hunger, being half-full, full, and too full)
- 2) **The state when you start and stop eating** (stomach empty and half-full)
- 3) **Mindful Eating** (inspiring curiosity and engaging senses in the sensations arising from the process of eating).

Equipment: computer, speakers, projector or educational board to show the animated cartoon/TED talk, Internet access.

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