

# Influence of the physical environment on eating behaviour

## Fact sheet

**Travelling, at the station, at supermarket check-outs, at work, at school, etc.: you encounter food almost everywhere. Food is readily available almost everywhere, and what is on offer is predominantly unhealthy. The environment can tempt people into unhealthy eating behaviour. This can ultimately cause people to become overweight.**

The extent to which people are tempted into unhealthy food choices depends on factors such as the physical environment (food that is available in the environment) and “internal” factors (how people make food choices). You can get people to make more healthy food choices by helping them to resist temptations. That can be very difficult, as many decisions are made unconsciously. Another strategy is to change the environment. This is because the environment can be designed in a way that actually encourages healthy behaviour.<sup>1</sup>

This fact sheet discusses the physical environment in relation to diet and the way people make food choices within that environment. It goes on to present ways of helping people make healthier choices. While they are undoubtedly important, the political environment (regulatory frameworks), the economic environment (cost of healthy and unhealthy diet) and the socio-cultural environment (influence of social environment) are disregarded in this fact sheet.



### For whom is it relevant?

As a background document, this fact sheet would be of interest to anyone who, in everyday practice, works with people who find it hard to resist food temptations in the environment. Dietitians and weight consultants, for example, can help their clients to deal with this issue.

The fact sheet would also be of value to those involved in designing food environments. These might be policymakers at local authorities, neighbourhood communities, schools, businesses and supermarkets. They can ensure that the healthy choice becomes the easy choice. Manufacturers and caterers can also draw inspiration from this document. They could make the environment healthier, for instance, by offering smaller portions and more healthy products.

### What issues are involved?

In recent decades, it has become ever easier to opt for the excessive consumption of high-calorie foods.<sup>2,3</sup> A great diversity of tasty and cheap food is available almost everywhere.<sup>4</sup> The number of points where food is for sale are also very densely distributed.<sup>5</sup> The most important changes over the course of time have been food's increase in accessibility, as well as its more noticeable presence and falling price.<sup>6</sup> The environment invites people to eat (to excess) at any time.<sup>4</sup>

### The obesogenic environment

An environment that promotes high energy intake and low energy expenditure is referred to as an obesogenic environment.<sup>4,7</sup> According to this definition, the Netherlands, too, could be considered an obesogenic environment. The combination of an excess of high-calorie food, and limited physical activity ensures that people can easily take in more energy than they expend. As a result, people can become overweight. In this way, the obesogenic environment is largely responsible for the obesity epidemic.<sup>4,8</sup>



### Scientific state of the art

The obesogenic environment can tempt people into unhealthy eating behaviour. This can ultimately cause people to become overweight. The extent to which people are tempted into unhealthy food choices often depends on the following factors.

#### Availability

Research shows that if food is easy to obtain, people will eat more of it.<sup>9</sup> Exposure to food increases people's desire to eat, to eat larger quantities, and increases the actual amounts that they eat.<sup>10,11,12</sup> People are more likely to eat food that is within easy reach, and less likely to eat food that is difficult to access.<sup>13,14,15</sup>

#### Portion size

Portion size is an important factor in the obesogenic environment, and affects the amount that is eaten.<sup>16,17</sup> In recent decades, portions of energy-dense foods in the Netherlands have been getting steadily larger. Larger sizes have been introduced, the portion sizes of various products have increased, multi-packaging has been introduced, and the number of individual items in multi-packs has increased. When people are offered larger portions, their energy intake increases.<sup>18,19</sup> Consumers are tempted to eat larger portions because the price is relatively low and it is seen as being better value for money.<sup>18</sup>

Consumers are often unaware of what constitutes an appropriate portion size. They have come to see the large portions that are now available as an appropriate amount. This effect is known as "portion distortion". It is influenced by the following aspects:

- Large amounts have become the standard. Cappuccino, for example, can be offered in three different portions: small, medium and large. The term "medium" implies that this is a normal amount. In reality, however, "medium" is a large amount. Thus, "small" is a normal amount, and "large" is an extra large amount.
- Portions served in public places often greatly exceed the recommended, healthy portion size.
- When a range of different sizes are provided, people tend to opt for "medium", "regular", or the middle option.<sup>20</sup> Thus, as additional larger sizes become available, the middle option shifts to a larger size and is seen as normal.
- There are no standards for what constitutes "small", "medium" and "large".<sup>21</sup>

- “Unit bias” may play a part.<sup>22</sup> People tend to think that a single package is the correct amount to eat, while the package actually contains several portions. This is the case with half-litre bottles of soft drink, for example. One bottle seems to be a single portion, but it is actually equivalent to two glasses. The same goes for chocolate bars in which two pieces are packaged together. The text on the package states that a single piece is a portion, but because they are packaged together, it suggests that both pieces are a single portion.

### Behaviour

Broadly speaking, human behaviour is controlled by two cognitive systems: the reflective system and the impulsive system. The reflective system is based on rational choices and is largely conscious in nature. It is based on conscious reasoning, and choices are preceded by consideration. This system, therefore, requires time and energy. The impulsive system controls behaviour in an automatic and spontaneous way. Impulsive processes are initiated by a particular environmental cue. The impulsive system subsequently controls our behaviour rapidly, effortlessly and unconsciously. When a traffic light turns red, for example, you automatically apply the brake. In that instant, the red light is the cue and braking is the associated automatic behaviour. Habits are often involved, which makes it difficult to intervene in these unconscious processes.<sup>23,24</sup> Everyday actions are often habitual behaviour: behaviour that is often performed in a given situation. After repeatedly displaying such behaviour, people no longer consciously weigh up the pros and cons of the behaviour. On the contrary, exposure to the situation (time and place, for example) itself is enough to activate the impulsive behaviour.<sup>25,26</sup>

Research has shown that people make about 200 food choices every day.<sup>27</sup> These include things such as whether or not to eat a snack between meals, and which vegetables you eat for dinner. People have neither the time nor the energy to use the reflective system for every single decision.<sup>28</sup> Thus, in many of these 200 food-choice situations, eating behaviour will be determined by the impulsive system, which means that it is being controlled unconsciously. Research has shown, for example, that habit is the strongest predictor for unhealthy snacking.<sup>29</sup>

### Cues

When people are hungry and thirsty, food (or eating and drinking it) can act as a given cue. The sight of a bar of chocolate, for example, is rewarding for someone who is hungry, and this can prompt them to eat it.<sup>26,30</sup> But environmental cues can also trigger behaviour in

the absence of hunger or thirst, simply because the person in question has had positive experiences with that behaviour.<sup>31</sup> In the case of the bar of chocolate, for example, the positive experience might have been that it was very tasty. Thus, in given situations, cues will activate learned behaviour. In other words, the sight of food ensures that the associated natural behaviour of “eating” is also performed. As research has shown: habits are directly activated by environmental cues.<sup>32</sup>

### Self-control

Human behaviour is largely controlled by impulses, such as habits. This tendency is further enhanced by the fact that people suffer from a poor self-control. Even those with a great deal of self-control have their limits in this regard. This is because exercising self-control takes effort. Self-control is subject to “ego depletion”, or depletion resulting from the exercise of self-control.<sup>33</sup> This can be compared to muscles, which may become fatigued after exercise, requiring a period of recovery before they can function optimally again.<sup>34</sup>

### Quick decision rules (heuristics)

Heuristics are a way of making quick decisions. These are efficient cognitive processes in which part of the information is omitted, and energy is saved when completing an action.<sup>35,36</sup> At times when people have little self-control, they tend to use heuristics as an impulsive decision strategy, as these require no energy to reach a decision.<sup>37,38,39</sup> Also, when they act unconsciously, consumers are “more vulnerable” to making use of simple heuristics.<sup>37</sup>

One example of a heuristic is the tendency to go along with the choice made by large groups of people (social proof). For instance, if everyone else in a cafeteria chooses salad, then you are more likely to choose the salad.

When people make quick decisions based on heuristics, they rely on characteristics like what something looks like, familiar pictures, shapes, sizes, logos, brands, and prices.<sup>40</sup> One example (as previously mentioned, in connection with “portion distortion”) is the tendency to opt for “medium”.<sup>20</sup> This is because options have been shown to be more attractive when they are placed in the middle (i.e. “medium”) of a range of three options.<sup>41</sup> This effect is caused by people’s tendency to see the product in the middle as the most popular one.<sup>42,43</sup>

Heuristics can also be used to help people make healthier choices at precisely those times when they lack self-control. For example, by making use of the tendency to go along with other people’s choices.

When people discover that the majority has opted for the healthy product, they are more likely to choose that too, in a moment of poor self-control.<sup>39</sup>

### Possible solutions

There are two possible ways to get people to make more healthy choices in an obesogenic environment: helping people make more healthy food choices by helping them to resist food temptations, and making the food environment itself healthier.

#### Resisting food temptations: self-regulation

When people have difficulties dealing with the obesogenic environment and are being constantly tempted to eat unhealthily, self-regulation can provide a solution. Self-regulation contributes to healthy eating by setting specific goals.<sup>44</sup> An effective self-regulation strategy is the use of implementation intentions, also known as “if-then” plans. This kind of plan involves having a concrete plan to exhibit a specific behaviour in a given situation: “If I find myself in situation X, then I’ll do Y”. For example, “If I’m at the station and I fancy a tasty snack, I’ll buy a piece of fruit”.<sup>45,46</sup> In this way, people can make specific plans for moments when they have difficulty with the obesogenic environment. Thus, if external stimuli provoke certain unhealthy habits, using an “if-then” plan to acquire a new behaviour for such situations can be a way to break the habit.

It also appears that people are able to offer greater resistance if they are given advance warning of an impending attempt to influence them. Thus, advance warning is an aid to self-regulation.<sup>47</sup> The Netherlands Nutrition Centre’s “Don’t tempt me” campaign (see box) is based on this effect.

#### Modifying the environment: nudging

Giving consumers a nudge in the right direction, without restricting their freedoms, is a promising way of promoting healthy choices. This phenomenon is known by the term “nudging”.<sup>48</sup> Thus, even though unhealthy choices are still available, people are nudged to make healthier choices. Various aspects of how foods are presented may affect food choices, such as increasing the proportion of healthy choices. This might include making more low-calorie drinks and healthy sandwiches available in school canteens. But even small changes in the physical environment can lead to a change in the products chosen. These include the placement of, and access to, products or the ease with which products can be eaten.<sup>9,49,50</sup> For example, if fruit is offered in pre-sliced form.

## What is the Netherlands Nutrition Centre’s role?

### Guidelines for Healthier Canteens for the Netherlands

These guidelines can be used by all types of canteens, for the step-by-step development of a healthier product range. The guidelines are partially based on the nudging principle. Further details can be found in the “Guidelines for Healthier Canteens” fact sheet, at [www.voedingscentrum.nl/factheets](http://www.voedingscentrum.nl/factheets).

### Don’t tempt me

In November 2014, we issued a call for public input, entitled “Tell us about those moments and situations when you are sorely tempted”. The goal was to make consumers aware of food temptations. People were invited to post photographs on Facebook and Twitter of places where they are tempted to buy something unhealthy. Awareness means that people are forewarned, which helps them offer greater resistance.

### The “My Goal” tool

“My Goal” helps people to deal with food temptations more effectively. The tool is available at [Mijnvoedingscentrum.nl](http://Mijnvoedingscentrum.nl). Here, consumers can fill in an online food diary. Every time they report eating sweets or snacks, they are asked questions about the situation in which they ate these products, and their main reason for doing so. After three days, they use data from the tool to set a specific goal. A week later, “My Goal” checks on their progress. “My Goal” is based on the implementation intentions strategy.



## Looking to the future

The obesogenic environment is a complex problem that is difficult to solve. On the one hand, consumers need to be aware of how the environment influences their food choices. They also need more practical guidance in dealing with the multitude of unhealthy food products.

On the other hand, the parties responsible for providing these foods and for designing the environment will need to implement changes, to facilitate healthy choices. Measures to counter the obesogenic environment would be more effective if policymakers, industry, and health promotion specialists were to cooperate with one another. One example is portion size. This is an area in which industry needs to make modifications. Policymakers involved in the layout of the environment will then be able to present the food supply in such a way that people opt for healthy portions. In this context, the Netherlands Nutrition Centre is the party that informs consumers about what constitutes normal, healthy portion sizes.

The focus of this fact sheet is portion size, the type of food supplied, the attractiveness of such food, and individuals' self-control. While these factors are important, solutions are also found in the political environment (regulatory frameworks), the economic environment (cost of healthy and unhealthy diet) and the socio-cultural environment (influence of social environment).

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