

# THE TEMPEST HANDBOOK: Strategies to Support Healthy Eating in Adolescents



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## Scientific background

The TEMPEST project forms the background for writing this book. TEMPEST is a research project that ran from 2009 to 2013 in nine European countries: Belgium, Denmark, Finland, Germany, Netherlands, Poland, Portugal, Romania, and United Kingdom. TEMPEST stands for Temptations to Eat Moderated by Personal and Environmental Self-regulatory Tools, which represents the main aim of the project: find out in what way adolescents can learn to regulate their food intake in a food replete environment. Of importance, when we use the term ‘adolescent’, we refer to both younger adolescents (age 10-13) and older adolescents (age 14-17). Almost 15,000 10- to 17-year-olds participated in the project and gave us information about the way they deal with food temptations. For more information about the project, visit the website [www.tempestoproject.eu](http://www.tempestoproject.eu).

In this handbook we present findings from the TEMPEST project, but also discuss research from the broader discipline of psychology that helps us understand adolescents’ eating habits. We want to showcase the most important Tempest research results, but we also want to go beyond TEMPEST: we hope to offer our readers insight into the concept of self-regulation, explain its importance, illustrate how adolescents can use self-regulation strategies for healthy eating and explore what parents and other caregivers can contribute to this process. In other words, we want to use the knowledge we gained in the Tempest project to provide adolescents and their parents with a toolbox of strategies that will help them maintain healthy eating behavior.

The book is primarily written for parents who are interested in their adolescent child’s eating habits. Adolescents consider their parents important in supporting them to adopt a healthy lifestyle. This book may also be of interest to a wider audience who find themselves of influence on adolescent’s eating habits, such as dieticians, teachers, and last but not least, the adolescent him or herself.

## Introduction

Imagine yourself as a child in a sweet shop, having access to an unlimited amount of great tasting sweets, chocolates and ice creams. Being in such a sweet shop, eating whatever you want and as much as you want, is many a child's dream. Conversely, it's many a parent's nightmare to get their child out of the shop, or even better, to just walk past it quietly. The problem of the modern *food environment* is that the world has practically become one big sweet shop. If we successfully navigate our child past the first food outlet, the next one is just around the corner. It is clear that maintaining a healthy weight has become a challenge for many adolescents living in this 'sweet shop' environment. While adolescents typically do find healthy eating important, the many food temptations around them often prove too difficult to handle all by themselves, and they look toward their parents for support. How can parents help their children deal effectively with these ubiquitous temptations?

Eating healthily requires a great deal of self-regulation. Self-regulation refers to everything people can do to adjust and change their own thoughts, feelings, and behaviors in order to achieve a personally valued long-term goal (e.g., eating healthily, maintaining a healthy weight). For example, self-regulation is required when we find ourselves confronted with a conflict between the urge to indulge in delicious but unhealthy food and our intention to maintain a healthy weight. As human beings, we are not simply slaves of our drives and impulses. Instead, we can use our mind to choose to pursue alternative behavior. To give a simple example: most adolescents are aware that by studying hard in high school, their chances of success later in life are likely to increase. On a day-to-day basis, however, many adolescents have problems overcoming their impulse to, for instance, play videogames. In order to successfully forego this impulse, there are self-regulation strategies at our disposal that enable us to choose behavioral alternatives for our primary drives. Adolescents, too, possess such self-regulation strategies, although not all adolescents are equally skilled at self-regulation. Some adolescents are better able at regulating their behavior, while others find it more difficult to resist immediate temptations.

Self-regulation is related to, yet different from what is often talked about as 'willpower'. Willpower is defined as the ability to forego an immediate pleasure (for example, a nice-tasting piece of cake) in order to achieve longer-term goals (such as staying healthy and maintaining a normal weight). Being able to 'delay gratification', as this ability is referred to, can be considered a central goal of self-regulation and self-regulatory strategy use. Delaying gratification is not easy for adolescents (nor for their parents, but that is a different story). This is mostly due to the fact

that, for instance, eating some crisps when watching TV is very attractive in the here and now, while the benefits of an alternative will only pay off in the future. As the ability to oversee long-term consequences of an action does not fully develop until adulthood, adolescents are typically more focused on the present and short-term gratification. If they want to eat something that tastes good now, it is hard for them (even harder than it already is for adults) to contrast this short-term pleasure with its longer-term consequences. Nevertheless, (some) adolescents are able to successfully delay gratification. Moreover, there are ways to help adolescents achieve delay of gratification. We describe a classic delay-of-gratification experiment, illustrating these issues, in Box 1.

In this handbook we present self-regulation strategies that help to delay gratification. Put more simply, we present strategies that adolescents can, and indeed do, employ to pursue healthy eating habits while navigating the tempting food environment. Our research with adolescents identified three basic categories of self-regulation strategies. More specifically, self-regulation may be directed to 1) reduce the temptations we face in our daily food environment, 2) reduce the value that is given to a temptation, or 3) support one's healthy eating goal. Each of these three categories can be further subdivided in two specific self-regulation strategies. These categories and strategies are further explained in Box 2.

These six self-regulatory strategies identified in our research with young people across Europe formed the basis of the Tempest Self-regulation Questionnaire for Eating, or TESQ-E, which was the center point of the TEMPEST research project. The handbook is set up to correspond to the TESQ-E questionnaire, addressing one strategy in each of the following chapters. We explain what the strategy entails, provide important research results and describe the experiences and points of view of adolescents themselves, as well as the suggestions of parents and health professionals. Lastly, we give some examples about how the use of self-regulatory strategies may be bolstered in youngsters. The chapters also include quotes, research results (numbers and figures) and other illustrations. These will be shown in so-called 'boxes'. In this handbook we use the term "adolescents" to refer to all participants in the Tempest project, aged between 10 and 17 years. Deviations from this age group are mentioned explicitly.

### ***Box 1: the Marshmallow experiment***

Put a four-year old child in a room and ask her what she wants: either one marshmallow immediately or two marshmallows after a while (say 15 minutes). It may be surprising to learn that as many 28% of the four-year olds - who are typically known for not being very patient - were able to wait for the two marshmallows, which constitutes what psychologists call the 'delayed but bigger reward'. This simple experiment, designed by the renowned American psychologist Walter Mischel, became world famous when it was published in the eminent journal *Science* in 1989, showing that children who are able to wait for two marshmallows reported better careers and better family lives up to thirty years later. Apparently, being able to wait for a delayed gratification is a crucial factor in leading a happy and successful life.

Many dilemmas that adolescents encounter in daily life can be regarded as similar to the decision that the four-year olds in Mischel's experiment were facing: shall we favor the immediate reward even though it is less beneficial in the end (for example having a chocolate cake that tastes lovely but ruins our waist) or shall we favor the option with long-term benefits that are larger, but only appear later (deny the cake and stay lean)? Importantly, although there are considerable individual differences in the ability to wait for the delayed reward, it has also been demonstrated that people can perform much better or much worse on this task depending on the circumstances. In Mischel's experiment, for example, if children were encouraged to think of the marshmallows as 'white, puffy clouds' they could wait longer for the two sweets than when they were instructed to think of them as 'yummy' (thus emphasizing their tempting qualities). (Type in 'marshmallow experiment' on YouTube to find video clips of replications of this experiment.)

### *Box 2: the different categories of self-regulation strategies*

<b>Category</b>	<b>Strategy</b>	<b>Example</b>
Reduce the temptations	Temptation avoidance (chapter 1)	Avoid the confectionary aisles in the supermarket
	Temptation control (chapter 2)	Make sure the crisps are stored in the cupboard and out of sight while watching TV
Reduce the value of the temptations	Distraction (chapter 3)	Keeping busy with something else, when feeling hungry before dinner
	Suppression (chapter 4)	Ignore the smell of tasty food when passing a bakery
Support the healthy eating goal	Goal and rule setting (chapter 5)	Make a rule about how many sweets you can have per day
	Goal deliberation (chapter 6)	Think about whether you really want it, when you feel to urge to snack unhealthy



## Chapter 1: Temptation avoidance

Tom is an eleven-year-old boy. Since starting Year 6, Tom is allowed to walk home from school by himself. On his way, he passes a bakery and a supermarket. After the first couple of months in 5<sup>th</sup> grade, his mother notices that Tom has been putting on quite some weight. When discussing this with Tom, he confesses that he has been spending his pocket money on his walks to and from school: he often goes into the bakery on his way to school to buy a fresh, hot roll, or into the supermarket on his way back home to buy a bag of sweets or crisps. Tom explains that he often tells himself not to go inside the bakery or supermarket before leaving home in the morning, because he too has noticed the weight gain and also does not like that all his pocket money is going into food. At the actual moment of passing these food outlets, however, their lure simply becomes too strong for him to resist. Tom's father is in favor of taking away his pocket money, so that he will simply not be able to buy anything anymore. His mother decides to first try a different route to school; together, she and Tom find a route that does not pass by any food outlets. Throughout the rest of the school year, Tom takes this route to school and does not put on any more weight. Tom has successfully learned to avoid his biggest temptations.

### Temptation avoidance explained

A temptation exists when a short-term goal (for example, to eat something tasty like chocolate) competes with a long-term goal (for example, to stay lean and fit). This also means that a certain situation may be very tempting for one person, but not at all for someone else. Temptation avoidance refers to different ways of distancing oneself from situations that may challenge our intentions to eat healthily. These situations are thus not necessarily the same for all people, but the strategy of temptation avoidance always involves physically staying away from situations and places that feature easily tempting foods.

Rather than entering such a situation and then hoping for the best, temptation avoidance is a preemptive strategy that keeps us from entering the situation at all. For example, we can divert our gaze when walking past alluring fast food stores or physically stay away from places known to have particularly appealing, unhealthy foods. Importantly, because we stay away from tempting situations, we do not need to exert immense amounts of willpower to handle a tempting situation, thus saving such willpower for other tempting situations that we cannot easily avoid.

Our research showed that almost 40% of adolescents frequently use the strategy of avoiding temptations (see Figure 1). To get a feeling of what adolescents reported to do in order to avoid temptations, please see Box 3.

## **What research shows us**

There are simply too many temptations in our environment. In order to successfully regulate our eating behavior, it is therefore important to teach ourselves smart ways of avoiding some of these temptations. Research shows that the mere opportunity to eat unhealthy food can affect our intake (for example, we know that people who live closer to fast food outlets weigh more than people who live further away from one), so if we can find a way to avoid walking past these outlets on our way home, or find a route through the supermarket that doesn't take us by the sweet shelves, this will affect our eating behavior in a positive way.

Research from the Tempest team has also shown that adolescents are not always able to identify the specific situations that create tempting conflicts. One way that we know can help adolescents determine which tempting situations they should aim to avoid is by monitoring their own eating behavior. Through monitoring, adolescents can gain more insight into their eating behavior and thus also learn more about the specific situations in which they typically indulge in unhealthy foods. We also know, however, that monitoring is not a strategy that many adolescents spontaneously apply. Nevertheless, when we taught adolescents to monitor their eating behavior, they indicated that monitoring was rather easy to do. After practicing with monitoring for a week, a group of adolescents reported that they have gained more insight into their own eating behavior and the specific situations they should try to avoid. Adolescents who did not monitor their eating behavior did not show such insight.

## **What adolescents say**

Unhealthy foods, such as crisps, sweets and pizza, are things that adolescents identify as “temptations” because they like the taste of such foods. Knowing that these high-calorie, low-nutrition foods are not good for them, though, adolescents told us that they would sometimes avoid situations in which such foods are present as a strategy to eat more healthfully. They said, for example, that they could “keep themselves away from places where junk food is sold”. They also reported that it would be easier to avoid purchasing unhealthy food if they “do not go to

the unhealthy food section in the supermarket". At home, adolescents said they would sometimes avoid the kitchen because that is where the food is kept. One child said that when she had a craving for sweets before dinner, she would stay in her room upstairs to avoid being tempted by the cookie jar in the kitchen cupboard.

In other words, adolescents felt that they could remove the temptation to eat unhealthily by physically staying away from the temptation and thereby avoiding the tempting situation altogether. Adolescents thus seem to act upon the old adage 'and lead us not into temptation' as a way of dealing with an environment laden with food temptations. On the other hand, adolescents also noted that it is simply not always possible to avoid temptations. They say that at parties, for example, snacks and treats are unavoidable. In those situations, additional self-regulation strategies are thus required.

## **How to use and improve temptation avoidance**

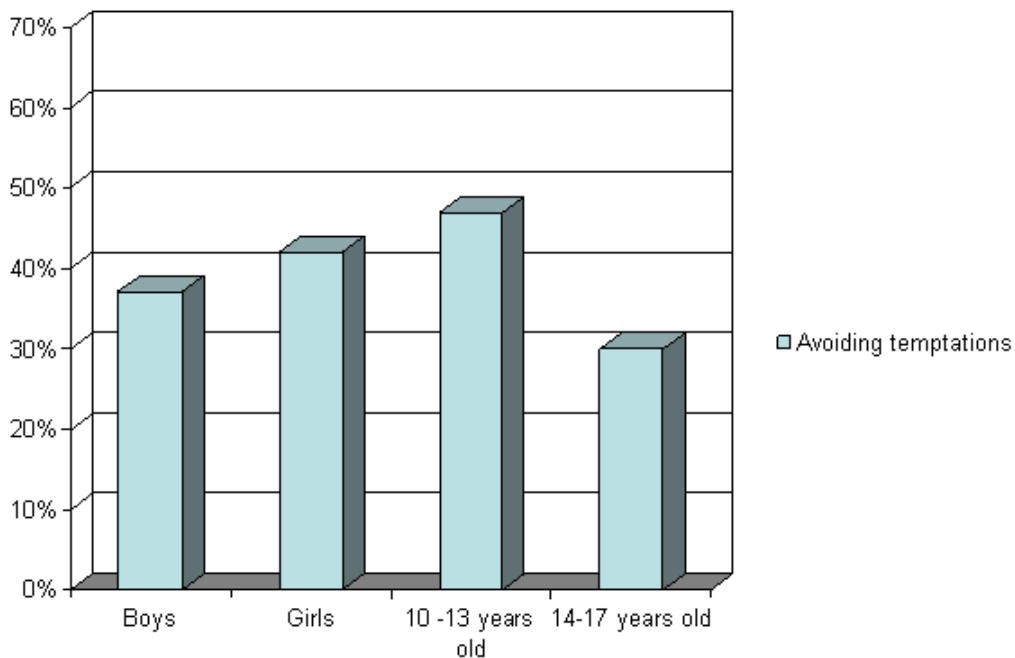
Avoiding temptations, especially at times when we are at risk of self-regulatory failure, is a strategy that parents typically already know of and employ for themselves. Some parents named the example of not doing groceries when hungry, thus avoiding the tempting environment of a grocery store at times when their resistance to temptations may be lowered. They indicated also using this strategy with their adolescent children, for example by taking them shopping only when the 'healthy' groceries (fruits, vegetables, bread, meat) have to be bought and not when it is time to stock up on snacks. Another parent indicated not letting their children watch TV commercials, as these often portray unhealthy food in ways that are very appealing to adolescents (e.g., through promotion by famous actors or by including small gifts with the snack). In schools, temptation avoidance could be helped by making it easier to avoid temptations (such as vending machines) without removing them altogether; for example by placing these at less central points in a school.

Temptation avoidance can be improved in adolescents by helping them apply this strategy at the right moments. Adolescents need to learn the points in time at which they are especially vulnerable to temptations. Parents can support them by, for example, helping them to recognise the effects that hunger and tiredness can have on their self-regulatory capacity. As discussed earlier in this chapter, monitoring might be useful to gain insight into these crucial moments. Our research has shown that self-monitoring techniques can be taught rather quickly and easily. A practical tool for helping youngsters to learn to monitor their eating

behavior is to keep a simple snack monitoring diary for a particular period of time (for an example, see Box 4). The diary is an easy and practical tool that will, after keeping it for some days, help adolescents recognise certain patterns in their eating habits – including the situations in which they typically give in to temptations and thus would better be avoided in the future.

Adolescents can then be taught how best to deal with these situations, such as by avoiding the kitchen where all the snacks are stored. Parents themselves can model temptation avoidance to set a good example. For instance, when they take their children to the grocery store, they could avoid the aisles with unhealthy foods if they do not anything from there. Although parents may sometimes have the feeling that their child no longer values their opinion on healthy eating, research indicates that the contrary is the case (see Box 5).

**Figure 1: percentage of adolescents using the self-regulation strategy frequently or very often**



**Box 3: TESQ-E temptation avoidance items**

1. If I am in town, I make sure that I don't go by fast-food places
2. If I pass a bakery, I avoid looking at display in the window
3. If I go to the supermarket, I avoid the aisle with sweets and chocolates
4. If I am bored, I stay away from the kitchen

**Box 4: example of a snack monitoring diary used in adolescents**

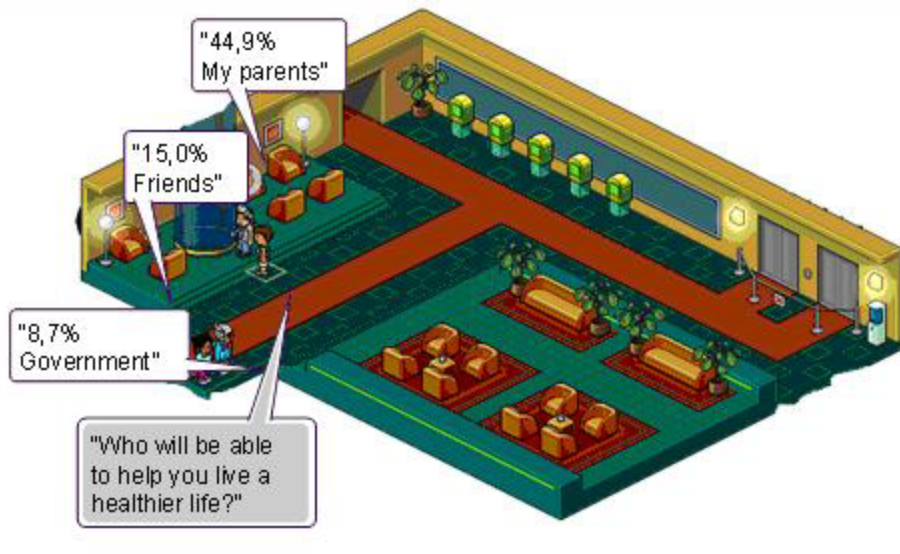
Where were you?		With whom?		How did you feel?	
<input type="checkbox"/> home	<input type="checkbox"/> shopping mall	<input type="checkbox"/> alone	<input type="checkbox"/> acquaintances	<input type="checkbox"/> bored	<input type="checkbox"/> happy
<input type="checkbox"/> school	<input type="checkbox"/> park	<input type="checkbox"/> class mates	<input type="checkbox"/> strangers	<input type="checkbox"/> tense	<input type="checkbox"/> afraid
<input type="checkbox"/> train station	<input type="checkbox"/> cinema	<input type="checkbox"/> boy/girlfriend	<input type="checkbox"/> others, please	<input type="checkbox"/> sad	<input type="checkbox"/> aroused
<input type="checkbox"/> on the road	<input type="checkbox"/> visiting	<input type="checkbox"/> friends	state:	<input type="checkbox"/> excited	<input type="checkbox"/> others, please
<input type="checkbox"/> bar or cafe	someone	<input type="checkbox"/> family		<input type="checkbox"/> nervous	state:
<input type="checkbox"/> fast-food place	<input type="checkbox"/> party	<b>Were you really hungry?</b>			
	<input type="checkbox"/> different, namely	<input type="checkbox"/> yes <input type="checkbox"/> no			

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### **Box 5: Habbo hotel & the role of parents**

Many parents struggle with the question of how they could support their children in eating healthily. Especially when their children become adolescents and begin to make food decisions by themselves, parents face the challenge of steering healthy food choices in such a way that they neither dictate nor let their child decide completely by themselves. It is important though to realise that adolescents appreciate parental guidance in health behavior. Importantly, research from the Dutch National Think Tank showed that almost 45% of Dutch adolescents who visited the Habbo Hotel on the internet considered the advice of their parents in healthy living very important. This means that parents should not be too shy in discussing food choices with their children in a respectful manner.

**Almost half of youth thinks that parents are most important to help them improve their lifestyle**



© Dutch National ThinkTank ('De Nationale DenkTank')

## Chapter 2: Temptation control

Imagine Jack and Jill, siblings who are 14 and 12 years old. While both find healthy eating important, they sometimes run into problems sticking to their good intentions. Their parents try to help them by keeping unhealthy snacks and sweets out of the house. This works fine as long as Jack and Jill are at home, but Jack notices that when he goes to school, he has a very hard time staying away from the tempting snacks sold in the cafeteria. And Jill, who often hangs out in town with her friends after school, notices that she is often pulled toward fast food outlets and food stalls. Both complain that there are simply too many temptations around once they get out of the safe environment of their home. Jill has a friend, Lucy, whose parents do allow unhealthy food in the house and even actively offer unhealthy foods to Lucy and her friends from time to time. Jill used to think that Lucy's parents were irresponsible, but recently she has noticed that Lucy never seems to be tempted so much by the fast food restaurants that Jill almost cannot stay away from. It seems that Lucy is better able to successfully manage the temptations in her environment than Jack and Jill. Lucy possesses the self-regulation strategy we call temptation control.

### Temptation control explained

Temptation control is a strategy that can help youngsters reduce the lure of tempting foods. This strategy is all about the actions we can take to limit the extent to which temptations intrude upon our healthy eating intentions, and instead put healthier alternatives on the forefront. Temptation control thus deals with removing cues that prompt unhealthy eating, and adding cues that encourage healthy eating. Without necessitating big changes to our daily lives and living environments, this strategy entails making smart and small adjustments that can gently steer our behavior in the right direction. Importantly, such small adjustments are easy to implement and, perhaps even more important, are also easy to follow – without usually requiring much conscious effort. Temptation control is different from temptation avoidance in that it is not about *avoiding* temptations, but about restructuring one's food environment so that it becomes less tempting.

More than half of the adolescents in our research said they frequently use the strategy of controlling temptations (see Figure 2). Consult Box 6 to get an idea of how to create a healthy-diet-friendly environment.

## What research shows us

There are different ways to go about temptation control. When adolescents are young, the easiest and most effective way *may* seem to forbid unhealthy foods altogether, and thus restrict access to any kind of temptation. For example, intuitively, it seems right to make sure that there is no sweets, crisps or other snack food in the home so that there is no opportunity to eat these foods. Research indicates, however, that such complete restriction can get adolescents into trouble later on: adolescents who were restricted may consume much more unhealthy foods when these become available at a later point, than adolescents who were allowed to eat sensible portions of unhealthy foods. In a similar vein, although we would think that larger portions of unhealthy food are dangerous and smaller portions less so, this does not necessarily seem to be the case. For people who want to watch their eating habits, a small (and therefore seemingly rather harmless) portion of unhealthy food may not trigger any alarm bells. If such warning signs are not present, people may not feel the need to arm themselves against the temptation. That may cause failure to be vigilant about their eating behavior and thus lead to high consumption. In the case of a large temptation, on the other hand, alarm bells are more likely to go off, thus activating self-regulation strategies to resist the temptation – resulting in less consumption. Research from the Tempest group indeed showed that girls who have the goal to watch their eating habits consumed *more* of the unhealthy food that they previously indicated as not very tempting, but *less* of the unhealthy food that they previously indicated as very tempting. This was only found in girls who had the goal to watch their eating behavior; girls who did not have such a goal consumed equal amounts of both types of the unhealthy food. Smaller portions and less tempting foods thus may not always be a safe bet, especially for those who are concerned with their eating!

It thus seems that, to learn to deal with temptations, at least some exposure to temptations is necessary. However, such exposure should occur in a supportive and supervised environment, where parents can help their children to learn to control their eating behavior and to deal with temptations in a smart way. Rather than omitting all tempting foods from our environment, it seems more important to reduce the ‘temptingness’ of these foods. Research by the Tempest team demonstrated that one way to expose adolescents to temptations in a supportive manner which helps adolescents to effectively control temptations is by making the temptation more abstract. For example, when we asked adolescents to make a flower figure out of small sweets, they subsequently ate less of this sweet than the other group of adolescents who made a flower figure out of Lego blocks. In other words,



looking at the sweets as ‘building blocks’ for a figure, rather than as something delicious and attractive, helped adolescents resist the temptation. This research is further described in Box 7.

## **What adolescents say**

Through our communication with adolescents of diverse ages and backgrounds, it is clear that they understand what food temptations are and that they also realise how tempting foods can influence their eating behavior. They also describe several methods of trying to deal with these temptations in a good way. For example, some adolescents said that they could “prepare and take a sandwich with them to school so that they won’t buy all the junk food from the food stall.” Others suggested, “get small healthy snacks: you can always have an apple with you.” These are strategies adolescents identify as useful in managing their food consumption while at school or out of the house. The strategies suggest that adolescents expect that having healthy foods close by when they are hungry can aid them in controlling temptations and maintaining a healthy diet.

At home, adolescents find different food temptations, such as the desire to snack while watching TV. Yet, they suggest similar strategies to deal with such temptations. For example, adolescents said that they could “put out healthy things when they start watching TV, so that you can reach them easily.” In this manner, adolescents actually suggest creating a nudge for healthy eating, simply by making healthy foods easily accessible. They also use food (in) visibility as a cue to remind them what they “should” eat. For example, they suggest “putting the sweet jar in the cupboard, so that you’re not tempted by its sight”.

What is important to note is that adolescents themselves also do not suggest removing temptations altogether (by not buying sweets at all, for example). Rather, they suggest handling these temptations in a way that makes it easy to keep the temptations under control. Research by the Tempest team provides evidence that adolescents have rather good knowledge of temptation control strategies, which is of course very positive. However, we also know that adolescents do not always follow their own advice. The role of parents and health professionals should then be, firstly, to model use of these strategies, and secondly, to help adolescents to actually implement these strategies and implement them at the right time (namely, when they are confronted with a temptation).

## How to use and improve temptation control

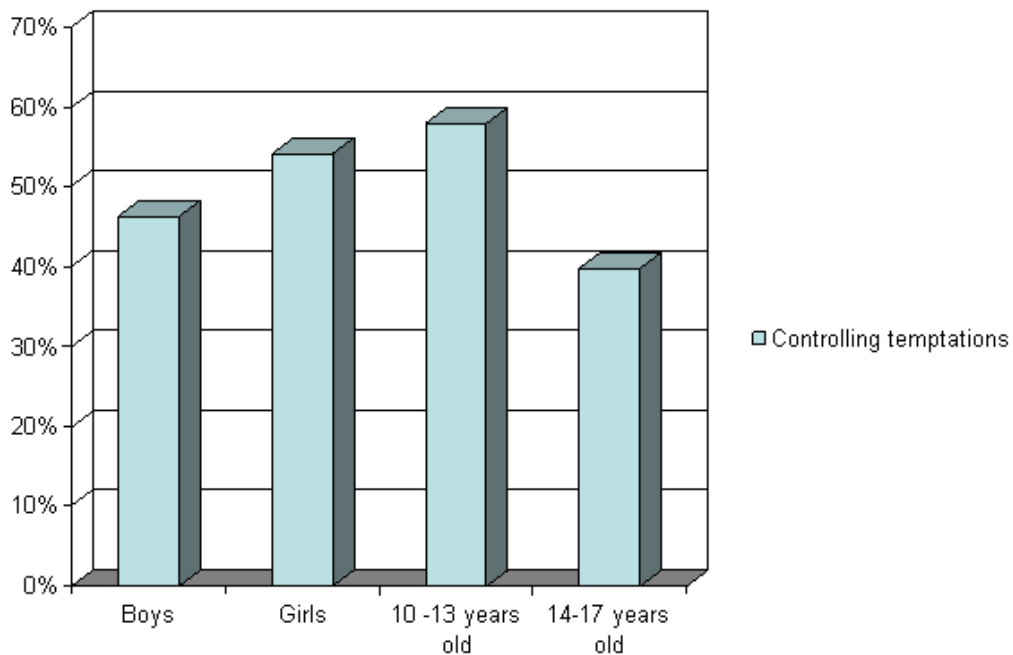
We heard parents express doubts about the best ways to teach adolescents to deal with temptations. As was mentioned above, a total 'no-go' approach in the long term is likely to be counterproductive. Instead, some level of exposure seems to be important. Mere exposure however is not enough; parents cannot simply put some unhealthy food in front of their child and hope for the best. In this manner, exposure to temptations is likely to backfire and may cause a child to overeat. Optimal results are obtained when parents create a supportive, supervised environment in which to expose adolescents to temptations. As we already showed in Box 5, many adolescents indeed expect help from their parents in making healthy choices in a tempting environment. Adolescents themselves do not yet have all the skills they need to deal with temptations in the right way, so they need to learn how to act. They can learn this from role models: for example, by watching parents control temptations successfully. Parents can also support adolescents to exercise temptation control, for example by deciding together the right amount of crisps to eat at one sitting and putting the rest away. Another way to support adolescents is through distancing techniques. Tempest researchers have looked into the effects of 'distancing': helping adolescents eat less of unhealthy foods not by removing these foods from the environment, but by placing them a little bit further away- thus making these foods less accessible. This is further explained in Box 8.

One parent described wanting to teach her adolescents that eating a few sweets is not a bad thing, and even something to enjoy, but that moderation is very important – even in the face of excessive availability of sweets. She decided that, instead of handing her adolescents one or two sweets every day, and restricting their access, she would give them one week's worth of sweets at once, in a container, to store in their own room. That way, the adolescents could eat the sweets all at once, but then there would be none left for the rest of the week; or they could eat a few pieces every day like she wanted them to, and thus enjoy a sensible amount of sweets every day. Allowing the adolescents to regulate this by themselves gave them the opportunity to learn how to control the temptation of having larger amounts of unhealthy food in their vicinity. The parent reported that, while her adolescents tended to eat the sweets all at once the first couple of weeks, they gradually became less interested in the sweets and would eventually even have some left over at the end of the week.

It is important to consider the synergies between the strategies of temptation avoidance and temptation exposure, which may, on first sight, seem to contradict each other. This is, however, certainly not the

case. Common sense teaches us that it is impossible to always avoid temptations. The research on temptation control teaches us that this is also not desirable, as adolescents need to learn how to handle tempting situations. Tempest researchers see the perfect solution in a combination of avoidance and exposure: avoiding temptation is the best option when adolescents are vulnerable to giving in to temptations, for example when they are hungry or tired (at times, in other words, when their self-regulatory capacity is momentarily low). Exposure, on the other hand, should be most effective when this capacity is high and when the environment is supportive of self regulation.

**Figure 2: percentage of adolescents using the self-regulation strategy frequently or very often**

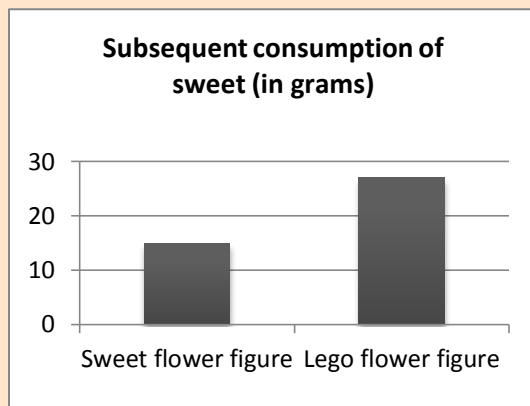


### **Box 6: TESQ-E temptation control items**

1. If I want to have a treat, I take a little bit and put the rest out of sight
2. If I am watching TV, I make sure that the crisps are out of reach
3. If I am behind the PC, I make sure there is some healthy food within reach
4. If I want to eat sweets, I take a few and put the rest of the bag away

### **Box 7: Sweet as building blocks**

Tempest researchers asked adolescents to make a flower figure either from small pieces of sweet or from Lego blocks. After they had done so, they were allowed to eat as many sweets as they liked from a bowl. The adolescents who had already used the sweets as building blocks for the flower ate less than the adolescents who had built the flower out of Lego and had thus not yet been exposed to the sweets. The idea behind this finding is that the children who constructed a figure from sweets were exposed to the very subtle message that the sweets are not for eating and that they should not eat the sweets. Below is a graph showing the results and a picture taken from the flowers the adolescents created with the sweets.



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***Box 8: 'Put the sweet a little further away please'***

Studies among older adolescents (university students) have revealed a dramatic impact of putting foods further away on the amount that the adolescents consumed of these foods. For example, when a bowl of M&Ms was put at 20cm away from participants they consumed about 17 M&Ms. However, when the bowl was put only 50cm further away at 70cm, only 3 M&Ms were eaten. Importantly, participants who had eaten only a few M&Ms did not experience more craving for sweets afterwards, showing that they didn't have to put a lot of effort in resisting them. From these Tempest results, it seems to be the case that putting sweets at a distance simply makes them less tempting: a simple and easy way to control temptations.

## Chapter 3: Distraction

Sarah is fourteen and her parents think she is old enough to stay home alone one night when they go out to a party. They have bought different kinds of snacks and soft drinks for her to choose from. While Sarah initially thought she would just have a handful of crisps, the rest of the bag keeps staring her in the face; she cannot seem to focus on anything else. And beside the crisps, she knows there is also chocolate, popcorn and licorice in the sweet cupboard. Thoughts about all these snacks keep popping into her head and within the hour, she's eaten some of everything. Just when she's getting up to get a new serving of crisps, her friend calls. They talk on the phone for a few minutes and Sarah forgets about the snacks. After hanging up the phone, Sarah realises that she should keep herself busy to keep her mind off the snacks. For the rest of the night, she watches a scary movie and chats online, her mind no longer wanders off to the snacks in the cupboard. Sarah has experienced the power of distraction.

### Distraction explained

In the current environment, we sometimes encounter temptations that we cannot simply control or avoid, because they are out of our hands. The cake at a birthday party, for example, is hard to avoid and we are also not able to take a small piece and put the rest back in the fridge. The birthday cake is simply right in front of us and outside of our control. In situations like this, when we cannot control our exposure to temptations, still we are not completely at the will of our environment. There are other self-regulation strategies we may employ in situations like these. These strategies are aimed at diminishing the impact that the temptation has on us (rather than aiming to control or avoid the temptation itself). A powerful tool that we have at our disposal for this is our attention: we can control what we pay attention to in our environment. Temptations, with their attractive and luring properties, typically draw our attention and make it hard for us to resist them. However, if we are able to move our attention away from the luring temptation, it will be easier to forego the impulse to consume the tempting food. A strategy to divert our attention from temptations is by distracting ourselves, allowing us to focus our attention on something else rather than the appealing but unhealthy foods and drinks that find their way into our immediate environment.

About 45% of the adolescents said that they commonly used the distraction strategy (See Figure 3). For some examples of distraction used, see the items included in the TESQ-E (Box 9).

## **What research shows us**

Attention allocation and distraction have long been identified as supportive of successful self-regulation in adolescents. Evidence for the importance of attention and distraction in self-regulation among young children was provided in the famous marshmallow studies (see introduction chapter). In this groundbreaking research on delay of gratification, children were presented with a choice between an immediate but smaller reward (e.g., one marshmallow) and a delayed but larger reward (e.g., two marshmallows). Several strategies were identified that can help adolescents hold out for the larger reward. One of the most potent strategies was distraction.

The researchers found that the time children were able to refrain from eating the first marshmallow could be partly predicted by where they directed their attention. Children who spontaneously directed more of their attention to other aspects of the room in which they were waiting than to the reward could delay gratification for longer than adolescents who focused more of their attention on the reward. Some adolescents, for example, turned around in their chair so that they visually distracted themselves. This is what is called external distraction: focusing on other things in the environment. Another type of distraction is internal distraction, which means that the child itself generates a distraction by for example diverting its thoughts and thinking about 'fun' things. Other examples of internal distraction were displayed by children who started to sing a song or do a little dance while sitting in their chair. Such internal or external distraction may reduce the frustration adolescents would otherwise experience while waiting, and it gives them something else to focus on other than just that temptation in front of them.

## **What adolescents say**

Adolescents indicate that food temptations can be very attention-drawing. Some say that it is almost impossible not to pay attention to their favourite snack or a bowl of nice-looking sweets. This shows that youngsters understand the lure of tempting food. Moreover, they know the influence that this lure can have on their eating behavior: adolescents told us that these strong attention-grabbing qualities of food temptations make it very hard for them to resist the temptations.

Nevertheless, our conversations with adolescents also taught us that they know the power that distraction can have. Adolescents know that by distracting themselves, they can decrease the attention-grabbing spell that unhealthy food can place on them. On the basis of our work with almost 100 young people who helped us with identifying eating-related self-regulation strategies, we distinguished several prototypical instances of the use of distraction to ‘stay on track’ as far as resisting food-related temptations is concerned. Adolescents said, for example, that they could call a friend when they feel like having a snack, play a game or chat with their parents. One child even suggested brushing your teeth; he said that “it will distract you for a few minutes and afterward the sweet will not taste so nice anymore”.

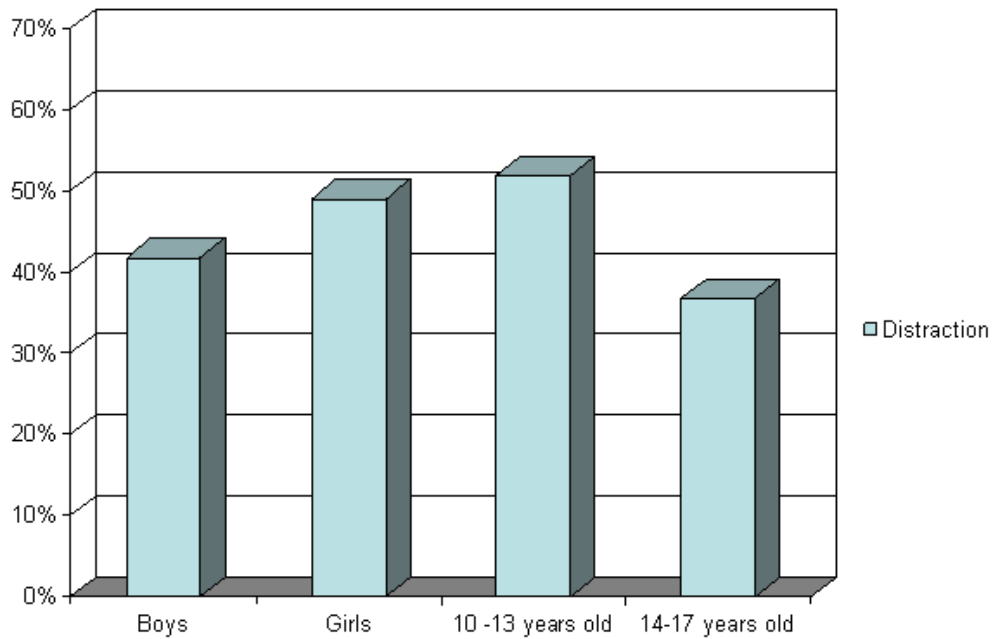
## **How to use and improve distraction**

Distraction is a self-regulation strategy with which many youngsters and their caretakers may be familiar. Caretakers in fact are likely to use distraction in many instances, for example when adolescents are sad or hurt: they will try to distract them with a story, a toy or a song. The same kind of distraction techniques can be used with respect to eating behavior. For example, engaging a child who is hungry before dinner by engaging him in a game or book can help take his mind off food.

Beside such external distraction provided to the child by the environment or by a parent or other adult, adolescents can also be taught ways to distract themselves (i.e., how to use internal distraction). Forming if-then plans can facilitate distraction (see Box 10). In simple ‘if-then’ plans one specifies what one should do in a certain situation. As an example, an adolescent could make the plan such as ‘if I feel tempted to have a snack, then I will distract myself by reading a book’. Of course, these plans can be adapted to each individual to fit his or her goals and opportunities for distraction. Research has shown that adolescents are very much able to formulate such plans (see Box 11 for instructions) and that these plans also have large positive effects on their eating behavior.



**Figure 3: percentage of adolescents using the self-regulation strategy frequently or very often**



***Box 9: TESQ-E distraction items***

1. If I feel tempted to buy sweets, I distract myself
2. If I feel like eating something, I call a friend instead
3. If I am getting hungry before dinner, I try to keep myself busy
4. If I have the urge to eat sweets, I find something else to do

### ***Box 10: if-then plans***

If-then plans are simple devices that help people to enact something they find important. For example, if Sarah wants to eat more healthily, and to stay away from unhealthy snacks in her home, she could formulate the goal “I want to eat less unhealthy snacks”. However, simply specifying a goal is not going to help much because people tend to forget about their goals when they get busy with other things. Formulating an if-then plan can be a great help in making these goals more achievable. Specifying an if-then plan means that you name an opportunity for, in Sarah’s case, eating less unhealthy snacks (the if- part) and link this opportunity to the desired behavior (the then-part). Sarah could say: “If I am watching television at night and I feel like a snack, then I will call my friend Rosie”. Numerous studies have proven the effectiveness of such simple plans. For example, when if-then plans are made to reduce the consumption of unhealthy snacks, the amount of calories consumed from unhealthy snacks decreases by as much as 100 calories per day. It is important to mention that forming if-then plans is not only useful for distraction, but can also be helpful to facilitate other self-regulation strategies such as avoiding temptations (“If I am at a party, then I will stay away from the table with treats”) or controlling temptations (“If I want a snack, then I will take a little bit and put the rest out of sight”).

### **Box 11: how to make an effective if-then plan**

If-then plans can be very helpful to improve one's snacking habits. To form an if-then plan, the following three steps should be completed.

#### **Step 1: Define your personal trigger that makes you eat unhealthily**

Triggers can be anything including thoughts, feelings or specific situations. For example, you might be inclined to take an unhealthy snack when bored, when feeling stressed out, when watching TV, or when feeling hungry when you get back from school. Think back about the past week; what was the most important trigger to indulge in an unhealthy treat? Write this situational trigger down in a few words, starting with the word 'if' ....

Make it as personal and specific as possible.

(For example: 'If I am already hungry before dinner,' or 'If I am bored,')

If .....

#### **Step 2: Come up with solutions to deal with this trigger**

Keeping the trigger that you defined in step 1 in mind, think about what you can do to refrain from snacking when you find yourself in this particular situation. Write this solution down in a few words, starting with the word 'then'. Make sure that negating words (e.g., not, none, never) are avoided.

(For example: 'Then I will drink a glass of water instead' or 'Then I will call a friend to distract myself')

Then .....

#### **Step 3: Make the plan complete by connecting step 1 and 2**

Write down the plan which connects the trigger to a solution.

If..... , and I feel tempted to have an unhealthy treat, then .....

(For example: 'If I am already hungry before dinner, and I feel tempted to have an unhealthy treat, then I will drink a glass of water instead').

It is important to actually write down both the if-component and the then-component as well as the complete plan, and to repeat the plan a couple of times for yourself. This increases the likelihood that you will be able to resist the temptation. Take the time to imagine the situation and how you will behave in that situation as vividly as possible.

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## Chapter 4: Suppression

Jake is a twelve-year-old boy who loves watching television and when he is watching he has the habit of eating sweets. His mother worries about his sweet consumption and explains to Jake that he must use his willpower to suppress his tendency to eat sweets while watching television. “When there is a will, there is a way”, she tells him. The next morning is a weekend day and Jake engages in his favourite activity of watching some shows, but, following the good advice of his mother, he tells himself “I will be strong and have no sweets”. Much to his surprise, this strategy works! Exhilarated about the power of ‘just saying no’ he decides to use this strategy more often. But when he uses it to resist his urge to have sweets after a long school day on a Monday afternoon, he finds that it doesn’t help him at all. Now Jake knows that suppression can be a good strategy to forego unhealthy snacks, but not at all times. Suppression is a good self-regulation strategy but only for a limited period of time.

### Suppression explained

An important way to support the self-regulation of eating behavior is by not paying attention to temptations. One way to do this is to distract oneself, as we discussed in the previous chapter. There is, however, another important strategy that centers on attention, and that is the strategy of suppression. Suppression entails everything that we can do to ignore and reject temptations with our strength of mind: pushing out of our mind any thoughts about both the food itself and its tempting qualities (e.g., its smell, its taste) and thoughts about ourselves in relation to that food (e.g., wanting to eat it, really longing for it, how good it would taste in our mouth). Suppression also entails the psychological techniques we can use to tell ourselves not to engage with a temptation, even if we want to (for example, to stop and tell yourself ‘no’ every time you feel like a snack). The technique of suppression thus relies to a large extent on willpower; we need our higher ‘executive’ to put a stop on what our impulses might suggest and be cognitively strong enough to control our behavior.

Frequent use of the suppression technique was reported by almost 40% of the adolescents (see Figure 4). Typical statements that reflect suppressions are presented in the TESQ-E items in Box 12.

## What research shows us

While suppression is likely to be beneficial in some instances, its applicability may be limited (see Box 13). Important research has shown that suppressing thoughts, feelings and emotions does not happen automatically; we need what is referred to as self-control strength to not think about tempting foods and eating them. People do not have a limitless supply of self-control strength; when we use it too much, the self-control resource gets depleted. Our self-control resource can be compared to a muscle: when we use it too much, it gets tired and will not work as well anymore. In terms of a muscle, this could mean that after lifting ten heavy boxes, we will not be able to lift the eleventh anymore. In terms of the self-control resource, this could mean suppressing the desire to eat a piece of chocolate cake at a party and then suppressing the desire to stop at a fast food restaurant on the way home, but no longer being able to say no to the bag of crisps upon arrival at home. In other words, if we use willpower too often, without enough time in between to recover, we will be left vulnerable and will be more likely to give in to subsequent temptations. This is why Tempest researchers recommend the use of less depleting self-regulatory strategies for healthy eating whenever possible. This way, self-control resources can be saved as much as possible for those instances when other self-regulatory strategies cannot be easily applied.

There are indications that suppression of thoughts and feelings in general (even if not directly related to eating) may be bad for healthy eating intentions. Tempest researchers showed people a sad or scary movie and told them to suppress all their emotions while they were watching. People were told that there was a camera on their faces, and people watching their face should not be able to see any signs of emotional distress. When these people were then placed in a situation in which there was nice-tasting but unhealthy food available, they ate more of this food than people who watched the same movie but who did not have to suppress their emotions.

## What adolescents say

Interestingly, adolescents indicate using suppression most often of all strategies, together with temptation avoidance. They told us things like: “in order to ensure that I eat healthily, I just tell myself ‘no’ when I want to have a snack” or “even if I want to eat sweet really badly, I just ignore that feeling”. As we just described, however, such suppression of temptations using willpower can only be successful for a limited period of time. The fact that adolescents indicate using this strategy most often

may thus not be very positive; it may mean that they tend to fall back onto suppression, a strategy that is beneficial only in the short run, too often, leaving them vulnerable in situations where temptations endure or quickly follow each other.

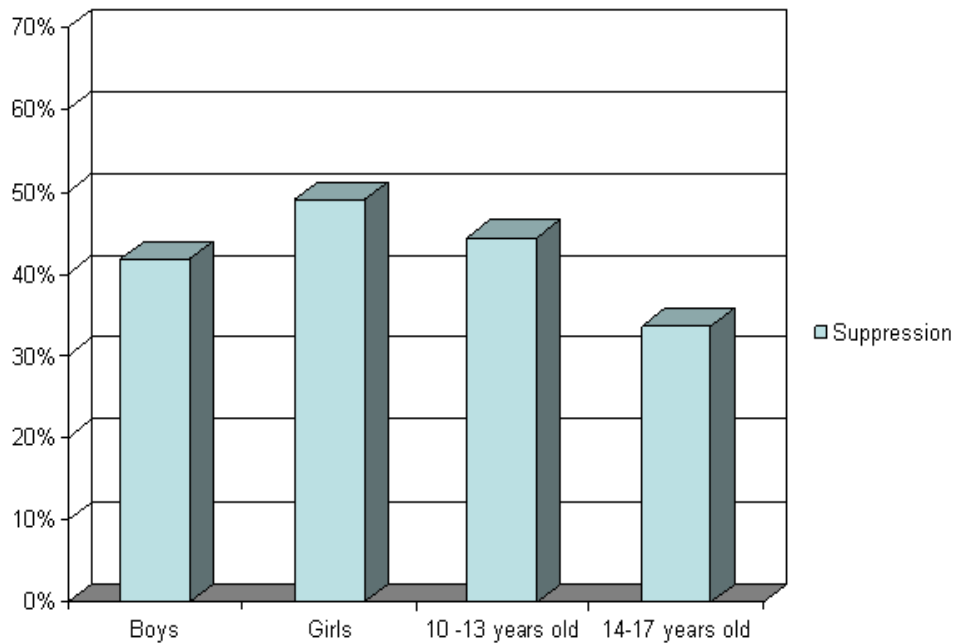
That they rely on suppression so much could be an indication that the self-regulatory competence of adolescents is not yet fully developed (see also the Discussion chapter). Moreover, it may also be an indication that youngsters cannot yet always estimate accurately how luring tempting foods are, and how enduring this temptation can be: they may feel that simply suppressing an urge to consume unhealthy foods will be sufficient to withstand the temptation, whereas in reality their suppressive power will quite often not be strong enough to withstand the temptation. Ideally, adolescents should rely more on other strategies, and use suppression only sparingly.

## **How to use and improve suppression**

Suppression is a strategy that consumes a lot of mental energy (see Box 14). It can therefore only be applied for short periods of time, after which the energy needs to be recovered. Adolescents should be made aware of this limited applicability of suppression and that relying on suppression too much will leave them vulnerable to temptations. On the other hand, suppression is not a useless strategy by any means. There are certain situations in which a temptation cannot be avoided or controlled and distraction is impossible. In such cases, suppression is valuable and should certainly be put to good use.

Suppression consumes mental energy, meaning that we can only suppress temptations for short periods of time. How much energy is consumed, and how much energy is available, is not the same for every adolescent. Some youngsters possess more of this resource, which is often compared to a muscle, than others. Every youngster, however, can train this 'self-control muscle', improving the strength and the speed with which the mental energy runs out when being used. How such training can be done is explained in Box 14.

**Figure 4: percentage of adolescents using the self-regulation strategy frequently or very often**



**Box 12: TESQ-E suppression items**

1. If I pass a bakery, I ignore the smells of tasty foods
2. If I want to eat unhealthy things, I just tell myself "no!"
3. I use willpower to stay away from unhealthy snacks
4. If I go to a party with lots of snacks, I ignore the food

***Box 13: suppression gone wrong: try not to think of a white bear (or a piece of cake)***

A potentially simple way to suppress giving in to temptations is by deciding not to think about the nice foods and treats we enjoy so much. In many situations we tell ourselves (or others) to 'just not think about it', or to 'stop thinking about it'. You're not alone if you've found that this well intended advice doesn't work. In fact, you may have experienced that the *harder* you try not to think of something (not only a luring snack, but anything that's on your mind) the *less successful* you are! This is what is called the 'white bear' effect, after a childhood anecdote of the Russian writer Leo Tolstoy, who recounted that his eldest brother would grant the younger brothers' 'every wish' on the condition that they could stand in a corner and not think of a white bear. In the late 1980s, the American psychologist Daniel Wegner conducted a first, now classic series of experiments to better understand the control we have over our thoughts. This and subsequent research has shown that most people have unwanted thoughts that haunt them, with thoughts of food being an obvious concern for people on a diet. Importantly, this research has convincingly shown that people are not very successful in suppressing their thoughts. Unfortunately, suppressing one's thoughts typically results in an escalation of the very thoughts we want to suppress... An alternative, more successful strategy to control our thoughts would be to acknowledge them, but not fight them, as proposed in mindfulness and similar strategies to change adverse thinking.



### ***Box 14: training the self-control muscle***

Researchers have discovered in experiments with late adolescents (university students) that suppression is difficult to maintain, because it consumes so much energy. However, suppression is easier if you train the self-control muscle that helps to inhibit undesired urges and impulses. This training is easy: just engage in doing something that you don't like very much for a few minutes every day for a couple of weeks. Why is this simple exercise so effective? The idea behind repeated training of willpower is that you get used to doing things that are not your primary urge or desire. By doing so, you learn to resist competing desires and continue doing the thing you might not actually want to do most. For example, if someone doesn't like to clean up his room, it helps to tidy up for just five minutes every day. In that way, tidying up becomes a kind of habit which doesn't require so much energy, and competing desires become less urgent. Importantly, training the self-control muscle in one domain (like in cleaning up) transfers to other behavioral domains. So, when Jake would lay the table for dinner in the evening (something he hates to do) for several weeks in a row, instead of sitting in front of the television right up to the start of dinner, chances are that he would also become better at resisting his bad habit of having sweets while watching television.

## Chapter 5: goal and rule setting

Think of John, a 13-year-old child who just entered high school and for the first time can determine what he is eating for lunch. At first, John is excited that his parents no longer prepare his school lunch and that he can buy fatty snacks from the school cafeteria as he wishes. But then, after a while, he learns that he has put on some weight and is no longer a fast runner when playing football. John decides that he should alter his newly acquired habit of eating snacks for lunch and prepare his lunch of cheese sandwiches at home instead. In self-regulation terms, John has adopted a healthy eating goal. Or take Mary, a 15-year-old girl who has decided that she would like to lose some weight. Although she is really committed to her goal, she finds herself snacking in the afternoon because she is always so busy chatting with her friends during the lunch break that she doesn't eat properly. Once she realizes that her afternoon burgers corrupt her goal, she plans to from now on sit down with her friends during lunch break and finish a healthy sandwich during their conversation. In self-regulation terms, Mary has adopted a new rule that makes it easier to adhere to her goal.

### Goal and rule setting explained

Goal setting is a way of considering what someone would really like to accomplish in the future and putting this into a clear and concise statement. A healthy eating goal entails more than a vague intention to eat more healthily. From our conversations with adolescents, we know that most of them will express such intentions. Nevertheless, only some of them show behaviour that is in accordance with these vague intentions. Adopting a healthy eating goal means that someone has thought about what he doesn't like about his eating habits and has a genuine desire to change it. A good goal helps to achieve this because of the inspiration that people can get from the idea that things will be different in the future. A healthy eating goal need not necessarily be about change, however; it can also be adopted by someone who is happy with his current eating habits and strongly wants to continue along this good path.

Of course, just having a goal in mind is not sufficient for making changes, even if this goal is concrete and inspiring. Goals themselves set a standard for change, but they don't specify what should be done on a daily basis to make progress toward that goal. One way of staying on track is to create rules that indicate appropriate moments to act in accordance with the goal or that determine what kind of behavior is off-

limits. Setting rules means that someone has thought about specific ways and moments to take action toward the goal and has decided to behave in line with those rules. Especially for youngsters, breaking up a 'large' long-term goal into simple and specific rules will help them stay on top of their game.

Please consult Box 15 to get an idea of what goal and rule setting contains. It is very common to use goal and rule setting; about 47% of the adolescents reported frequent use of this strategy (See Figure 5).

## **What research shows us**

Not all goals are good goals. For instance, the goal 'I want to eat more healthily' is not a good goal, since it is very hard to determine when you are making progress toward that goal: is adding one apple per day to your diet goal progress? Or do you also need to remove unhealthy snacks before we can say you are moving in the direction of the goal? Goals only help to realize healthy eating ambitions if they are concrete and specific. This is important especially for adolescents, who have an even stronger need for concrete, measurable goals. Grasping abstract or vague goals that are set far in the future is hard for them to do. The goal to eat two pieces of fruit per day for the next month is thus better than the less specific goal 'I want to eat more fruit for the rest of my life'.

Goals with a clear timeframe are also more helpful. A child aiming to eat more fruits by the end of the week has a better chance to succeed than a child who wants to eat more fruits without specifying when this has to be accomplished. Importantly, goals should also be attainable. It makes no sense to aim for the impossible and state 'I will never eat sweets again'. A child setting such a goal will set himself up for failure, even if it has true healthy eating intentions. Such failure will then lead to disappointment, which could have been avoided with a more realistic goal.

Our research has shown that another important aspect of goal setting is that adolescents should not set goals without considering whether they are really committed to these goals. Even when attainable, a goal that actually does not represent a desired endpoint to a child or adolescent will not motivate him to adapt his behavior. This also means that goals should not be imposed upon adolescents; goals work best if they are self-determined and represent something that is desirable for the child himself.

What about rule setting? While goals are an expression of commitment and motivation to accomplish a personal ambition, there are numerous

situations that challenge goal striving on a daily basis. For instance, adolescents may forget about their goal because there are competing activities. Or sometimes they may feel less motivated and not care so much about healthy eating anymore. In such cases, rules are a great help to persist in goal pursuit. With a rule in mind, one does not have to deliberate all the time whether or not to act in accordance with the goal; rules allow for sticking to a routine. Our research has shown that adolescents are very creative in formulating their own rules and have a good understanding of the situations that pose suitable opportunities to enact their goal.

## **What adolescents say**

In our conversations with adolescents, we have learned that many of them do not spontaneously name specific goals that they would want to pursue, although they are aware of the importance of goals. This indicates that they might benefit from some support in formulating healthy eating goals. Adolescents do, however, recognise the importance of setting rules to regulate their food intake, instead of relying on momentary decisions at difficult moments.

One particularly popular type of rules adolescents name is the creation of routines or habits, such as 'take a piece of fruit every day right after school'. This kind of rule stipulates typical times and places that make it easier to adhere to a goal, in this case a fruit consumption goal. A related category of rules specifies healthy alternatives at difficult moments, such as when watching television or when being bored or stressed. Apparently adolescents have a good sense of situations in which they tend to forget about their goals and know how to create specific rules or 'coping plans' for handling those situations. Another type of rule adolescents expressed relates to allowing themselves unhealthy foods at special occasions, rather than banning these foods altogether, such as 'only eat crisps in the weekend' or 'have pizza or fries for dinner no more than twice a month'.

Adolescents also repeatedly referred to their parents in helping to create a healthy eating-friendly home environment that would make it easier for them to stick to healthy eating goals and rules. For instance, adolescents told us that they would want their parents to bring less sweets and crisps to the home or to help them to prepare a healthy school lunch. Also with regard to the aforementioned rules for having unhealthy food only at certain special occasions, adolescents indicated requiring the support and cooperation of parents who decide about meals and grocery shopping. So, while parents may find it difficult to formulate rules that specify clear guidelines for adolescents without becoming too

authoritarian, which may backfire, parents needn't be too shy in helping their adolescent children to create rules and providing the environment in which these rules can be followed through.

## **How to use and improve goal and rule setting**

Some parents expressed concerns about their own role in helping adolescents to formulate goals and rules for healthy eating. Parents were reluctant to impose goals and rules that their children would not agree with. Many parents indicated fearing that such authoritarian parenting would backfire, with adolescents eating unhealthily behind their parents' backs. Indeed, research has indicated that goals must be self-determined at least to some extent; youngsters are motivated to change behavior only if this leads to the achievement of a goal that matters to them personally. On the other hand, however, parents do feel the need to impose some standards because a complete laissez-faire attitude would likely also not lead to the best eating behavior in their adolescent child. An important middle road between these two paths is being 'authoritative' (not authoritarian and not laissez-faire). This means that, as a parent, one's role is to help adolescents set goals and rules that reflect their own desires, within a framework of standards that parents find important. Adolescents also expect such guidance from their parents, indicating that they are generally not able to ensure a healthy lifestyle all by themselves (see also Box 5 in chapter 1).

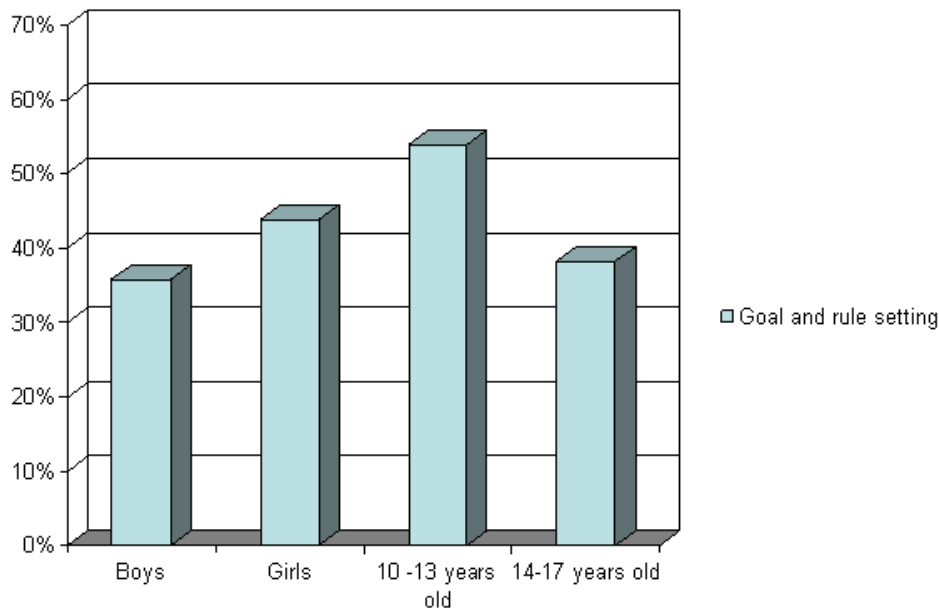
From our conversations with adolescents we have learned that they are very eager to formulate goals that help them to eat healthily, but find it difficult to specify such goals in appropriate terms. Because their ability to consider the future is still limited, adolescents may need some help in thinking about what they find important to accomplish when it comes to healthy eating. The 'do's and don'ts' in goal setting (listed in Box 16) provide some guidelines for formulating a goal that motivates youngsters to make realistic and age-appropriate changes in their eating behavior.

Importantly, one type of goal that is definitely not going to help is a broad avoidance goal like 'I will not eat chocolate'. Avoidance goals have been proven to be ineffective because they keep focusing adolescents on the thing they are not allowed to have. Every time a child thinks about his goal of not having chocolate, the idea of chocolate comes to the fore, making it very difficult to succeed. When adolescents want to set a goal to avoid unhealthy snacks, it makes more sense to adopt a so-called substitution goal: 'If I feel like snacking, I will have an apple instead of chocolate'.

Adolescents can also be encouraged to think about rules. In fact, in our research we found that adolescents were very enthusiastic about the concept of rules. We were impressed by their ingenious rules that sometimes very neatly corresponded with recent research in psychology. For example, many adolescents are aware that they often eat mindlessly when watching television or playing computer games, which makes it almost impossible not to eat in those situations unless they have made a rule to prepare themselves for such dangerous moments. We therefore recommend that adolescents should be encouraged to reflect on and take (some) responsibility for their own situation.

Schools and teachers play an important role here, as adolescents can learn from each other and together come to good and useful rules to achieve healthy eating goals. Schools can also help adolescents by imposing certain clear rules of their own, such as a fruit break at 10 am in primary school or serving hamburgers at the school cafeteria only on Fridays. Such rules will set a healthy example and, because the eating behavior of peers is of large influence on adolescents, (see Box 17), its effects can snowball. Witnessing one's peers leave unhealthy foods alone and grab instead for healthier alternatives will help other youngsters make healthier choices too.

**Figure 5: percentage of adolescents using the self-regulation strategy frequently or very often**



### ***Box 15: TESQ-E goal and rule setting items***

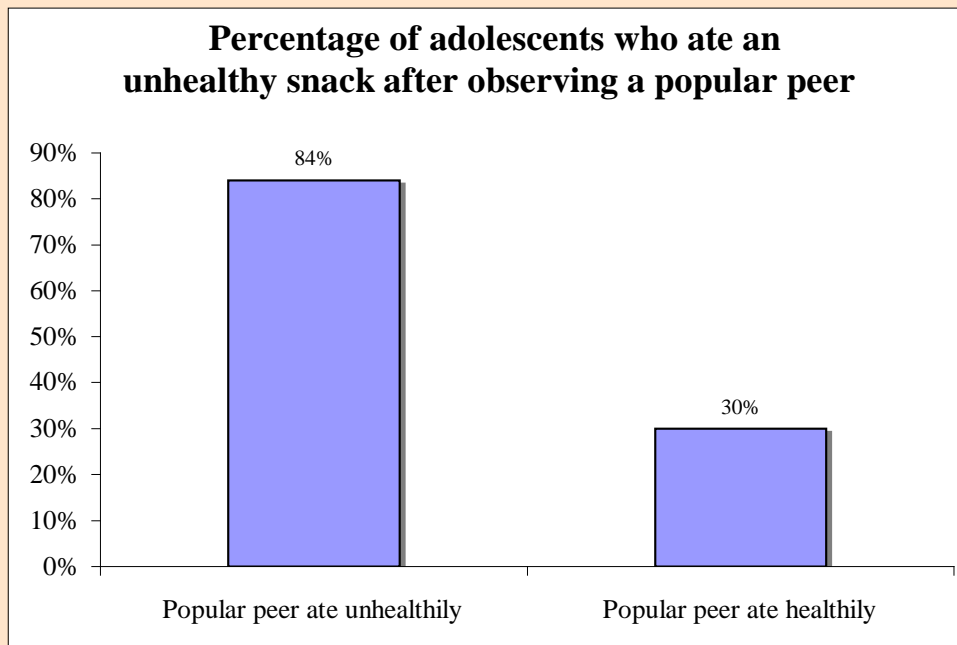
1. I plan to bring a piece of fruit to school
2. I have an agreement with myself about how many sweets I can have per day
3. If I want to eat a snack, I take a piece of fruit first
4. I set goals to eat healthily for myself

### ***Box 16: do's and don'ts in goal and rule setting***

When it comes to goal and rule setting, the best advice is to be SMART: set Specific, Measurable, Attainable, Realistic, and Timely goals. Specific means that it is better to state that you want to 'eat an apple everyday' rather than 'eat more fruits'. Setting a specific goal means that you can determine whether you have accomplished the goal, which is easier to eat in case of a goal specifying the exact number and types of fruits. Attainable and Realistic means that there should be a fair chance that you can attain your goal: Never eating sweet again is not going to work; eating sweet in weekends only is. Timely means that there is a clear endpoint for evaluation of your progress, which should not be too far away in the future. That means that eating one piece of fruit everyday in the next two weeks is a good goal, but eating one piece of fruit without a specific timeline is not. Setting SMART goals is important, but don't forget - whatever type of goal you specify - that goals should represent something that you really desire. It makes no sense to formulate a healthy goal if it concerns something that other people tell you to do. After all, goal striving takes some effort and you should be ready to face that effort to avoid disappointment. Remember that goals shouldn't make adolescents worry but rather should inspire them. Also, eating goals should not be dominating adolescents' lives as they have other important business to take care of, such as schoolwork, friends, and hobbies.

### **Box 17: the impact of peer eating behavior**

Tempest research has shown that the eating behavior of peers has an influence on youngsters' eating habits, indicating that implementing healthy eating rules in schools (but also in, for example, cafeterias of sports facilities) is of high importance. Whether adolescents snack and how much they snack is much more strongly influenced by their peers' snacking behavior, in some cases even more so than by the actual availability of unhealthy food items. When a popular peer eats unhealthy snacks, other adolescents will often snack too. In contrast, when a popular peer eats healthy fruits, most of them do not start to eat unhealthy snacks even if these unhealthy snacks are right in front of them.





## Chapter 6: Goal deliberation

Rosie is a 16-year-old girl who finds it important to maintain a healthy weight. She likes to look nice and thinks that a slim figure is an important part of that. Nevertheless, she does really like all kinds of unhealthy food – mostly chocolate! Notwithstanding her good intentions, Rosie sometimes caves in and ends up eating a whole bar of chocolate without even thinking about it. Afterwards, she never really understands why this happened and what caused her to fail to follow through on her intentions, for which she would then feel bad. She agrees with herself that, from now on, if she is on the verge of eating chocolate, she will first take a two-minute break to think about if she really wants to have it and how it will make her feel afterwards. If she still wants to have the chocolate after these two minutes, she can. After doing this for a while, Rosie notices that most of the time she no longer really wants the chocolate. Sometimes she realizes during the short break that she only wanted to eat because she was bored, so she would find something else to do. Sometimes she started thinking about wanting to stay slim, and she would choose not to eat the chocolate. And the few times that she still wanted to eat the chocolate after two minutes, she was able to enjoy it more and not feel guilty afterwards like she used to. Rosie has taught herself to apply a goal deliberation exercise.

### Goal deliberation explained

The previous chapter was all about how to set goals and rules and how that can help youngsters stick to a healthy diet. Once they have formed goals and rules, it is sometimes necessary to do something to make sure that these goals remain important. In everyday life, most people have many goals that they want to pursue. Adolescents want to do well in school, be kind to others, fit in with their peers, and have an enjoyable time. Eating healthily may not always be the number one goal for adolescents. What's more, eating healthily may sometimes be in conflict with other important goals: if a child wishes to eat healthily but sees that his peers are all eating fast food during lunch break, the goal to fit in with these peers will compete with the goal to eat healthily.

To make sure that youngsters will keep paying attention to their goals and rules for healthy eating, particular exercises exist that help to remind them of these goals. Such exercises are referred to as goal deliberation. Simple examples of goal deliberation are to think about the consequences of failing to stick to a healthy diet (e.g., what would I look like, what would be the effect on my athletic abilities) and to monitor on a

regular basis if goal progress is still being made. Goal deliberation might help youngsters to stick to their healthy eating goals, even when they may feel tempted to violate these goals.

Box 18 provides some of examples of goal deliberation that were mentioned by adolescents. Goal deliberation is the strategy that adolescents use most often. More than 53% report to frequently use it (see Figure 6).

## **What research shows us**

In our studies we found that adolescents who are concerned about their weight and who are motivated to eat healthily apply goal deliberation strategies most frequently.

Tempest research has also found that the strategy of goal deliberation is used most often by adolescents who are able to resist indulging in immediate pleasures (such as a nice cake at a birthday party) with the aim to attain long-term goals (e.g., to keep a healthy body weight) – in other words, adolescents who are better able to delay gratification (see Box 1 in the Introduction chapter).

As we already mentioned, not all adolescents are equally able to delay gratification. An important prerequisite for this is the ability to think about the future. If youngsters are not yet able to take the future consequences of their current acts into account, it is very hard for them to act upon these anticipated consequences. Research indeed showed that goal deliberation is used more frequently by children who think about the future (see Box 19 on future time orientation research).

## **What adolescents say**

When Tempest researchers asked adolescents what they could do to eat healthily, many of the answers they gave reflected goal deliberation strategies. A distinction can be made between three types of such strategies. First, adolescents mentioned different ways in which they thought about the negative consequences of unhealthy eating or the positive consequences of healthy eating, and this would help remind them of the importance to eat healthily. For example, adolescents mentioned that if they wanted to avoid unhealthy foods, they reminded themselves that they did not want to become fat or they imagined what they would look like if they were overweight. Other adolescents

mentioned considering how eating healthily would help them to stay attractive, athletic and in good health.

A second type of strategies can be referred to as mindful eating. As we mentioned before, eating unhealthy foods often occurs in a mindless way. This means that sometimes our eating goals and rules are violated without us being aware of that. A great number of adolescents mentioned using strategies increasing the awareness of what and where they were eating. For example, they reported to take a moment to consciously consider whether they were really hungry before they decided to take a tempting snack. By taking such a short conscious break when in a tempting situation, adolescents make sure their healthy eating goal is not forgotten.

A third type of goal deliberation strategies that some adolescents mentioned to maintain goals in focus is monitoring where, when and why they were eating healthy and unhealthy foods. We discussed self-monitoring already in chapter 1 (temptation avoidance), where it was referred to as a strategy to determine which types of tempting situations adolescents should aim to avoid. Monitoring can also be helpful in goal deliberation, however: when people keep track of what they are eating and in what situations, it also becomes clear when they lose sight of their goals and when they are violating their rules. Although self-monitoring has been proven to be relevant for maintaining a healthy diet in adults, only few adolescents actively mentioned this as an effective strategy. Nevertheless, as we also discussed earlier, self-monitoring techniques *can* be taught to adolescents with relative ease.

## **How to use and improve goal deliberation**

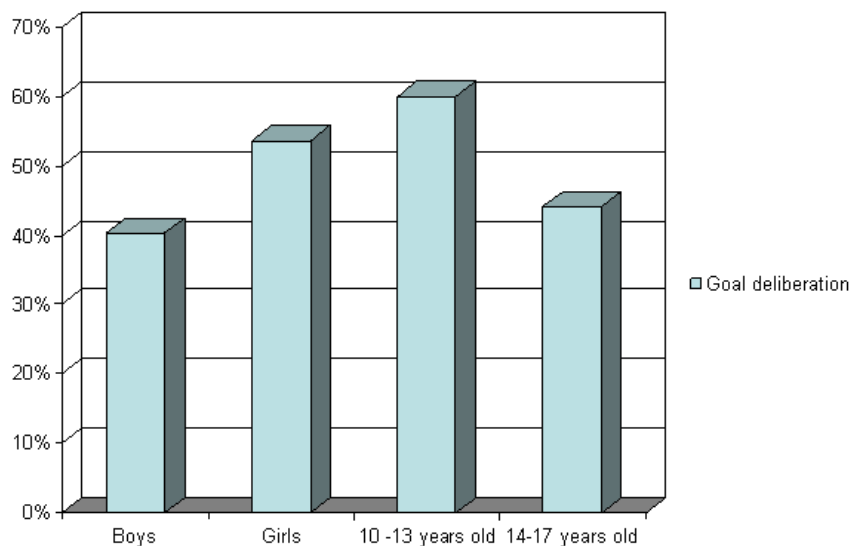
There are several ways to improve goal deliberation. Goal deliberation strategies are often spontaneously promoted by parents and other caregivers, even if they may not realize that they are indeed promoting goal deliberation. Adults often urge adolescents to consider the negative consequences of their eating behaviors: “Don’t eat so many crisps or you will end up too fat” or “Take some fruits because that will help to avoid getting a cold” can be common parental expressions. The underlying message seems to be absorbed well by adolescents, as they provided the same kind of statements when asked what they do to ensure their healthy eating. Since adolescents who think about the future consequences of their current dietary patterns are better able to control their eating behavior, it certainly is a good thing that parents repeatedly point to the importance of a healthy diet for a healthy (future) life. By verbally connecting current behavior to future consequences, parents actually

provide their child with a good example of how to apply goal deliberation. Mental contrasting is a useful technique that helps adolescents achieve this (see Box 20).

Goal deliberation entails more than actively connecting current acts to future consequences. Another way of strengthening goal deliberation is to apply mindful eating exercises. When adolescents feel tempted to eat an unhealthy snack, it is good to take a small thoughtful break from that situation. Youngsters could take a moment to answer the following questions: “Am I really hungry?”, “Do I really want to have this food?”, “How will I feel after I have eaten this food?”. Food cravings usually last only a few minutes and if a child is able to bridge these few minutes by taking a mindfulness break, he or she will be less likely to end up eating a snack, as the urge to have it will have faded away.

A further way of improving goal deliberation is through applying self-monitoring exercises (see also chapter 1). By gaining more insight into the situations in which they would typically eat unhealthily, adolescents can learn to recognise these situations and prepare to handle them successfully. They may realise, for example, that they tend to go for crisps when they are home alone, or that they always end up in a fast food outlet when they hang out with friends after football practice. By identifying such patterns, adolescents will be better able to anticipate difficult and tempting situations and to be better prepared for them (for example by applying temptation control and temptation avoidance strategies).

**Figure 6: percentage of adolescents using the self-regulation strategy frequently or very often**



### **Box 18: TESQ-E goal deliberation items**

1. If I want to have a snack, I try to realise that snacks are bad for your health
2. If I think I may be overeating, I think of how this may compromise exercising
3. If I want to take a snack, I remember that I want to stay attractive
4. If I feel like eating something unhealthy, I think about whether I really want it

### **Box 19: future time orientation**

Some people seem to think only about the present when making decisions. Imagine the adolescent who spends all of his pocket money on clothes, without considering that there will be no money left for other items such as computer games. On the other hand, there are adolescents who seem inclined to scrutinise what might be the consequences of a particular action. Take for example a high school student who gathers information about future career prospects that may come about from selecting a specific line of education. This student can be said to have a *future time orientation*. Typically, people with a strong future time orientation value planning and can become worried if things do not get done in time. They generally approach big tasks by dividing them into subtasks and systematically complete these tasks before the deadline.

Future time orientation develops between the ages of 10 to 25. Given that the future is very distant at a young age, it is perhaps not surprising that youngsters are not strongly oriented towards the future. Thinking ahead 10 years in time is very different for a 10-year old child than for his or her 40-year old parent. Nevertheless, future time orientation in adolescents can still pay off in the present. Our research showed that adolescents who had a relatively strong future time orientation, used goal setting and goal deliberation more often than their peers who were less oriented towards the future. Moreover, future oriented adolescents were better able to delay gratification. Adolescents were allowed to choose between a small amount of sweets that they would get immediately, or the double amount of sweets which they would receive one week later. Those with a stronger time orientation were twice as likely to wait a week for their reward.

### ***Box 20: mental contrasting***

From our research we know that many adolescents have a desire to eat more healthily. However, just having a wish is not sufficient to achieve a goal. Turning a fantasy about the future into a binding goal that you are committed to requires some extra effort. Researchers have developed a procedure that helps turn a wish into a goal. This procedure is called 'mental contrasting' - you first think about what you desire and then contrast it in your mind with how things are now. As goals by definition refer to desired end states, this means that thinking about how it is now, is not going to make you happy. If, for instance, you have a desire to eat more fruits, comparing the desired situation with your current situation means that you have to admit that you have failed so far in eating enough fruits. Although mental contrasting confronts you with the reality - which may not be so nice - this exercise helps motivate you to engage in actions to attain your goal; it helps you realise that something needs to be done to accomplish what you are wishing for.

## Discussion

In the previous chapters it has become clear that various strategies exist that can help young people adopt and maintain a healthy diet. In our research we further found that adolescents who used these strategies more often, also ate more fruits and vegetables and less snacks and soft drinks. This suggests that such strategies are useful. Importantly, many adolescents already seem to use these strategies. In general girls are more likely to use strategies to regulate their eating behavior than boys. This may be because girls tend to be more concerned with the importance of healthy eating. We also found that younger adolescents were more likely to use self-regulation strategies than older adolescents. While there are several possible explanations for this, it may be that because older adolescents generally spend more time away from home and experience more out-of-home eating opportunities than younger adolescents, they are more likely to find themselves in tempting situations. The Tempest research further found indications that motivation and autonomy are important prerequisites for the use of self-regulation strategies. Adolescents were more likely to use self-regulation strategies if they were motivated to eat healthily and desired to take responsibility for their own behavior.

Parents sometimes question how much they can still influence their child's eating habits, in particular with older adolescents. Adolescence is characterised by a strong desire to gain autonomy and independence, and parents may feel that friends have a much stronger influence on the behavior of their child than they do as a parent. However, as we already argued in the beginning of this Handbook, adolescents value their parents' roles in healthy eating (see Box 5). Parents have an important influence on their children through their own food-related attitudes and practices, which may differ across countries and food cultures (see Box 21). Moreover, research by the Tempest team has shown that the eating standards that parents have for their children have stronger influence on adolescents' eating habits than the eating standards of friends. We therefore emphasise that parents continue to play an important role in adolescents' eating behavior. Naturally, other parties, such as schools and (local) governments, may also influence the diets of adolescents through the services they provide and the policies they implement. When we asked the opinions of adolescents about different approaches that might help support their healthy eating, the important role that parents play was again apparent. We found that adolescents do not agree with approaches that restrict their freedom of choice. More specifically, we found that adolescents did not favor approaches such as increasing the price of, limiting the availability of or banning advertisements for unhealthy foods. (See Box 22).

Resistance may occur when adolescents feel restricted in their freedom of food choice. It is therefore important to be sensitive to this when attempting to influence food choice and to provide supportive ‘nudges’ rather than to impose clear restrictions. Nudges are gentle and subtle hints to refrain from unhealthy eating without explicitly forbidding it, so that adolescents can decide for themselves what they will do (see Box 23). Using nudges to influence food choices (called ‘nudging’) seems to lead to better eating behavior in adolescents than prohibiting the consumption of unhealthy food or adopting a ‘laissez faire’ attitude. For parents, these findings are an important indication that while children do not want to be told what to do, they do need guidance from their parents (and they also expect such guidance, as we showed also in Box 5). Subtle nudges seem to be a promising route for providing such effective and acceptable guidance.



### ***Box 21: Have your cake and eat it too? An exploration of differences in food culture***

Although the prevalence of overweight and obesity in adolescents (and adults) has been on the increase in wealthy nations, there are substantial differences between countries. One such difference that has received much attention is the difference between the United States of America and France, sometimes referred to as the 'French paradox': the French consume more fat than Americans, but are less affected by cardiovascular disease. In an intriguing program of research, American psychologist Paul Rozin and French sociologist Claude Fischler jointly explored how differences in food culture may explain the weight-related differences observed between the USA and France.

In a series of studies, Rozin and Fischler documented substantial differences in food-related attitudes between countries. They noted that for the French, food is a source of pleasure in life, while for the Americans it is a source of concern over health. Through observations in restaurants and supermarkets, as well as analyses of cookbooks and restaurant guides, Rozin and Fischler also found evidence for differences in the food environment in France and the US. Explaining why the French may be slimmer, they observed differences in portion size suggesting that the French eat less and value quality of what they eat, while for the Americans quantity is the most important. Observations in McDonalds food outlets in Paris and Philadelphia showed that the French spend more time eating and have more pleasurable food experiences.

In a further study, Rozin and Fischler found that Americans expect and value more choices, for example in ice cream favour selection and in number of items restaurant menu. This may reflect a higher importance attached to individual preferences in the US, compared to a stronger focus on communal food values in France. In the Tempest project we found that adolescents from families that often eat together and see family meals as important, pleasurable and social events they consumed less snacks and soft drinks. Like the French, these adolescents experience a food culture that promotes moderation and enjoyment, or in other words, that they can have their cake and eat it too.

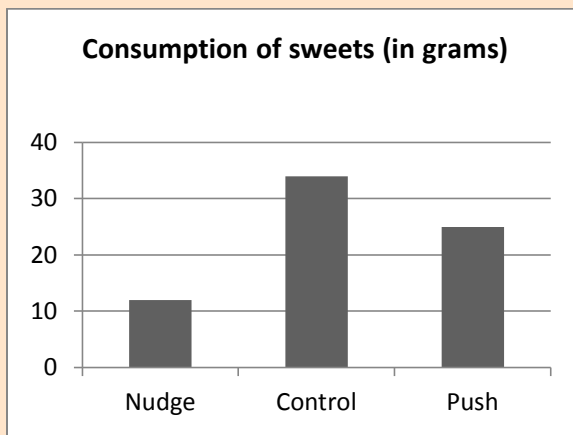
### ***Box 22: Adolescent's views on approaches to improve their diets***

In the Tempest project, we asked almost 3000 adolescents from the Netherlands, Poland, Portugal and the United Kingdom about their opinions regarding approaches to support healthy eating. The table below shows the percentage of adolescents who were supportive of each specific approach.

<i>Approaches to improve adolescent's diets</i>	<i>%</i>
It is important that parents talk with their children about the importance of healthy eating	69.9%
It is a good idea to have rules at home about eating fruits and vegetables	57.2%
Young people should learn more about healthy eating in school	60.1%
Schools should not sell unhealthy foods and fizzy drinks	33.4%
Teachers should encourage young people to eat healthily	60.0%
The price of snacks and soft drinks should be increased so that young people consume less	31.6%
Healthy foods and drinks should be cheaper than unhealthy products	61.2%
Unhealthy foods and drinks should be banned for sale to young people	18.8%
Advertising of snacks and soft drinks to young people should be prohibited	21.9%
Snacks and fizzy drinks should have health warning labels	47.9%

### **Box 23: nudging**

Tempest researchers wanted to find out whether subtly nudging adolescents to refrain from temptation results in better subsequent self-regulation than explicitly telling them to refrain from unhealthy eating. To investigate this, we placed different types of sweets and wrappers in front of children, and asked them to perform a linking task: they had to identify which taste belonged to which wrapper. We explicitly said “do not eat the sweets” to a first group of children (explicit condition). A second group of children did not receive additional instructions (nudge condition), but we expected that the linking task would provide a subtle nudge that eating from the sweets might not be appropriate in this research setting. A third group of children received a similar task but without any sweets present (control condition). Participants who were nudged not to eat the sweets subsequently ate less of similar sweets than participants who were explicitly told not to eat sweets or who were not exposed to sweets. This suggests that it is better to nudge adolescents not to consume a tempting treat when they are exposed to it, than to forbid them to eat it.



## Further Reading

For more information on related topics, consider the following books:

- *Willpower: Why Self-Control is the Secret of Success* by Roy F. Baumeister, published by Penguin in 2012
- *Nudge: Improving Decisions About Health, Wealth and Happiness* by Richard H Thaler and Cass R Sunstein, published by Penguin in 2009.

Scientific references for the research discussed here are available from the TEMPEST website.

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