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*Learning to form “when-then” plans:
An implementation intentions program*

(Version summer 2011)

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To cite this program:

Burkard, C., Rochat, L., Emmenegger, J., Juillerat Van der Linden, A.-C., & Van der Linden, M. (2014). A daily-life-oriented intervention to improve prospective memory and goal-directed behaviour in aging: A pilot study. *Neuropsychological Rehabilitation*, 24, 266-295.
doi:10.1080/09602011.2014.887023

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1) CONTENT AND STRUCTURE OF THE PROGRAM

This program aims to teach older participants with cognitive impairments how to use a planning and self-control strategy in their daily lives. This strategy—the “when-then technique” or “implementation intentions” (Gollwitzer, 1993)—improves performance in different cognitive domains, including prospective memory, inhibition and initiation of action.

The program consists of 10 sessions of 60 minutes each, with two sessions per week, and has been conceived to be administered in small groups (about four people) of older adults. However, it may be used in the context of individual interventions as well, or adapted to other populations of patients who are experiencing cognitive difficulties (patients with nondegenerative brain lesions or with psychopathological problems).

The learning program comprises exercises of increasing complexity. First, simple, concrete explanations are given to participants, detailing the implementation intentions strategy, as well as situations in which it may or may not be used (*psycho-education*); this component of the program addresses basic theoretical knowledge, while the sessions that follow are geared more toward practical aspects.

Indeed, after the introduction, the participants have to analyze various situations of daily life in which a person is faced with a problem, or is faced with a task to perform. They learn how to respond to these problems by using the when-then technique in these situations (*scenario analysis*). The variability of the proposed situations increases gradually with the progress of the participants in the program. Participants learn to form correct verbal when-then plans and, in parallel, are taught how to visualize these plans (*visualization*).

After practicing the verbal and the visual component of implementation intentions separately, the next step is the practical application of the acquired knowledge and skills by applying the technique to tasks that participants have to perform later in the session (*practice: “missions”*). Initially, the technique is applied under the control of the clinician, and then the participants receive less help and guidance and apply it gradually by themselves.

Finally, in the transfer or *generalization* phase from the session to real-life situations, we propose that the participants use the strategy in their daily lives. To facilitate this transfer, different methods are suggested to the participants during the session (observation of appropriate situations for applying the technique in daily life, anticipation of situations that will occur and would be adequate for using it, achieving a personal list of suitable situations, analysis of the difficulties associated with the use of the strategy). At different times throughout the program, learned knowledge is summarized and new details are introduced.

Each week, a summary is also distributed to the participants. This summary contains the explanations and exercises completed during the session, with one or more correct answers.

Specifically, the schedule of sessions is as follows:

Session	Content
1.	<ul style="list-style-type: none">- Explanation of the technique and examples- Scenario analysis: simple prospective memory (“unique” situations)
2.	<ul style="list-style-type: none">- Short summary- Scenario analysis: simple prospective memory (“unique” and “repeated” situations, verification)
3.	<ul style="list-style-type: none">- Short summary- Scenario analysis: prospective memory (with and without planning)- Visualization: introduction (explanations + movie sequences - if time left)
4.	<ul style="list-style-type: none">- Visualization: movie sequences + exercises- Scenario analysis: time based → event based- Generation of possible scenarios by the participants
5.	<ul style="list-style-type: none">- Visualization: exercises- Scenario analysis: all types of situations + distractors
6.	<ul style="list-style-type: none">- Application: missions (under supervision of the clinician)- Scenario analysis: inhibition
7.	<ul style="list-style-type: none">- Application: missions (diminution of the intervention by the clinician)- Scenario analysis: apathy, emotions- Homework (for session 9): Identify situations in daily life for appropriate use of the strategy. Use strategy as frequently as possible.
8.	<ul style="list-style-type: none">- Application: missions (autonomous use of the strategy)- Homework (for session 9): Identify situations in daily life for appropriate use of the strategy. Use strategy as frequently as possible.
9.	<ul style="list-style-type: none">- Generalization: anticipation of situations for the following week- Limitations of the technique- Homework (for session 10): Use the strategy as often as possible, including in the situations listed during the session and write down successes, failures and difficulties.
10.	<ul style="list-style-type: none">- Generalization: Work on the situations brought forward by the participants.- General recapitulation- Establishment of a personal list of potential suitable situations- Application: Use the strategy in as many situations as possible.

2) MATERIALS

The following section presents the exercises in detail (objectives, instructions) and the basic material to use.

2.1) Explanation of the when-then technique

The following text is intended to give a basic explanation of the program concerning (1) the content of this intervention and (2) the functioning of the when-then technique. The idea is to present it orally, with the help of visual diagrams and schemas (see below) at the beginning of the first session.

As the name suggests, in this memory group we will talk about... memory! For you, what does the term "memory" refer to—does it refer to the past, present or future? (Expected answer: the past). In fact, usually, when the term memory is evoked, we immediately think of the past, for example, memories or remembrances.

*As you were surely told when you came to this memory clinic for the first time, memory consists of different systems. In this program, we will address together a subcomponent of memory that we do not often think of, the memory about the **future**; more specifically, we will talk about a strategy that improves the memory of the future. But what is it exactly, when we speak of memory linked to the future? It is the memory that intervenes when one remembers to do something in the future: this is the memory of things to do. For **example**: "Later on, I have to call Mary to wish her a happy birthday; tomorrow, I must not forget to go to my appointment at the hairdresser; every morning at 8 a.m., I have to think about taking my medication for hypertension; I still have to fill in my tax declaration before the end of the month." (Allow participants to generate other examples, and note all the examples on the flip chart).*

What is special about this "memory for things to do" is that one must not only remember the information, the task to be done (I must call Mary), but one also has to learn to identify and to seize the opportunity to perform this action, as well as to remember the time to achieve it (I must call Mary today, as tomorrow it will be too late to wish her a happy birthday). In everyday life, as you can well imagine, this memory plays a fundamental role. To some extent, one could even say it plays a more important role than memory of the past, since it allows us to perform concrete actions at a given time. Like other subcomponents of memory, the memory for things to do is not perfect. Everyone forgets from time to time to perform an action that he or she wanted to achieve. In addition, like other memory systems, the memory for things to do is sensitive to stress, fatigue, busy schedules and age; when people complain of memory problems in their daily lives, the memory of things to do is often mentioned.

The purpose of the moments we spend together here is to learn to use a strategy that improves the memory of things to do (which can help at any age, in everyone, irrespective of memory problems, by the way!!) in everyday life. The purpose of these sessions is not only to explain how this strategy works, but to show you practically, with examples from everyday life, when we can or cannot use it and how we apply it, so that you can really use it in your everyday life. But before we start using the strategy and some exercises, I want to know what techniques and strategies you use in your everyday life in order not to forget the things you have to do. Probably all of us know or use techniques for remembering things we have to do. How do you, for example, remember to take your medication, or go to an appointment? (Expected answers: note on paper, note in agenda, ask somebody to remind us, make a knot in one's handkerchief, repeat the task, put the object in plain view, always do the action at the same time... ; briefly discuss the benefits and disadvantages of the strategies mentioned; see examples in Table 1).

Table 1: Possible strategies to use in prospective memory

<p>Agenda /sticky notes/other notes:</p> <ul style="list-style-type: none">- Paper does not forget: reliability- Works for long duration- Must have paper or calendar at encoding time- The external aid must be checked at the right time (not always adequate, cf. message to transmit, action to be done in the short term)- Sticky note/paper: where is it? <p>Ask somebody to remind us:</p> <ul style="list-style-type: none">- If this person is present at the time of encoding and retrieval- Depends on the memory of this person- Can be perceived positively ("nice mutual aid relationship") or negatively (dependence on someone else) <p>Repeating "I must... ":</p> <ul style="list-style-type: none">- Works in the short term- If not interrupted- Expensive (no activity that requires concentration can be performed at the same time) <p>Place an object in view:</p> <ul style="list-style-type: none">- Useful if it is to take or use an object (if there is one...)- You must be sure that the location is strategic <p>Always do the action at the same time:</p> <ul style="list-style-type: none">- If repetitive action (medication)- Attention to changing habits (when traveling,...) <p>Knot in the handkerchief:</p> <ul style="list-style-type: none">- Only works if one has a good retrospective memory! (and if you do not use it too often, cf. confusion) <p>Alarm (cell phone, timer)</p> <ul style="list-style-type: none">- It is necessary to remember the action (well, not always with modern technology)- Works when you know exactly when to do the action (less convenient if the task is purely event based) <p>When-then technique:</p> <ul style="list-style-type: none">- Inexpensive- Can be interrupted- Is used when there is no paper or agenda- Works even with advancing age- "Automatic" (explain)- More than just memory- When you know in what situation we want to perform the action- Relatively short term <p>Common to all strategies: used preventively</p>

In this group, we will learn a new technique to improve memory for things to do. It does not replace the strategies you have used to date, but adds a **tool** to your arsenal, a string to your bow.

So I will now describe the **strategy**. The idea is actually very simple: the strategy involves **imagining** yourself in the situation where you want to perform an action while doing it. Consider an **example**. Suppose that when you leave this room, you would like to remember to give me a document. In this case, you should imagine now as precisely as possible the moment you leave this room. For this, you can close your eyes and try to see yourself at the exact moment you leave this room, with the greatest possible amount of detail. At this time, you imagine that you remember what you want to do and you give me the document. In addition to that, you say to yourself, committing yourself to do it, "when I leave the room, then I will give the document to the neuropsychologist." Okay?

In other words, the strategy consists of taking time to imagine the situation in which we would like to perform an action, trying to perform this action, and then saying aloud a phrase such as "when I find myself in this situation, then I will take that action." That is why we call this strategy the when-then method. It consists of creating a link between a situation (when I leave the room) and a behavior, or an action (then I will give my document to the neuropsychologist). (Use visual aids, such as Figure 1, to emphasize both visual and verbal components of the strategy and Figure 2a to illustrate the when-then sentence). Does this seem clear to you?

Figure 1: Both components of the strategy

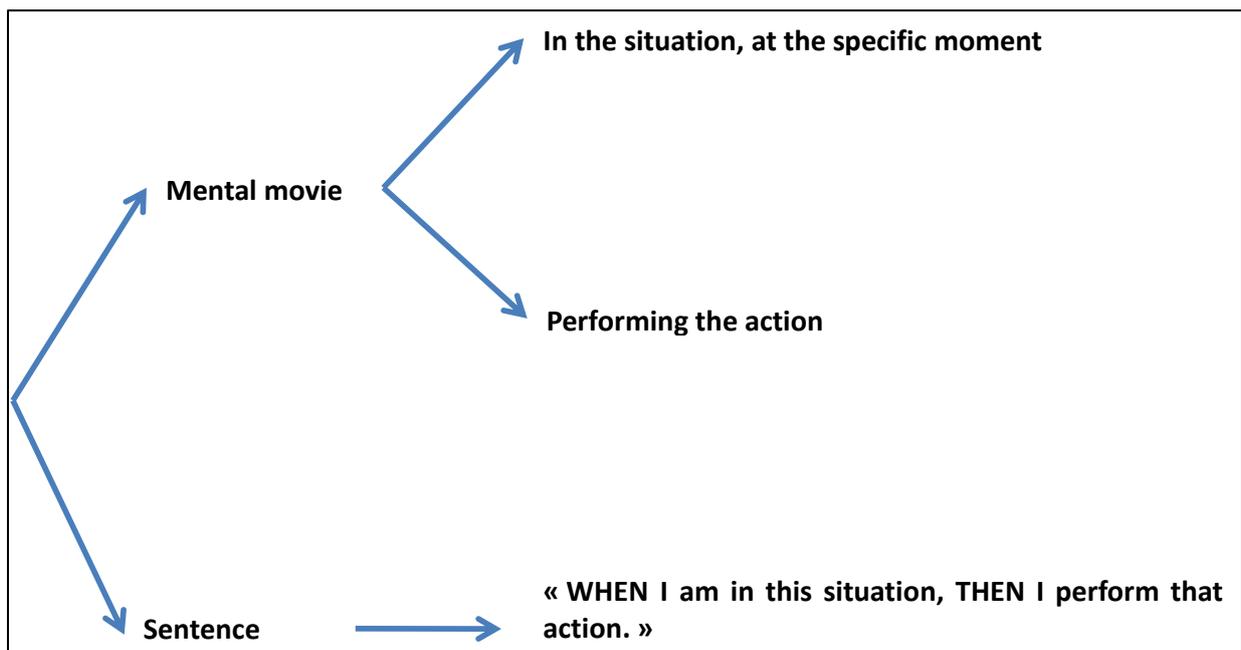
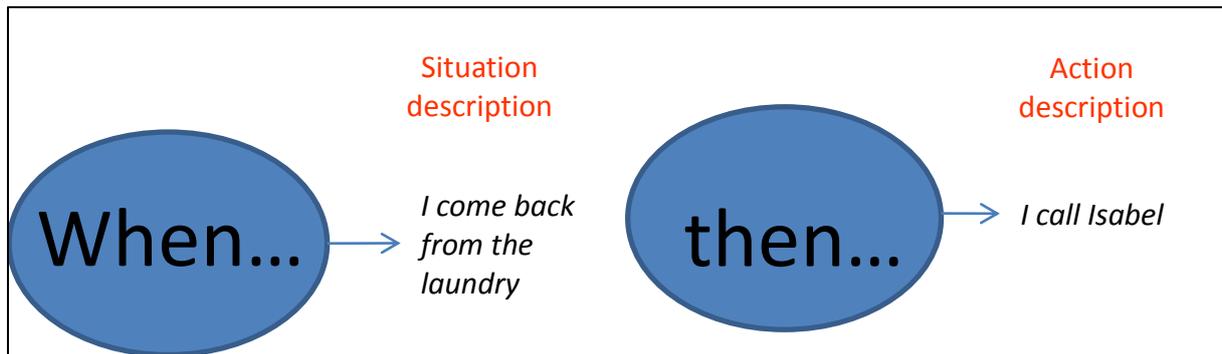


Figure 2a: When-then strategy



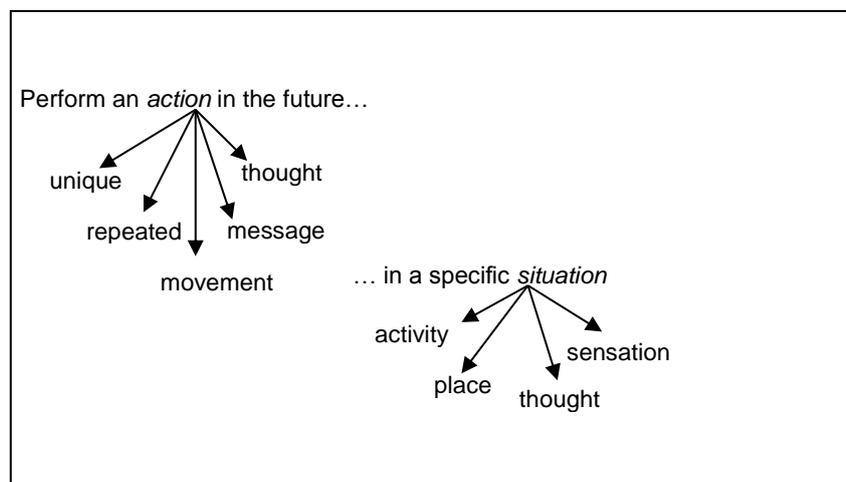
Now, in a little more detail: when can we use this strategy? (use Figure 3)

Let's start by saying that, in general, it can be used when one wants to **perform an action in the future**. It may be a **single, unique** action, which takes place only once (tomorrow on the way home from buying bread from the bakery, I must think to put this letter in the mailbox), or for an action that takes place **regularly** (a repeated action - in the morning after breakfast, I must think of taking my medication; after lunch, I must consult my diary).

You can use this strategy for different types of things to do, for **different types of "actions."** The action may be a movement, a gesture, an activity (when I finish my meal, then I will water the plants), a message to transmit (when my husband comes home from playing tennis, then I will send him a message) or sometimes even a thought (when I feel sad, then I will try to think of a happy time; when something negative or unpleasant happens to me, then I will try to see the positives aspects of the situation; when I am faced with a difficult situation, then I will tell myself that I am able to do it).

You can also use **different situations** (in the "when..." part). It can be an activity (when I finish washing the dishes), a place (when I get home), a physical sensation (when I am hungry) or a thought (when I think I will never make it).

Figure 3: When to use the technique



We said that the when-then strategy would allow you to remember things to do. However, it can also remind you not to do something in certain situations. For example, not to mention the surprise that you arranged for a friend when you see him; not to touch door frames that your husband just painted (if you have a habit of leaning on them), etc. This may be especially important because sometimes one has habits, or does things automatically, and in some situations one realizes that they are not suitable or that they are no longer suitable.

To make these explanations more specific, I propose immediately moving on to the exercises.

In subsequent summaries, try to involve the participants as much as possible. Ensure that you regularly summarize at least the following elements:

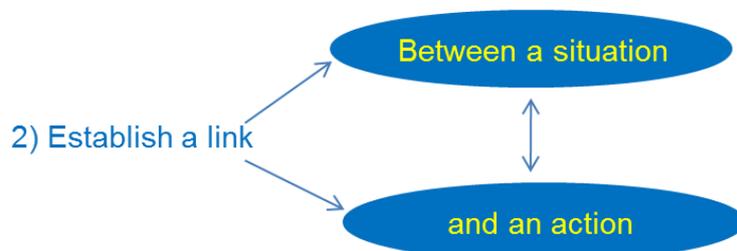
- The when-then strategy improves the memory of things to do.
- It consists of imagining, or visualizing, a short mental movie and saying (aloud or in a low voice) a when-then phrase (use Figure 4).

For participants with memory impairments, care should be taken to minimize error production in these exercises.

Figure 4: Summary of the strategy

In 3 key points...

1) Memory for things to do



3)



2.2) Scenario analysis

In the “scenario analysis” exercises (sessions 1-6), participants are presented with situations that could occur in their daily lives and in which a person is faced with a cognitive difficulty and thus could use the when-then strategy to solve this difficulty. The participants’ task is to help the protagonist of the scenario to form the appropriate when-then sentence.

To avoid too much load on working memory, it can be useful to print the scenarios on cards that are distributed to the participants.

To gradually increase the difficulty, we recommend starting with simple prospective memory exercises where the protagonist knows in which circumstances he or she must carry out the action; (sessions 1 and 2) and then introducing prospective memory situations with planning (where the scenario does not specifically mention when the action has to be performed; session 3). We then propose prospective memory exercises that require transformation of the "time-based" situation to an "event-based" situation (the protagonist of the scenario has to perform the action at a certain time, which must be converted to an activity or location to be visualized; session 4). When participants master these situations, it is possible to introduce distractors (i.e., situations in which it is not possible to use the when-then technique; session 5). Finally, we suggest introducing somewhat different situations during sessions 6 and 7: the use of the strategy to improve inhibition and to overcome motivational or emotional difficulties.

Within these categories, the neuropsychologist can choose which situations to use and in what order. The neuropsychologist can also draw on participants’ complaints or problems reported in the pre-intervention assessment in order to work on situations of daily life that are specific to the group of participants.

At the end of the session, participants are reminded that to implement the strategy, it is necessary to tell themselves the when-then sentence (saying it out loud or in a low voice), or to write it down, committing themselves to do so.

Finally, we propose spending time at the end of some sessions for the participants themselves to generate situations in which the when-then strategy can be used. We then ask the other participants to form the correct sentence.

Instructions: *In the first exercise we will do, I will read situations that have happened to different people and that could have happened to some of you.*

Your task is to identify what the person should do and to help the person to form the when-then sentence. We will start with easy situations and then gradually increase the difficulty level. So what would you do instead of... (name the corresponding chosen situation; see below)? If more answers than “using the when-then technique” are given, accept all plausible and useful strategies (note the task on paper, enter the information directly on a cell phone, use an external memory aid,...), but force the answer "use the when-then method" ("What else could we do?" and “What if we do not have paper at hand? "). And what would be the correct when-then sentence?

Generally speaking, in the scenario analysis exercises, various alternatives to when-then sentences may also be accepted (important: sentences are correct when containing the words “when” and “then,” are formulated as first person singular and do not include a negation); responses indicated after the arrow are *possible* answers. As the exercises go on, participants are asked to form more precise plans.

Prospective memory exercises (sessions 1 and 2)

1. Pierre went to his doctor who diagnosed him with high blood cholesterol. He prescribed a new medication that Pierre must take every day at lunch before eating.
 - When I am about to eat my lunch, then I will take my cholesterol medication.
2. A friend of John's wife called. His wife was not there at the time, and so John answered the phone. This friend asked that John's wife call back as soon as she returns.
 - When my wife returns, then I will tell her to call her friend.
3. Catherine wrote a letter that she should post soon. This morning, she plans to go shopping and the post office is on her way; she will put the letter in the box when she passes the post office.
 - When I pass the post office on my way to go shopping, then I will throw my letter in the box.
4. Following a sprain, Odette's physiotherapist advised her to do some daily exercises to improve the mobility and the flexibility of her foot. He advises her to perform the exercises every night before she goes to bed. He recommends that she be as regular as possible.
 - Each night when I go to bed/when I brush my teeth, then I will do my physiotherapy exercises.
5. Melanie is in the bus and her husband calls her on her cell phone to ask her to go to the bakery on the way back from the gym because there is no bread left at home.
 - When I get out of the bus while coming back from the gym, then I will stop at the bakery to buy bread.
6. Jacqueline has an appointment tomorrow morning with a friend to whom she promised to lend a book she just read. However, Jacqueline knows she often forgets to bring objects with her when she leaves home.
 - When I leave the house tomorrow, then I will check that I have taken the book.
7. Charles realized that he tends to forget to turn off the stove after use.
 - When I finish cooking, then I will check that I have turned off the stove.
8. Françoise realized that when she leaves her home, she regularly forgets her glasses.
 - When I leave my house, then I will make sure I have taken my glasses.
9. When Carmen comes home, she must remember to call Florence, whose birthday is today.
 - When I get home, then I will immediately call Florence for her birthday.
10. When Marianne goes shopping, she often forgets an item she had included on her list (possibly help participants think of verification/checking).
 - When I get to the checkout, then I will make sure I have all the items on my shopping list.

Prospective memory exercises with planning (session 3)

Whereas in previous scenarios, the situation in which the behavior must be implemented (the "when" part) was explicit (in exercise 1, Peter must take his medication just before lunch), in the new scenarios presented here, participants must plan the action themselves and set an appropriate time for the initiation of behavior (in situation 13, Florent should call Peter the next day for his birthday, but we do not know at what time of day). The neuropsychologist can ask participants to draw on their own environment to define the appropriate time (*"Imagine that it is you who must call Pierre tomorrow. What would you do? When could you call him?"*).

11. Jeanine talked to her boss, who asked her to read another article before the meeting taking place the next day in the afternoon.
 - [Tomorrow, when I get to work], then I will read the article that the boss asked me to read.
12. It is morning and Anna's granddaughter Nina is still at school. Today, Nina will spend the afternoon with her grandparents. Before her granddaughter goes home at the end of the afternoon, Anna should remember to give her the gloves she had forgotten last week.
 - When Nina leaves, then I will give her the gloves.
 - When Nina arrives, then I will put her gloves near her coat so that she will not forget them.

13. Florent does not want to forget to call Pierre tomorrow for his wedding anniversary.
→ Tomorrow [when I have drunk my afternoon coffee], then I will call Peter.
14. While she is having coffee with a friend, Genevieve remembers that she still has some "homework" to do for her memory training taking place the next day.
→ [When I get home tonight], then I will do my memory training homework.
15. Philippe must not forget to pay his bills by the day after tomorrow.
→ [When I get up from my nap tomorrow afternoon], then I will pay my bills.

Transforming "time-based situations" to "event-based" situations (session 4)

Instructions: *Often in everyday life, it happens that we have a task to perform at a certain time ("I have an appointment with Annie at 2 p.m. today"). Now imagine, visualize, that "when it is 2 p.m." does not make sense. How then can the when-then technique be used with actions that are to be performed at a specific time? What I propose is to transform these time-based situations into situations that are defined by an activity, a place or an event, as in the situations we have seen so far. We must therefore try to identify characteristics other than the time to define the situation. In the example of an appointment with Annie at 2 p.m., I would therefore try to identify what I have to do before 2 p.m. (drink my coffee and take a nap). Thus, the sentence becomes "when I finish my coffee/my nap this afternoon, then I will go to meet Annie."*

16. Catherine has an appointment with her ophthalmologist at 4 p.m. today.
→ [When I finish my shopping], then I will go to the ophthalmologist.
→ When my alarm goes off, then I will prepare myself to go to the ophthalmologist.
17. Alexandre must pick up his son at school at 11:30 a.m. tomorrow.
→ Tomorrow [when I finish gardening], then I will go to pick up Eric from school.
18. Rachel must go to an appointment with the contact person for her health insurance at 2 p.m.
→ When I have drunk my afternoon coffee tomorrow, then I have to prepare myself to go to the health insurance office.
19. Antoine must call Martine before 4 p.m.
→ When I finish my crossword, then I will call Martine.

Discrimination exercises (session 5)

When ease is achieved in these prospective memory situations, it is possible to introduce "trap situations," i.e., situations where it is not appropriate to use the when-then technique. Appropriate and inappropriate situations are presented randomly to the participants, who should justify why one can or cannot use the when-then method, in order to teach them the following rule of identification: The when-then technique can be used when a person wants to remember to perform an action in the future. For sentences in which the strategy can be used, the participants must form the when-then sentence. Below are some examples of inappropriate situations.

20. Hugues would like to remember what he ate for lunch.
21. Pascale realizes that when she remembers her recent trips, she does not remember all the details that she would like to remember.
22. Jacques would like to learn how to use his new cell phone, which has many different buttons.
23. Pauline would like to remember the name of the friendly lady she met yesterday at the cafe, whose name she has unfortunately forgotten.
24. Jean-Pierre would like to remember the capitals of all the countries of Africa.
25. Marie-Pierre would like to remember whether or not she switched off the iron this afternoon before leaving home.

Inhibition exercises (session 6)

1. Claude tends to ask several times a day what the current date is, which sometimes annoys his wife. But Claude has a digital calendar in the living room, which is updated automatically.

- When I want to know the date, then I will look at the calendar in the living room.
- 2. Later, Therese will drink coffee with one of her friends. Usually, when they see each other, the first thing Therese does is to ask her friend about her husband. But this time, Therese knows that her friend does not want to talk about her husband, who was just diagnosed with a serious illness. On the contrary, her friend needs to take her mind off things.
 - When I meet my friend, then I will ask her about the theater piece she went to see last week.
- 3. It is almost Claudine's birthday and her friends are preparing a surprise party. This afternoon, Mary and Claudine will drink coffee together. Mary must at all costs be ready if Claudine asks what she plans to do that evening.
 - When Claudine asks me what I am doing on the night of her birthday, then I will tell her I have been offered a ticket to a concert.
- 4. Jeanne must at all costs avoid touching door frames today as she usually does, because Edward just repainted them.
 - When I pass the doors, then I will keep my arms next to my body.
- 5. Pierre decided not to eat snacks between the meals.
 - When I am hungry, then I will drink a glass of water.
 - When I work, then I will focus on what I am doing and remain seated [instead of nibbling].
 - When I pass the department with the aperitifs at the supermarket, then I will continue on my way without taking any of them.
- 6. Adrienne decided not to smoke the cigarette to accompany the coffee she drinks every day with her neighbor.
 - When the neighbor offers me a cigarette, then I will answer "no thank you, I am trying to break this habit."
 - When I prepare to go to the neighbor, then I will leave my cigarettes at home.

Apathy/activity (re)initiation/emotions/self-efficacy exercises (session 7)

- 7. Lucienne wants to restart knitting. In fact, she loves to knit, but feels a bit "lazy" at the moment. She says that knitting 1 hour per day, for example after lunch, would be a nice goal.
 - When I finish my lunch (possibly after dishwashing), then I will start knitting.
- 8. When Raymonde is alone, she is often bored. Her husband reported that she enjoys reading.
 - When I am alone, then I will read my book.
 - When I am bored, then I will read my book.
- 9. John loves to tinker for his granddaughters. But lately, he fails to get started. For Easter, he would like to build them a dollhouse. To do this, he should spend a little time on it each day until then.
 - Every day [when I finish getting dressed], then I will start to tinker on the dollhouse.
- 10. Sometimes, Jean-Luc ruminates and rehashes his concerns.
 - When I ruminate and rehash my concerns, then I will do a crossword puzzle.
 - When I ruminate and rehash my worries, then I will call my friend Maurice.
 - When I ruminate and rehash my worries, then I will think about a happy time shared with my family.
- 11. When she faces a family problem, Huguette becomes demoralized easily.
 - When I face a difficult situation in my family, then I will tell myself that I am capable of mastering it.
- 12. When Gilbert must complete his tax return, he gets discouraged easily.
 - When I have to face my tax return, then I will tell myself that I am capable.
- 13. Henriette is sometimes sad when she feels alone.
 - When I feel sad, then [I will listen to the cheerful music that I like].

We recommend regularly distributing a summary of the scenarios tackled in the group sessions and the solutions/answers that were developed.

2.3) Visualization

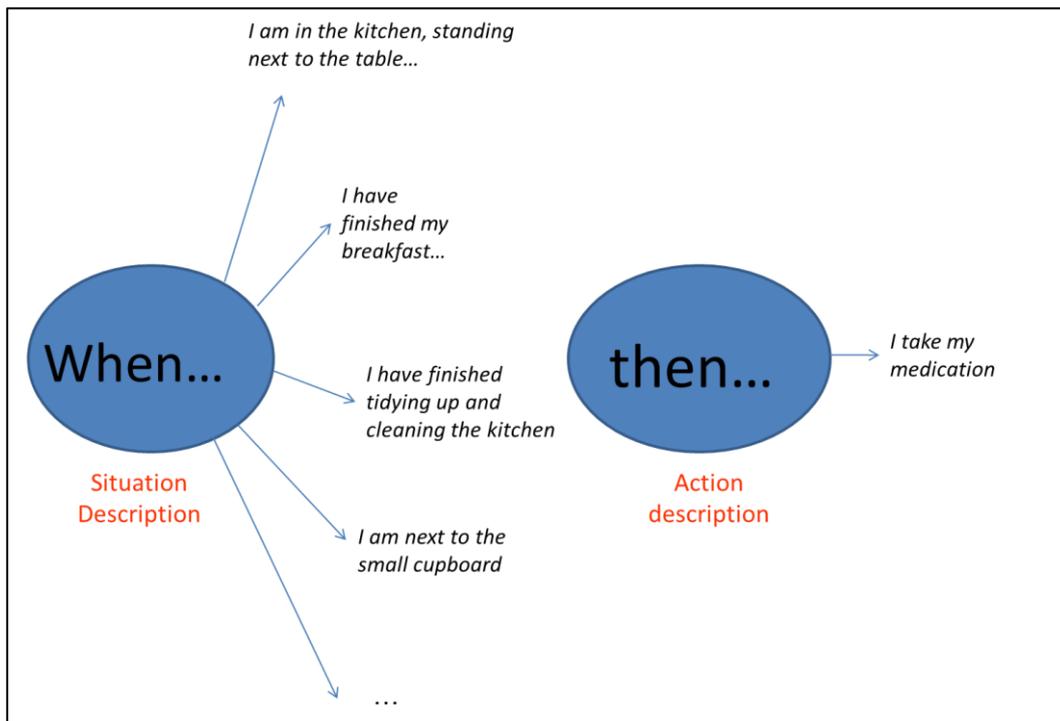
Besides the exercises based on scenario analysis and the verbal component of the strategy, the program proposes visualization exercises (introduction: session 3; movies: session 4; exercises: sessions 4 and 5).

The visualization exercises were designed to draw attention to the importance of this component for the efficacy of the strategy and to provide training for detailed visualization, possibly also including other modalities.

Introduction: *Until now, we have learned in which situations you could use the strategy and how to identify the situation and the action. We will now come back to some elements that we briefly mentioned in the first session concerning the specific application of the strategy.*

You surely remember these figures (show Figures 1 and 2a; see above). We spent a few sessions working on the when-then sentence; now we will dedicate ourselves to visualization. In fact, it is necessary to imagine the situation with as many details as possible, so that if you close your eyes, you get to see this place and see yourself, feel yourself, performing the action. There may be visual, auditory, olfactory and tactile elements. The more precisely you capture the situation, the more probable it is that you will perform the action. Therefore, rather than being limited by quickly imagining "if I finish lunch, then I will take my medicine," it is worthwhile imagining the situation in detail (Figure 2b).

Figure 2b: Detailed when-then strategy



To improve your chances to achieve the action, it is essential to take the time to imagine the situation and to say the sentence. It is clear that if one does not take the time, but thinks "by the way," or absentmindedly thinks "ah yes, when I find myself in this situation, then I'll do such and such an

action” and continues with previous activities, this will probably not be enough. To improve your memory and your chances of achieving the action, you must provide the means. This strategy does not cost much time, but we must still devote a little while to it.

The goal is to visualize the situation in which you perform the action as accurately as possible, as if you were experiencing the situation. You must try to imagine it as a little mental movie.”

At the next session (session 4), we present two short movies, one illustrating the visualization of the situation "when I start eating my breakfast, then I will take my medicine" and the second illustrating the situation "when I leave home, then I will make sure I have money with me." For clarity, the two sequences filmed from an actor's perspective were preceded by the same scenario filmed from an observer's perspective. It is possible to ask participants to guess what the when-then sentence of the protagonist might have been. It is also necessary to draw the attention of the participants to the salient element (the "trigger moment"), the precise element on which the person focuses her attention to trigger the implementation intention (in the taking medication example: the time to drain the sugar spoon after putting sugar in the tea; in the money example: the time when the protagonist put the key in the lock). Emphasize the importance of visualizing as many details as possible, focusing on one of them (with a "freeze frame"), which will trigger the action.

Visualization exercises

Next (sessions 4 and 5), situations are proposed to the participants that they are asked to visualize. To do this, we suggest that the participants close their eyes and imagine themselves in the described situation. The clinician can guide the participants if necessary by asking leading questions to force visualization (*“What do you see? Can you describe the situation, the place? What is in front of you? Next to you? Was it dark or bright? What color is the object that you are mentioning? Is there someone with you?”...*). If the situation allows it, also include auditory and olfactory modalities, or touch, as well as physical bodily sensations.

Suggest a situation to each participant; all participants close their eyes and try to visualize themselves in the context. One participant is asked to verbalize what he or she is visualizing.

Note: In this exercise, we only visualize a situation (there is no action to be performed, and it is therefore not an implementation intention).

Exercises

1. Imagine coming out of the memory clinic.
2. Imagine your breakfast table as you start eating.
3. Imagine being about to brush your teeth.
4. Imagine yourself at your bakery.
5. Imagine the route between the tramway/bus stop and your home (or another short path).
6. Imagine yourself in front of your mailbox.

2.4) Practice: "missions"

In the next section, we propose practicing the use of implementation intentions during the session in similar-to-real-life tasks. This training aims at having the participants learn and practice how to create and “encode” the implementation intention by visualization and verbalization; on the other hand, these semi-ecological exercises allow participants to experience the strategy specifically for the first time in the program.

The clinician may assign a "mission" to each participant (a task to do during the session), but asks the other participants to pay attention and possibly to help the colleague whose turn it is. During the first practice session, the clinician performs all the steps with the participants (identifying the target situation and deciding to use the strategy; choosing the situation and the behavior; encoding the intention visually—providing a maximum number of elements—and verbally); depending on the ease with which this task is performed, the clinician adapts the amount of help and guidance thereafter. In addition, some tasks can be assigned to all participants.

Exercises – first session (session 6)

(Preparation: Arrange for someone to phone you on a cell phone at a given time during the session; have a document ready for the secretary; have a cookie recipe available; have some cookies on the table; arrange for a colleague to drop in)

The psychologist assigns the following missions to the participants:

7. When my phone rings (I am waiting for a call from the head of the department), remind me to tell him that we need a fan in the room.
8. While passing the secretary's office, I want you to give this document to the secretary (Place the document in a handbag or in the agenda of the participant so that it is not visible).
9. At the end of the session (but before leaving the room), remind me to give you a new cookie recipe that I just discovered.
10. When my colleague drops in, remember to offer him or her a biscuit.

Exercises – second session (session 7)

(Preparation: Think of a story to tell concerning pastry; have some biscuits in the kitchen; prepare a summary of the last session; have a document with a nice story ready to give to the participants.)

11. The next time we talk about pastry, remind me that I want to tell you a story about it.
12. When we finish the "mission distribution," remind me to go to the kitchen (neuropsychologist will go for the biscuits and comment on this act to "speak about pastry").
13. When I give you the summary of the last session, remind me to write down the homework for next week (homework: identify situations of daily life in which participants could use the strategy).
14. When I return to the kitchen, remind me to give you a document with a nice little story that I recently found.
15. Starting the next time, when you get to the memory clinic, consider asking for a mug or a cup at the secretary's office (all).
16. Remember to bring a pen or red pencil to the next meeting (or favorite book, newspaper, ...) (all).

Homework (for session 9): *In the following week, identify situations in your daily life in which the strategy can be used. Use the strategy as frequently as possible.*

Exercises – third session (session 8)

(Preparation: Have some mugs in the secretary's office; have handouts (e.g. summaries) to distribute to the participants; place a punch or a stapler, an envelope and a water jar in the room; arrange for the trainee or colleague to leave 3 minutes earlier because he or she expects a patient and arrange for the person leaving to have a glass of water; have written on small cards a phone number where participants can reach the neuropsychologist or secretary the next morning.)

Check who brought a pencil or a red pen and who went to get the cup. Possibly re-encode the exercise of the cup.

17. The next time that I distribute materials, remind me to bring the punch/stapler back to the secretary's office.
18. At the end of the session, you need to remember to give me this envelope.
19. When I go to fill the water jar, remind me to bring my agenda.
20. When my colleague leaves, tell him/her to take his/her glass of water with him/her.
21. Tomorrow morning after you wake up, call me to tell me how many hours you slept (all).
22. (Try to find specific ideas for each patient.)

Homework (for session 9): *In the following days, identify situations in your daily life for appropriate use of the strategy. Use the strategy as frequently as possible.*

Other possibilities: *At the very end of the session, remind me to give you the recipe for the chocolate cake from last session. At the end of the session, give me your address book so that I can check something. On leaving, do not forget anything* (practical application, especially if some participants tend to systematically forget things).

2.5) Generalization

Finally, for the last two sessions (9 and 10), various generalizations and transfer-to-daily-life exercises are proposed.

First generalization session (session 9)

Anticipation of situations

To promote generalization, we ask each participant to make a list of situations that he or she will face in the coming week in which this strategy might be used. The participants can do the following:

- Use their observations (homework requested during the previous week: identify situations of daily life in which they could use the strategy);
- Review their program for the coming week, their regular and irregular obligations, or their "good intentions" and projects for the week;
- By analogy, take ideas from the situations presented in the sessions.

Homework (for session 10): We then ask participants to try to use the strategy in these situations (and possibly others) and to take note of their successes, failures and challenges for the next session. For ease of notation, we distribute a table to fill in (see example below).

When-then notation table

Activity	When-then sentence	I visualized the "movie" (situation-target-action)	I told myself the sentence	I performed the action	Comments, difficulties
Example: Post a letter	When I pass the post office on the way to the shopping mall, then I will post my letter.	<input checked="" type="radio"/> YES / <input type="radio"/> NO	<input checked="" type="radio"/> YES / <input type="radio"/> NO	<input checked="" type="radio"/> YES / <input type="radio"/> NO	
Example: Pass a message	When my wife comes back, then I will tell her that Beatrix has called.	YES <input checked="" type="radio"/> NO	YES <input checked="" type="radio"/> NO	YES <input checked="" type="radio"/> NO	I did not think to use the technique
		YES / NO	YES / NO	YES / NO	

Limitations of the strategy

At the time of generalization, it is important to remind participants of the limitations of the when-then technique:

Of course, using the strategy increases the chances of performing an action, but it does not guarantee 100% that you will perform the action. There is a risk that you will nevertheless forget to do the action. However, the better you "encode" the target situation, the deeper the link between the situation and the behavior; in other words, the better you visualize the situation and the action, or the more precise you are, the greater your chances of performing the action. Furthermore, the more you commit yourself to the task, again, the greater your chances of achieving the action.

Second session generalization (session 10)

Real situations

The second session of generalization is mainly based on the material provided by the participants (in the table or what they tell about their experience with the technique), i.e. situations in which they wanted/had/could have used or actually used the strategy, as well as situations in which they need help. In addition, we take this discussion time as an opportunity to do a general summary of what was learned during the program.

Establishing a personal list

In a second part of the session, the program proposes that the participants establish a general personal list of situations that they will potentially face and where the use of the when-then method would be adequate. This list is to be used as a reminder, to be kept in their agenda with illustrative examples that include a wide variety of situations. While it may be interesting to open the doors to as many situations as possible (including the use of the strategy in cases of apathy or lack of motivation, even if at the moment the participant is not apathetic), it is also necessary to restrict the possibilities to some degree (e.g. it is not necessary to include shopping situations if the participant has a motor disorder that prevents him or her from going shopping alone, or laundry items if it is done by someone else).