

# Strengthen your brain's executive skills

Harold L. Taylor



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# Contents

	<b>Introduction</b>	<b>7</b>
	Is technology changing the way we think – and live?	7
<b>1</b>	<b>The battle for your brain</b>	<b>9</b>
1.1	When you leave the office, the interruptions follow	9
<b>2</b>	<b>What are executive skills?</b>	<b>11</b>
2.1	The CEO of your brain	11
2.2	Executive skills and ADHD	11
<b>3</b>	<b>The role of executive skills</b>	<b>13</b>
3.1	Strengthening your executive skills is a lifelong process	13
3.2	Executive skills and management functions	13
<b>4</b>	<b>Brain-based skills that impact how you manage time</b>	<b>15</b>
4.1	Working with your skills	15
4.2	Twelve executive skills	15

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<b>5</b>	<b>Response inhibition – easy does it</b>	<b>17</b>
5.1	Think before you act	17
<b>6</b>	<b>Working memory – hanging onto ideas</b>	<b>19</b>
6.1	Hold that thought – it's harder than you think	19
6.2	The importance of working memory	20
<b>7</b>	<b>Emotional control – keeping your cool</b>	<b>22</b>
7.1	Do people who can't control their anger really make you mad?	22
<b>8</b>	<b>Sustained attention – a vanishing skill</b>	<b>24</b>
8.1	Is your attention span decreasing?	24
<b>9</b>	<b>Task initiation – the uncommon strength</b>	<b>26</b>
9.1	A new way of looking at procrastination	26
<b>10</b>	<b>Planning/prioritization – a time management must</b>	<b>29</b>
10.1	Getting the important things done	29
<b>11</b>	<b>Time management and organization</b>	<b>31</b>
11.1	Do you have time to for time management?	31



<b>12</b>	<b>Goal-directed persistence</b>	<b>33</b>
12.1	To achieve a goal, insist on persisting	33
<b>13</b>	<b>Flexibility – a survival skill</b>	<b>35</b>
13.1	Bend over backwards to be flexible	35
<b>14</b>	<b>Metacognition – the managerial skill</b>	<b>37</b>
14.1	Have you ever thought about your thinking?	37
<b>15</b>	<b>Stress tolerance – a 21st century necessity</b>	<b>39</b>
15.1	Building stress resistance	39
<b>16</b>	<b>Suggestions for strengthening all the executive skills</b>	<b>41</b>
16.1	Don't cut back on sleep	41
16.2	Exercise your brain	42
16.3	Balance high tech with high touch	43
16.4	Watch what you eat	44
16.5	Break the habit of forming habits	44
<b>17</b>	<b>About the author</b>	<b>45</b>



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# Introduction

## Is technology changing the way we think – and live?

One thought stands out from the writings of Marshall McLuhan in the 1960s – “The medium is the message.” Step ahead 50 years and that statement now seems prophetic. The medium is the electronic technology such as e-mail, texting, and the Internet – and as we remain focused on the messages we receive and send, the medium takes over – impacting how we manage our time and our lives.

There is an expression I have used for over 35 years: “We are so busy doing things that we don’t realize we’re not getting anywhere.” I’m sure I didn’t come up with this expression originally since original thoughts are rare. But combined with McLuhan’s statement, it warns us that we should not be so focused on the beauty of the trees that we are unaware of the dangers of the forest.

Technology is a beautiful and wondrous thing. We can shop online, do online banking, send electronic greetings to our family and friends, download music, watch movies on our laptops, dictate to our computers using voice-activated software, and read electronic books on portable handheld devices – among hundreds of other things, most of which were unavailable in Marshall McLuhan’s lifetime.

I see nothing wrong with reading e-books or performing any of the above activities with the aid of technology. But I do question what’s happening to us if we stop reading altogether, remain cocooned in our homes, infrequently meet personally with friends and relatives, and spend more time watching movies than interacting with our children.

Nicholas Carr, in his 2010 book, *Shallows: what the Internet is doing to our brains*, claims he has noticed changes in his own reading. He loses concentration after a page or two, becomes fidgety, loses track of the storyline and looks for something else to do.

The ability to focus is one of the most critical brain functions according to Barbara Strauch, author of *The secret life of the grown-up brain*. And this ability depends on the strength of our executive skills, which are currently under attack by the unrelenting impact of both technology and our fast-paced lifestyle.

Multitasking taxes the brain, and gets progressively worse as we age. Have you ever been distracted by a telephone call only to forget what you were going to do before the distraction? The other morning I found myself brushing my teeth with after-shave lotion! (But others might attribute this to senility.) Research indicates you can have several motor programs running simultaneously, such as steering a car, chewing gum and reaching for a cell phone; but you can only focus your conscious attention on one thing according to Shelley Carson, author of *Your creative brain*, because your brain thinks sequentially.

Our lifestyle seems to be changing to one of constant rushing to get more things done, and researchers studying people's behavior at traffic lights have spotted people combing their hair, applying makeup, eating, reading newspapers, talking on cell phones and even using laptops. To quote Barton Sparagon of the *Meyer Friedman Institute* in San Francisco, "Hurrying is a struggle against time – and that's unhealthy." And Faith popcorn, author of *The popcorn report*, claims "Speed-eating has developed into a fine art."

Cramming more activities into a day causes stress, and stress causes sleeplessness, and lack of sleep causes impatience and the ability to concentrate. It's a vicious circle. Is technology to blame? No, we are to blame. Because we failed to heed Marshall McLuhan's warning that the medium is the message.

Controlling technology and taking action to strengthen our executive skills, we can not only cope with the rapid increase in technology, information and speed, we can increase our productivity and our ability to manage our time and our lives as well.



# 1 The battle for your brain

## 1.1 When you leave the office, the interruptions follow

We are ill-equipped to deal with the onslaught of interruptions introduced by technology. Our brain's natural inclination is to react to them. We coped with this in the old days by isolating ourselves from interruptions – by closing our office door and having our calls screened or intercepted – or by going to a coffee shop where no one could contact us.

With the advent of the cell phone, e-mail, texting and portable devices, interruptions now follow us wherever we go. We are at the mercy of our own ability or inability to resist the urge to answer our smart phones, check incoming e-mail or respond to text messages.

The battlefield, where it is determined whether we will lose the quest for personal productivity and life balance, has shifted from our office to our brain.

Although technology is evolving exponentially, our brains are not. The allure of e-mail, according to one techno-psychologist, is similar to that of the slot machine: You have intermittent, variable reinforcement. You don't know when you will be next rewarded so you keep pulling the handle.

There are different theories on willpower. Originally it was thought that willpower was like a muscle that was easily depleted. And research backed this up. But newer research also suggests we have as much willpower as we *expect* we have. If you *believe* you have the willpower to resist interruptions, you will have it. Sort of like the placebo effect.

This latter theory also seems to be backed up by research conducted at the *University of Rochester* as a follow-up to the marshmallow experiments of the 1960s. These original experiments were conducted at Stanford University by Walter Mischel, professor of psychology at Columbia University. He spent decades studying self-control. In the experiments of the 1960s, he monitored the ability of four-year-old children to resist a treat when left alone with it. The children were given a marshmallow and told that they could eat it immediately if they rang the bell to summon the researcher; but they would receive two of the treats if they could resist eating it until the researcher returned. Some of the children were able to wait over 15 minutes and some even longer; but most could not. Those who resisted the longest, showing the greatest self-control, were more successful later in life. Long-term follow-up studies showed that a child's ability to delay reward correlated with academic success and adult income, as well as with the ability to tolerate stress and rejection.

The Rochester experiments involved giving one group of children old used crayons and telling them if they resisted playing with them, they would be given new ones. But they never received the new ones. Another group was told the same thing but the researchers made good on their promise of new crayons. When they all took the marshmallow test afterwards, the group with a good experience behind them resisted eating the marshmallow for 12 minutes. The other group, who obviously had lower expectations, lasted only two minutes.

Although our brain hasn't evolved recently, perhaps it doesn't have to. We already have a brain capable of resisting temptation – although it may need strengthening – and we can still do a lot to remove the source of the temptation.

Removing the source of temptation could involve turning off your handheld devices while you work on priority projects, keeping the paperwork, to do lists and other distractions out of sight while working on a specific task, and leaving your cell phone at home if you decide to work in a coffee shop. You could also do all your priority work in the same place – one devoid of distracting scenery, pictures or paraphernalia so your brain gets to associate that space with work.

Resisting temptation might involve not going online or checking e-mail before 10 a.m., ignoring a ringing telephone when you're talking with family and friends, and resisting any urge to buy electronic devices that you really don't need. (After all, who really needs a smart watch when they already have a smart phone? It's much more important to have a smart brain.)

Self-discipline or self-control, focus, attention, prioritizing and planning are essential if we are to remain effective in this digital age of speed. These are all functions of our executive center in the prefrontal cortex area of our brain. That's why I claim that the battlefield has shifted from the office to the brain. In the next few chapters I will be discussing how we can strengthen these cognitive skills, and in particular, those executive skills that are so critical to the effective use of our time.

## 2 What are executive skills?

### 2.1 The CEO of your brain

Sometimes referred to as “habits of the mind”, a person’s “executive skills” are those brain-based skills required to execute tasks – that is, getting organized, planning, initiating work, staying on task, controlling impulses, regulating emotions, and being adaptable and resilient. These skills primarily reside in the prefrontal cortex, that part of the brain that helps you manage complex problems, goals and self-control. We are all born with executive skills; but they take about twenty years to fully develop.

People with weak executive skills are those who have trouble getting organized, managing time, planning ahead and staying focused. They tend to be impulsive, procrastinate, and get easily sidetracked.

If a child had these characteristics they would probably be diagnosed as having ADHD. Many researchers believe that ADD and ADHD are disorders of executive skills. All agree that if the child has ADHD at least *some* executive skills will be impaired, such as the ability to pay attention and stay focused, manage their time, and stick to one task for any length of time.

The female brain is smaller, but the prefrontal cortex matures about two years earlier, giving girls an advantage when it comes to executive skills such as sustained attention, self-regulation and emotional control. This could be the reason why nine boys are referred to medical clinics for behavioral problems for every girl – and why boys are three times more likely to be diagnosed with ADHD.

### 2.2 Executive skills and ADHD

Allen Frances, M.D., writing in the October, 2014 issue of *Psychology Today*, claims that we are being over-diagnosed and over-medicated, especially children and teenagers. He says that one in five adults take psychotropic medication on a daily basis. In the past twenty years the rate of ADHD diagnosis has tripled – 11 percent of all kids in the U.S. now have a diagnosis of ADHD, and 6 percent are on daily medication for it. A recent study found that by age 21, 81 percent of American kids could be labeled with a mental disorder if they are evaluated often enough.

It makes you wonder whether normal immaturity of the executive skills is being labeled as a mental disorder and treated with unnecessary medication. After all, if it takes twenty years for the executive skills to mature, perhaps we should be spending some of that money on exercise, diet, education and ways to counteract the negative effects of technology on our brains.

Strong executive skills are critical in today's digital age of speed because life is getting more and more complicated with increasing numbers of choices and decisions to make and less time in which to make them. For this reason, I believe that time management strategies must focus less on environmental control and more on internal control. We cannot control how the world is changing, neither the pace of life nor the 24/7 connectivity and constant bombardment of information. But we can change how we react to this change. And although some of that may still be physical, success in the future will depend more on what's going on in your mind, body and spirit than what's going on in your office.

The exact number of executive skills has yet to be determined. *Smart but Scattered* by Peggy Dawson and Richard Guare (The Guilford Press, 2009) identify 11 executive functions. *Work Your Strengths* by Chuck Martin, Peggy Dawson and Richard Guare (AMACOM, New York in 2010) describe 12 executive functions. *A New Understanding of ADHD in Children & Adults: Executive Function Impairments* by Thomas E. Brown (Routledge, May, 2013) proposes 6 separate clusters of executive functions. This probably makes more sense since several of the executive functions are similar, and the more detailed you are, the more open to error you are as research in this area continues.

Regardless of the number of skills, they are generally those essential to effective self-management or time management, and they can be strengthened. In this book I will discuss all twelve skills identified by the experts, and how they can be both accommodated and strengthened.

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## 3 The role of executive skills

### 3.1 Strengthening your executive skills is a lifelong process

Executive skills are critical in today's world because life is getting more and more complicated with increasing numbers of choices and decisions to make and less time in which to make them. The ability to set goals, plan and prioritize, and stay on course is vital if we are to remain effective in this digital age of speed.

The executive skills I will be describing seem close to what we used to teach managers or executives in workshops and business students in college. The functions of a manager are planning, organizing, staffing, directing and controlling – and includes innovating, decision-making and representing.

When we trained managers we tried to show them how they should plan, organize, staff and so on in order to become better managers. In retrospect, it would appear that some students were already good in those areas because of some highly developed brain skills. In fact the prefrontal cortex is sometimes referred to as the CEO of the brain, drawing on the feedback from other areas of the brain and making the decision whether to take one course of action or another.

### 3.2 Executive skills and management functions

Although there are similarities between the management functions that we teach and executive brain skills, the executive skills, as we are describing them here, relate to brain skills acquired through normal development. They are located in the prefrontal cortex and are the last areas of the brain to develop in late adolescence or early adulthood. The frontal lobes themselves, thought to be the main areas where the executive skills reside, require 18 to 20 years to develop. Some of the skills are developing at 5 to 6 months of age. By age 24, they are thought to be fully developed – or hardwired – some stronger than others.

But like math and reading, these skills can be taught and learned as children grow older. They are not genetic. When a baby is born she has no ability to control the undeveloped and primitive emotional circuits. The baby must learn from the fully-developed brain of the parents or others through one-on-one interactions with them.

As many as half of North American children have poor self-regulating skills by the time they get to school. It shows up in high rates of attention deficit disorder or ADHD among other problems. It is also claimed that some of this is traced to the increase in neurotoxins, such as mercury, air pollution and PCBs passing through the umbilical cords.

Executive skills can still be strengthened when we are adults, and that's the focus of this book. But it's easier to strengthen them in childhood if the parents role model appropriate behavior. Our brains are malleable or plastic, and are capable of changing throughout life. But there are two main growth periods, one in pre-adolescence, say up to 5 years old, and another during their teens. (100 billion cells by 5 years old followed by pruning, then more growth.)

A parent can design games and tasks that help develop the various executive skills that the child is weak in. It's a lot easier when the child is young than it is when they're twenty and fully developed. Change can still take place as we age, and we will discuss how in future chapters. In the meantime, if you want to read up on executive skills and their impact on learning, I would recommend *Smart but Scattered* by Peggy Dawson and Richard Guare. It is directed primarily at parents and takes one skill at a time and discusses ways of working with your child to strengthen that skill.

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## 4 Brain-based skills that impact how you manage time

### 4.1 Working with your skills

A 2010 book, where the same authors of *Smart but Scattered*, Peggy Dawson and Richard Guare, team up with Chuck Martin, who has also been researching this area, is called *Work Your Strengths: a Scientific Approach to Identify your Skills and Match Them to the Best Career for You*, published by AMACOM, New York. It doesn't focus on strengthening these skills, but rather, matching your stronger skills with jobs that require those skills in order to excel. Chuck Martin has found that most people have two or three strong skills and two or three weak skills with the rest falling somewhere in between.

You could partner with someone who has strengths where you have weaknesses, or move into a job that matches your skills, but why not strengthen these skills? We can change our brains as surely as the younger generation's brains are being changed at this very moment. Except that *their* brains are being changed with no effort on their part – they are simply living in a different technological environment. And the resulting changes may not be all good.

In the next few chapters we will take a look at these skills in more detail – describe them more fully, see how they impact our ability to get organized and manage our time, and discuss how we can improve or strengthen these skills.

But first, here are brief descriptions of the twelve executive skills described in the book, *Work Your Strengths*, by Richard Guare, Peg Dawson and Chuck Martin. I will be discussing each of these in further detail.

### 4.2 Twelve executive skills

*Response inhibition*: the ability to think before you act.

*Working memory*: the ability to hold information in memory while performing complex tasks.

*Emotional control*: the ability to manage emotions in order to achieve goals.

*Sustained attention*: the capacity to focus on a task despite fatigue or boredom.

*Task initiation*: the ability to begin tasks without undo procrastination.

*Planning/prioritization*: the capacity to develop a road map to arrive at a predetermined goal.

*Organization:* the ability to arrange according to a system.

*Time management:* the ability to estimate and allocate time effectively.

*Goal-directed persistence:* the ability to have a goal and follow through until its completion.

*Flexibility:* the ability to revise plans in the face of obstacles and setbacks.

*Metacognition:* the ability to observe yourself in a situation and make changes so you're better able to solve problems.

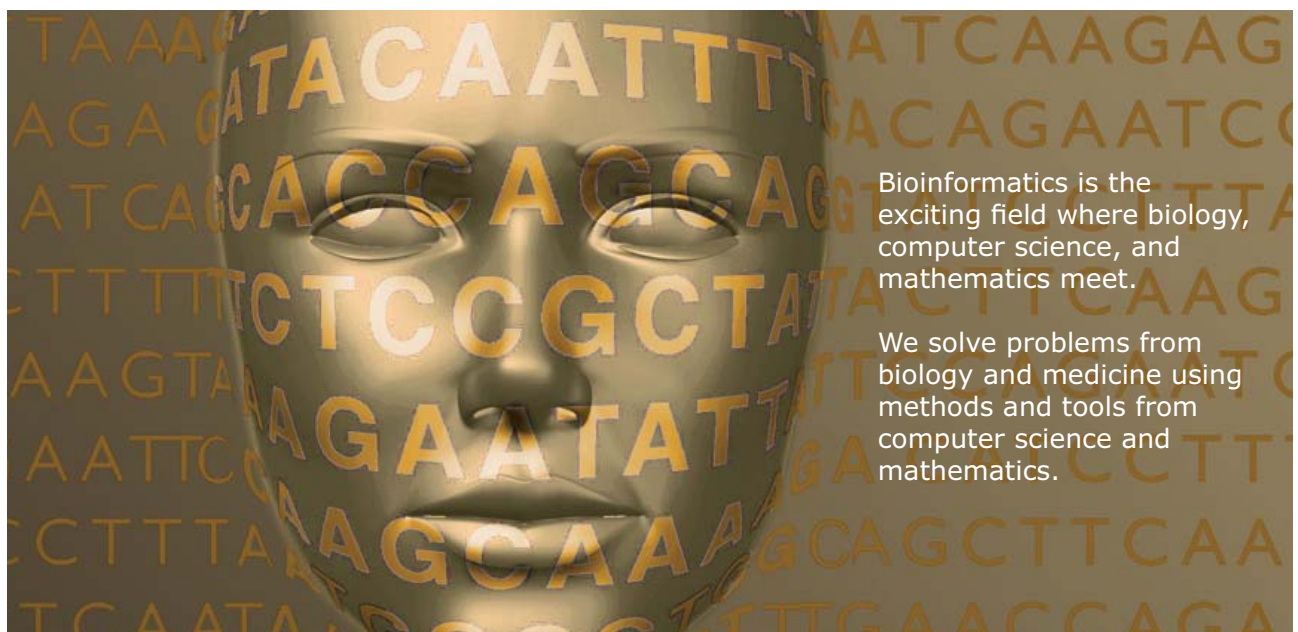
*Stress tolerance:* the ability to thrive in stressful situations.

According to the book just mentioned, the executive skill that is the most significant in high performance is planning/prioritization. The top strength in the most high-performing males is metacognition. The top strength in most high-performing females is organization. And the most common weakness is task initiation.

All these skills are important to children coping with life, students attempting to learn and adults wanting to make the best use of their time.



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# 5 Response inhibition – easy does it

## 5.1 Think before you act

It would be great if we were all strong in the executive skills listed in the last chapter; but unfortunately few of us are. I have never met anyone who didn't struggle at times with self-control, patience, focus, time management or other issues relevant to the executive skills described previously. Those of us who struggle excessively would probably be diagnosed as having ADHD. According to Jesse Payne, in his 2014 book *Change your brain change your life before 25*, in the US alone, 5.2 million children do struggle with ADHD. Then there are the adults.

The skill I will discuss first, which has a major impact on our ability to manage time, is *response inhibition* – the ability to think before you act. If you weigh the pros and cons before you act, work on tasks in accordance with their priority, and take a methodical approach to things, you're probably strong in response inhibition. Weakness in this skill would give rise to impulsiveness. So if you tend to say the first thing that pops into your mind, do things without thinking about the long-term impact of such actions, and are easily distracted by urgent, unimportant or trivial matters, you are relatively weak in this skill.

According to researcher Angelina Sutin, who tracked 200 people for more than 50 years, people who score in the top 10 percent on impulsiveness weigh 22 pounds more than those in the bottom 10 percent on average. Perhaps they intend to go to the gym and something else pops up and they follow that impulse instead or they see that tempting Big Mac hamburger and go for it.

To strengthen this and any other executive skill, you must buy into the fact that you are not your brain. You can control these impulses and actually rewire your brain with sufficient effort. Besides the actions I will describe, you must also create an environment that does not support the weakness that you want to eliminate.

For example, don't go shopping on an empty stomach, don't have email open when you're working on a project, and don't have your cell phone turned on when you're in a meeting. Studying the tapes of the marshmallow experiments, described in chapter 1, researchers detected that some kids were able to resist eating the single marshmallow by putting it out of sight or turning away from it so they couldn't see it. That's why you shouldn't keep your "fat clothes" once you lose weight or keep cigarettes in the house if you're giving up smoking.

In the same way, you shouldn't face an uncovered window when you're working on an important project or have personal photos and memorabilia on your desk that could encourage distractions. If your workstation is not conducive to concentration, try changing the location by having work sessions at a local coffee shop or spare boardroom.

Other things you can do are: work for shorter periods of time, structure your day by scheduling appointments with yourself to get specific things done, have specific times to check e-mail and text messages, and work with your natural body rhythms of high and low energy.

You can practice willpower. For example, break your favorite chocolate bar into 7 pieces and have only one piece a day. Grab water when you have an urge for a coke. Give up dessert for a week. Decline invitations you don't enjoy. Don't respond to an emotional email until the following morning. Use the stairs instead of the elevator, and so on. The more you practice self-discipline, the more your inner strength grows, just like exercising at a gym increases your physical strength. Your brain can be rewired through the repetition of good habits.

One result of weakness in this skill in young children was revealed by researchers when they discovered that sharing was difficult for most children. The study, mentioned in the July/August, 2012 issue of *Scientific American Mind*, was conducted with children 6 to 14 years old who had difficulty sharing items with other children. Functional MRIs revealed less activity in the prefrontal cortex area. But the researchers found that education and setting a good example could change this.

Adults can change as well. It's as though every time you practice self-control, you make a groove in the brain deeper and deeper and self-control becomes easier and easier until it becomes almost automatic.

There are many things, such as exercise, that you can do to strengthen *all* your cognitive skills, including the executive skills, but these will be covered after briefly discussing each executive skill in turn. But I should mention here that it's believed that exercise may inspire healthier choices by altering structure in the brain that deal with self-regulation and impulse control.

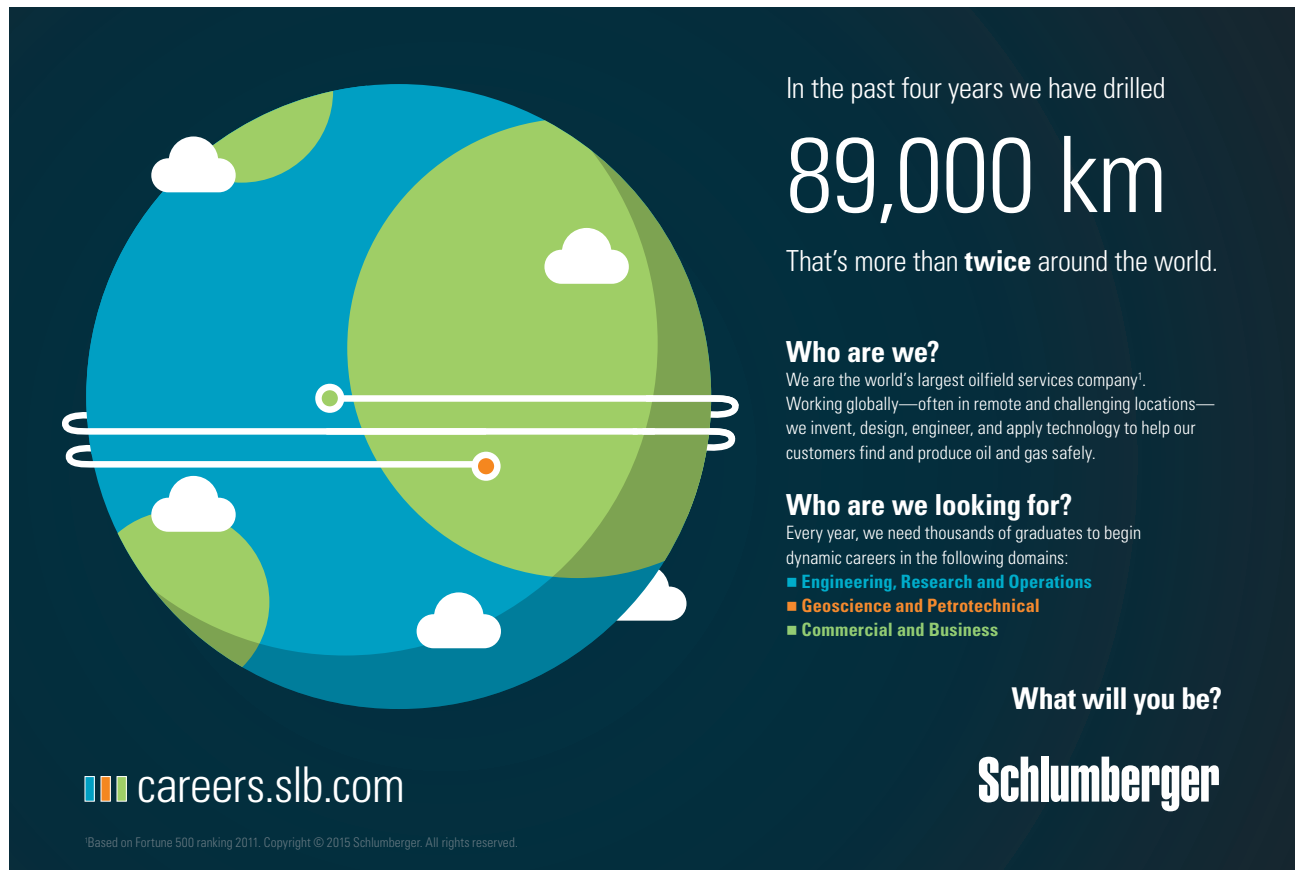
## 6 Working memory – hanging onto ideas

### 6.1 Hold that thought – it's harder than you think

*Working memory* is the ability to hold information in memory while performing complex tasks such as language comprehension, learning and reasoning. In the middle of a hectic day when you're going from one crisis to another and you still remember that you were supposed to phone someone at a specific time, you have a strong working memory. Or you're interrupted by a phone call and you don't forget where you left off.

Computers with greater RAM yield better performance and so it is with working memory in humans. Dr. Zach Hambrick, a Michigan State researcher found that those with greater working memory capacity outperformed others.

Studies of pilot errors in fatal airline crashes indicate that problems are rarely due to the pilot not knowing what to do or when to do it, but more often due to failures in resuming a task after being interrupted.



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The most important aid for coping with this weakness is to write down things and make lists. If you have to leave a project, write the next step before you leave. Before you answer the phone, or greet a drop-in visitor, jot down the first few words of your planned next sentence.

Recall is better at the beginning and end of events. For example, if you are trying to remember a nine digit number, you would easily recall the first few numbers and the last few numbers but you would find that it is more difficult to recall the ones in between. This is referred to as the “primacy effect” and “recency effect.” You tend to remember more of the information at the start and at the finish than in the middle. Working on a project or reading or studying for shorter periods of time provides more beginnings and endings. This is one of the reasons I recommend working on a project in shorter sprints rather than longer marathons.

## 6.2 The importance of working memory

Some researchers feel that working memory is critical, that there is a link between working memory and ability and general cognitive performance. An article in the May 5, 2011 *Toronto Globe and Mail* titled “The brain can juggle only so much” by Mark Fenske, co-author of *The winner's brain*, claims that practice can improve working memory. He illustrated this by using a computer-based task that requires information to be held in mind while updating it. Simply memorizing things will help. And you can become quite good at it. I used to facilitate memory training workshops, and on occasion I still do for seniors at our local church. People are amazed at what they are capable of remembering once they apply themselves.

It's evident that if we don't use our executive skills they will weaken. It's similar to the impact of a sedentary lifestyle on our muscles. But not only are we outsourcing our memories to computers, and doing it willingly, some people seem to be advocating it. The personal technology columnist for the *New York Times* in the August, 2013 issue of *Scientific American*, asks “why should we mourn the loss of memorization skills any more than we pine for hot type technology, Morse code abilities or a knack for operating elevators?”

Yet by letting computers do all our memorizing and dozens of other mental activities, we are weakening our brains. I'm not against progress. Computers in the classroom? By all means. Let them take over the routine work? Absolutely. Programming them to do those time wasting jobs, including calculations? Of course. But not to the extent that they eliminate the need, ability or desire to memorize, calculate, problem solve, create, think and otherwise exercise our brains. Heaven forbid if some quirk of nature should short-circuit the world's computers. We would all be as helpless as newborn babies.



The best thing for strengthening your memory, both working memory and long-term memory, is to exercise both your body and your brain. Do crossword puzzles, read articles and books, take educational courses, practice creativity exercises, and continually challenge yourself. If you retire physically, don't retire mentally. Studies suggest that maintaining intellectual activity throughout life can preserve memory in later years. The *Victoria Longitudinal Study* in Western Canada revealed that middle-aged or older individuals who participate in intellectually challenging activities and projects, including reading, are less likely to suffer declines in cognitive functioning.

If you want to cope with a weakness in *working memory*, I suggest you practice using the various memory aids described in my book, *Boost your memory & sharpen your mind*.

Physical exercise is even more important. You need to keep the blood flowing to the brain with the oxygen and glucose that it needs to operate at its peak. Physical exercise and other important factors such as sleep, stress reduction and brain-boosting foods will be discussed in the last chapter once I have covered actions you can take to strengthen all twelve executive skills.



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# 7 Emotional control – keeping your cool

## 7.1 Do people who can't control their anger really make you mad?

*Emotional control*, the next executive skill that we'll discuss, is the ability to manage emotions in order to achieve goals. If you are strong in this skill you are relatively unemotional and cool under pressure. You're not easily sidetracked, resist temptation, don't get overly emotional if criticized, and are not easily discouraged – in short, you have emotional control.

But if you react when criticized, have difficulty controlling your anger, and are easily frustrated, you have a low emotional control.

This is a difficult one to control since so many people seem to anger easily and take comments personally. And a negative attitude and emotional state can cause stress and lower the body's immune system. One Harvard study showed that those with the most negative attitudes at 25 suffered the most illnesses in their forties, fifties and sixties.

Another study involved 69 women with breast cancer who were asked three months after their surgery how they viewed their disease and how it affected their lives. 5 years later, 75 percent of those who had reacted positively and with a fighting spirit were still alive compared with less than half the others. There is little doubt that attitude can have either a negative or positive impact on your health.

If you let it, your brain will take any thought about financial problems or job insecurity or a disagreement with your spouse and create worse case scenarios to worry about. According to an article in the December 2009 issue of *Scientific American Mind*, research showed that “the more we dwell on negative thoughts, the more the threats feel real, and the more they will repeat in our skulls, sometimes uncontrollable.”

If you use the same suggestions as under impulsiveness and you don't answer contentious e-mail until the next day or at least count to ten before answering, you might avoid the emotional impact. And if you view your mind as separate from your brain and use the “thought-stopping technique whenever you find yourself slipping into anger mode or negativity or worry, you can gain control of your brain. You have to learn to press the “delete” button when non-productive thoughts start surfacing, and you might do this by actually saying, “Stop that!” and start thinking happy thoughts instead.

Researchers find that worriers show an increased activity in the area of the brain associated with executive functions such as planning, reasoning and impulse control. Most of the suggestions in strengthening the other executive skills will help with the emotional skill as well.

A happier, healthier lifestyle is more important than ever, and along with it, an attitude that tends to stress-proof your life. It's important to get sufficient sleep, daily exercise and social support. But it's equally important to be aware of the good things that happen to you – those positives amid negative events. Be more conscious of the things that go right in your life, and remember that when things look bleak, humor helps.

Meditation, mentioned in the final chapter, is also known to relieve anxiety and stress, calm emotions, and promote optimism and self-confidence.

Volunteer on a regular basis. By helping others you are also helping yourself. According to researchers, spending time on others enhances people's confidence in their ability to get things done and relieve the pressure of time constraints, allowing them to budget time and fulfil responsibilities more efficiently. And those who were instructed to write a note to a sick child felt as if they had more time on their hands than those who completed a mindless task. (*Psychological Science*)



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## 8 Sustained attention – a vanishing skill

### 8.1 Is your attention span decreasing?

*Sustained attention* is the capacity to focus on a task despite fatigue or boredom – to be able to maintain attention and not be easily distracted or side tracked. You are strong in this executive skill if you are able to screen out distractions and complete a task without your mind drifting to other thoughts. But if you're easily distracted, have trouble completing tasks, frequently interrupt yourself to deal with e-mail, text messages etc., then you have weak *sustained attention* skills.

There was an experiment conducted about 12 years ago that involved subjects watching a video of a basketball game. The psychologists showed the same video to everyone. A person dressed in a gorilla suit walked across the playing court during the game. Half the viewers never noticed. They coined the phrase “illusion of attention” to describe the fact that we are unaware of how much we are really missing in our visual world.

When you are focusing on a task, whether it is watching TV or working on an article or thesis, the mind tends to filter out distractions so that “intentional blindness” is a side effect of your power of concentration. If you're not looking for it, chances are you may not see it. As a case in point, 75% of the cases where DNA evidence frees someone previously convicted of a crime, they had originally been convicted by the testimony of eye witnesses.

You can use this fact to work more efficiently by focusing on a task even in a noisy environment or one in which people are forever walking past your field of vision. If you are interested and focused on what you are doing, you will be less susceptible to self-interruptions.

Unfortunately, focusing for any length of time is difficult, and in this digital age of speed, where we are continually being bombarded and interrupted by electronic media, attention spans are becoming even shorter.

Most people seem to be able to pay attention to things that they do well, whether it is texting, drawing or working on jig saw puzzles. But they may have problems with common tasks that bring no sense of pleasure or sustained interest. These could include writing weekly reports, attending lengthy meetings or organizing their home or office. So it's not that they are unable to pay attention for any length of time, but they may find it more boring than other people to stick to tasks that have no interest to them.

Focusing on something that is of little interest or more difficult for them consumes more of their energy. It has even been shown that making decisions consumes energy – to the extent that decisions made later in the day are not as sound as those made earlier in the day.

John Ratey, author of *Spark*, says people have no problem paying attention to something they enjoy since the reward centers of the brain send messages of satisfaction or pleasure to the prefrontal cortex when they are engaged in these activities, providing the motivation to continue. For this reason he sees ADHD as an attention variability disorder, not a consistent deficit.

Similarly, exercise can activate the reward center, increasing the level of dopamine and ultimately impacting our ability to pay attention and focus. Research also shows that the better your fitness level, the better your brain works.

The brain is goal-oriented, and if the expectation of achieving a goal is strong, and the rewards are great, attention is strong for longer periods of time. Therefore it would help if the tasks were reasonably easy, took shorter periods of time, were connected to a definite plan of action or schedule, and offered benefits that were clearly evident.

That's one reason why I recommend using the 90-minute rule of scheduling. This refers to the practice of breaking projects and larger tasks into 90-minute work sessions separated by breaks, either physical or mental.

Ninety minutes is a reasonable length of time to be unavailable to other people. It also minimizes self-interruptions & fatigue, allows you to capitalize on your “prime time” each day, avoids the inefficiency of marathon work sessions, and makes it easier to build a consistent habit of working productively each day. For a more detailed description of this technique, refer to my book, *Time to be productive*.

Those who think they are good at multitasking are usually the worst at it. Although researchers have identified a few “supertaskers,” who can focus fully on two or more things at the same time, chances are we're not one of them. Stick to one task for 90 minutes – less if you find you can't focus that long. If you are able to get two of these work sessions into each day, you will be head and shoulders above most people when it comes to personal productivity.

And you will be strengthening your attention skill in the process.

## 9 Task initiation – the uncommon strength

### 9.1 A new way of looking at procrastination

*Task initiation*, the brain skill being discussed in this chapter, is the ability to begin tasks without undo procrastination. If you have no problem digging right into a task at the scheduled time, seldom put things off, and have no trouble getting started with priorities at the beginning of each work day, you have strong task initiation skills. But if you tend to procrastinate, are slow getting started, do a lot of preliminary stuff like read the paper, have a coffee, straighten your desk etc. then you are weak on task initiation.

Most people procrastinate occasionally. Weak task initiation skills are one of the major causes of poor time management. Piers Steel, a *University of Calgary* psychologist, after analyzing psychological literature, concluded that 95 percent of people admit that they sometimes procrastinate.

Telling other people about your goals and making commitments rather than simply intentions have been known to help. Also recording starting times – including blocks of time in which to do your priority tasks – is a good idea. Having all materials ready before you start so there's no excuse to interrupt yourself and doing unpleasant tasks first are good ways to partially compensate for weak initiation skills.

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Forming a habit of starting for early in the morning, having policies as to when you work on the various tasks and choosing a quiet location all might help.

But we tend to avoid unpleasant things and gravitate towards pleasant things. This tendency is so common that it has even been given a label, the *Pleasure Principle*, which has been defined as: “*an organism avoids pain and seeks immediate gratification.*”

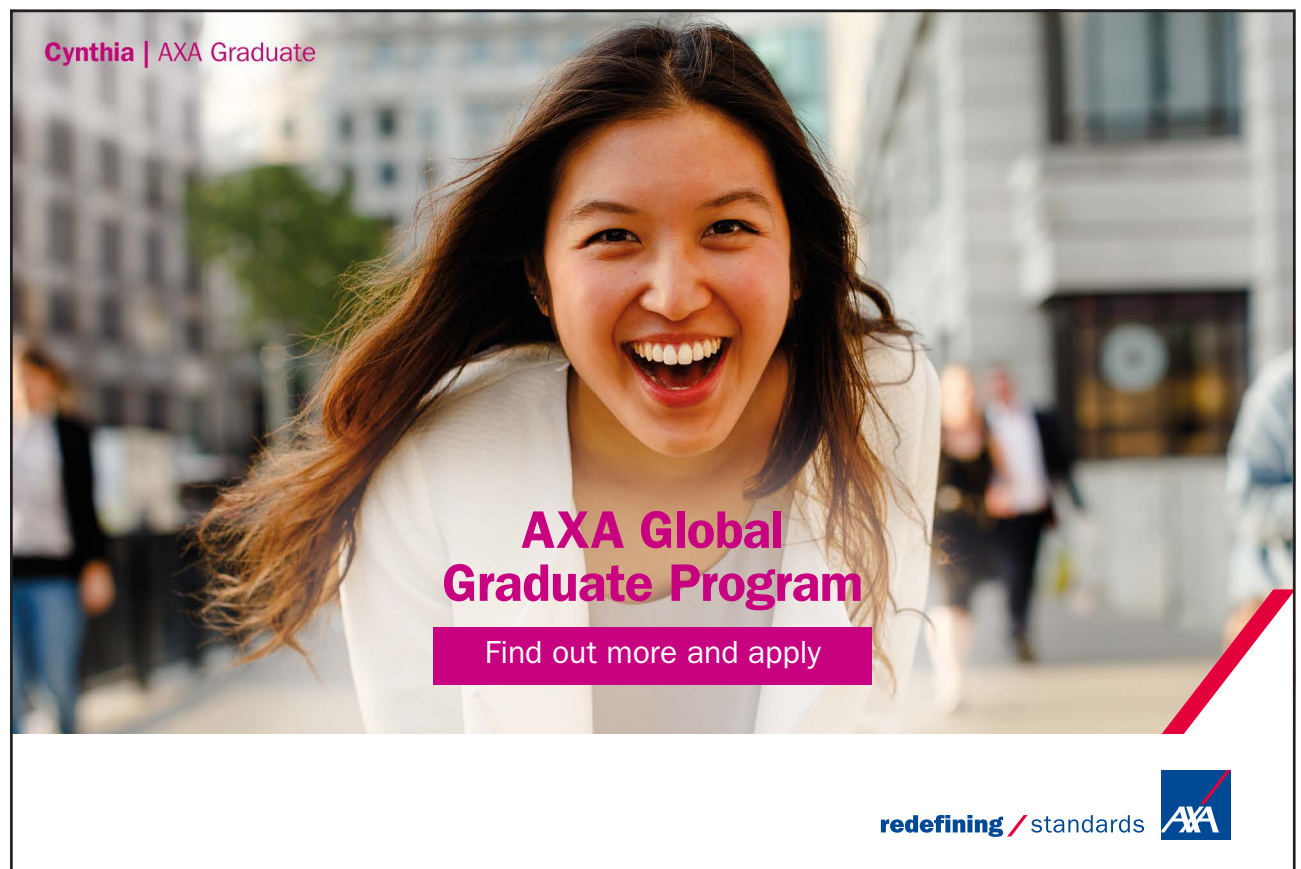
In a way, the *marshmallow experiment* is an example of this principle. Discussed in more detail in Chapter 1, a group of four-year-olds were given a [marshmallow](#) and promised another if they could wait 20 minutes before eating the first one. Some children could wait and others could not. The researchers then followed the progress of each child into adolescence, and demonstrated that those with the ability to wait were better adjusted and more dependable and scored an average of 210 points higher on the [Scholastic Aptitude Test](#). Those who gave into temptation early on were more likely to be lonely, easily frustrated and stubborn. They didn't cope well with stress and stayed clear of challenges. Yale University later conducted research on adults and found the similar results.

The executive skills needed to wait for the greater reward include task initiation and response inhibition. It may explain why we tend to procrastinate on distasteful or overwhelming tasks and work instead on those brief and pleasant tasks, even though they may be less important. When we procrastinate, we are frequently putting off what we want most in order to get what we want at the moment.

But how were the few four-year-olds, who also had very weak executive skills (since these skills take almost twenty years to fully develop) able to resist temptation and wait for the second marshmallow? Well, in examining the tapes many years later, researchers noticed that those children used strategies that allowed them to resist temptation – strategies that we could use ourselves in order to manage ourselves more effectively. They all changed their environment in some way to offset their natural inclination to devour the marshmallow right away. Some put the marshmallow out of sight by sitting under the table or by facing away from the marshmallow. Others sang a song or hummed a tune, focusing their attention on something other than the marshmallow. They did something to avoid having to face the temptation.

Translating these strategies to the business environment, you could turn off your cellphone, engage voicemail, turn off email alerts and close your office door at specific times while you work on your priority projects. You could remove all clutter and other potential distractions from your immediate work area – including any in-baskets. Don't have family photos or memorabilia in your line of sight. Face a blank wall, not a window or open doorway. Work on projects for 60 or 90 minutes at a time – maximum. If you find that's too long to postpone urges to interrupt yourself, shorten the work sessions even more. You can always increase them gradually later. Between sessions you can check email, return phone calls and grab a coffee. Work in short sprints rather than attempt marathons. Research shows that willpower consumes a lot of energy so you must pace yourself.

Through environmental and procedural changes it will be easier to resist the temptation to put things off. And the more you practice self-discipline, the stronger the neural connections in the brain, and the stronger those task initiation skills will become.



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# 10 Planning/prioritization – a time management must

## 10.1 Getting the important things done

The *Planning/prioritization* skill is the ability to determine what is important and what is not, and to create a roadmap or step by step plan to complete the chosen tasks. This involves making decisions as to where your focus should be directed and the best way to do the tasks or reach your goals. You must think clearly about each project, think through the various steps, and set target dates.

If you have trouble prioritizing and don't know where to start or how to proceed, you are weak in this skill.

In the last chapter I mentioned the importance of creating an environment that makes it easier to develop the executive skill of task initiation. This is true with all the skills, but especially so with the skill of *planning/prioritization*.

You must decide what has to be done and record these things so you don't forget to do them, determine which ones are more important, and then decide how, when and in what order they should be done. Actually doing them requires a skill of task initiation, which was discussed in a previous chapter.

You could start by making a "To do" list or checklist of tasks, activities and projects to be completed. Checklists are normally used for repetitive activities such as packing for trips, preparing for meetings or shopping for supplies. These become standing plans such they are used over and over again. To do lists change daily and are best recorded directly into your daily planner, either hard copy or electronic. The problem with separate single-sheet "To do" lists is that they are easily misplaced or overlooked – especially if you have a weak organization skills, which is next executive skill to be discussed in Chapter 11.

When you see all your tasks listed you are more easily able to compare them and select those of greater importance. Ask yourself which ones would have the greatest impact on your personal and business goals, and ultimately your success in life. At this stage you could put checkmarks on those of greater importance. Then take the more important ones and actually schedule them into your planner as though they were school classes. Example, "9 a.m. to 10:30 a.m., write article." These become blocks of time in your planner – commitments to meet with yourself at specific times to get the work done.

Those items of lesser importance can be left on your "To do" list and you can do them later if you still have time after completing the priorities.

Don't be fooled by items that are urgent, but not important. If not getting them done will have little impact on your job or life, leave them on a "To do" list to die a natural death.

As you practice this technique, your planning/prioritization skills will strengthen, as well as many of the other executive skills such as time management and organization.

You can make planning and prioritization a habit if you schedule planning time in your planner every day. For example, set aside a half-hour or more every afternoon or evening to compare the priority of those tasks that you have already scheduled for the balance of the week to those that you have added to your "To do" list in the meantime and make any necessary adjustments. Priorities do change; but if are constantly reviewing them, you will be certain to get the important things done.

And habits require less energy and forethought.



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# 11 Time management and organization

## 11.1 Do you have time to for time management?

Time management and organization are usually treated as two separate skills, but they are so closely related I will discuss them both together. Organization is the ability to arrange according to a system. If you are neat, detailed and orderly, generally have a place for everything, and have no trouble keeping track of everything, you have organization skills. But if you're messy, continually lose or misplace things and have no system for filing or handling e-mail or organizing other information, you are likely weak in this skill.

Time management is the ability to estimate and allocate time effectively. You are good in the skills if you have little trouble meeting deadlines, have a good sense of time passage, and know the importance of time. You're seldom late for meetings or appointments, set target dates, schedule your time and meet commitments. But if you're always running late can't account for where half your time went, have trouble estimating how long things will take, and fail to meet target dates, you are weak in this skill.

If a person is weak in these skills – or in any of the executive skills being discussed in this blog – they can actually strengthen the skills by adopting systems that partially compensate for these weaknesses.

In the case of time management and organization, I recommend the use of hardcopy planners and reverting to the old habit of writing things down and doing one thing at a time. This does not mean that you should abandon the use of technology, including the Internet, e-mail, iPhone's or texting. But forgetfulness, lack of focus, distractions, impulsivity, procrastination and other time wasters are reduced considerably when you build structure into your day that is both visible and actionable.

With the average Canadian spending over 45 hours online each month, there's not much time left to focus on what's important. And research suggests that Internet use is having a negative impact on how we think and behave, affecting our ability to focus, store memory, and interact with others.

Over 30 years ago I developed the *Taylor Planner* as an ADD-friendly planner since it compensates for many of the weak executive skills identified by individuals diagnosed with ADD or ADHD.

The planner displays an entire week at a glance (7 days) in 15-minute increments from early morning until late evening. It contains a weekly “Action List” of things to be done and space each day to block off time to work on the important tasks. Working in chunks of time rather than marathon work sessions makes it easier to maintain focus and avoid distractions. You can see a copy of the planner at [www.taylorintime.com](http://www.taylorintime.com).

Writing everything down, including things to do, appointments, morning, evening and weekend commitments, follow-ups and reminders makes it difficult to forget anything. There are sections for goals, important contacts, and assignments and due dates as well as plenty of space for personal notes, and other information.

Blocking off time to work on specific projects a little at a time avoids procrastination. Marking down the time you have to leave for an appointment prevents lateness. Notes in the daily “Follow-up” section remind you to check up on things asked for previously. You also have a permanent record of what you have accomplished.

There are daily follow-up sections for recording important dates and events you want to remember, such as birthdays, and reminders such as when to look in your follow-up file and where you put those theatre tickets.

The suggestions at the front of the planner include using colored self-adhesive labels to flag birthdays and other special events as well as yellow sticky notes for those urgent items you can't afford to overlook.

Other suggestions include organizing your work area before you call it a day, placing the top priority (or a reminder of it) on your desk before you leave work, and always preparing for the next day, whether that includes putting out the clothes you have to wear or leaving your computer bag, ready to go, at the front door. Also, set alarms on your smartphone to signal when it's time to stop working on a task or when it's time to leave for an appointment.

The more you are reminded of things you have to do or times you have to leave or places you have to visit or errands you have run, the less you will have to be reminded – since new neural connections are being strengthened in the brain.

You could attend a time management course for assistance or hire a professional organizer initially to organize your home, work area desk, file system, and set up procedures or systems for e-mail, handling paperwork and so on. The important thing is to develop systems that will work for you and stick to them until they become second nature.



# 12 Goal-directed persistence

## 12.1 To achieve a goal, insist on persisting

Goal-directed persistence is the ability to have a goal and follow through until its completion. If you are strong in this skill, you have a good record of achieving goals that you set. You are steady, persistent and reliable, and seldom let setbacks or obstacles prevent you from completing a project on time.

But if you are controlled by your environment, and others, and have trouble focusing beyond the present moment, you are weak in this skill.

Setting goals, recording them in your planner, using the chunk method of taking small steps at a time, working towards deadlines, having plenty of breaks, will both help you to be productive in spite of this weak skill – as well as help you to strengthen it.

It's important not to overwhelm yourself with too large a goal. Our short-term memory, discussed in an earlier blog, allows us to hold only a limited amount of any project in our mind at any one time. So it is important to break a large goal into smaller segments and work at these segments step by step.

An advertisement for SKF. It features a woman with long dark hair smiling in the foreground. In the background, a large white wind turbine is visible against a blue sky. The text 'Brain power' is written in large white letters on the left. On the right, there is a block of text about wind energy and SKF's role. At the bottom left, there is a call to action to visit the SKF website. The SKF logo is in the bottom right corner.

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For example if you want to organize your office, you would select one area, say a filing cabinet, and focus entirely on that, one drawer at a time. Setting a deadline of one drawer a day, and picking a specific time, say 3 p.m. to 4 p.m., will allow you to schedule each task as though it were a business meeting. When scheduling the time for each session, be sure to allow more time than you think it will take. And if it takes two or more sessions to finish the first drawer, don't let that bother you. You can adjust the time allowance for the other drawers.

The important thing is to build the habit of spending a certain amount of time each day working on a specific goal-related task. You can then apply this habit to any goal, no matter how large, whether it is writing a book one chapter at a time, completing a self-study course one lesson at a time or becoming a super salesperson one sale at a time.

Usually, people who quit before reaching their goal either do not have sufficient motivation to continue or do not have a clear plan to follow. So you must be clear on both the benefits of achieving the goal and the steps you must take in order to get there. Motivation requires both a strong desire to possess what the goal promises, and a belief that the action they are taking will achieve the goal

According to a study in the *Journal of Experimental Social Psychology*, and reported in the October, 2014 issue of *Psychology Today*, lessening the gap between expectations and outcome increases our satisfaction.

You will also encounter both internal and external distractions that could impede your progress. That's why the other executive skills discussed in this blog series are important as well – such as response inhibition, sustained attention and emotional control. Internal distractions could include such things as stress and tiredness as well as self-interruptions. So it's important to get adequate sleep, a healthy diet and plenty of exercise. These are especially important to strengthen your goal-directed persistence and other executive skills since we are more easily side-tracked and lack energy when we are tired, stressed or ill.

# 13 Flexibility – a survival skill

## 13.1 Bend over backwards to be flexible

Flexibility is the ability to revise plans in the face of obstacles and setbacks. If you are strong in this skill, you're adaptable and can easily adjust to a change in plans. You are good at coming up with alternative courses of action if conditions change.

But if you have trouble adapting to change, and are reluctant to change plans, and don't handle crises well, you are weak in this executive skill. It's easy to get stuck on one way to solve a problem or complete a task. By focusing on a detail you might miss the big picture.

Being able to roll with changes and take what you know and apply it to a new situation not only requires flexibility, but is a component of creativity as well. And participating in creativity exercises is one way to strengthen these skills.

Neuroplasticity tells us that we can change our brain by focusing on what we want to change, and this includes change itself. If we accept change and continually adapt to it, we will increase our flexibility. The more we adapt the easier it becomes. Even your attitude can be changed from one of pessimism to one of optimism if you continually focus on the positive aspects of work and life.

*Neurobics* is a word popularized by Lawrence Katz and Manning Rubin in their 2014 book, *Keep your brain alive*. *Neurobics* is a takeoff on aerobics, and refers to exercises for the brain. The authors describe *Neurobics* as helping you to maintain a continuing level of mental fitness, strength and flexibility as you age. The exercise is described in the book uses the five senses (vision, smell, touch, taste and hearing) in novel ways to increase the brain's ability to form associations among the different pieces of information that you encounter.

An example would be to get dressed, brush your teeth and find your way around your home wearing ear plugs and a blindfold. By doing this you are stimulating rarely used pathways in the brain and increasing your range of mental flexibility, touch and flexibility.

As mentioned in previous chapters, what's good for the brain is good for all the executive skills, including flexibility.

The brain itself was created to be flexible, and all you have to do is nurture this innate ability. To give you an example of how our brains can be rewired, in the year 2000, a study of London taxi drivers revealed that they had a much larger *posterior hippocampus* than men with a similar profile, but who did not drive for a living. That part of the hippocampus is responsible for a person's navigational skills.

As far as our brain is concerned, it seems to hold true that if we don't use it, we lose it. Another example appeared in the December 12, 2009 issue of the *Toronto Star*. It was an article on handwriting, which seems to have been replaced by the keyboard – at least by the younger generation. It concludes, based on research, that handwriting works the brain differently and builds distinct cognitive skills. It reinforces reading and spelling, develops motor memory as it becomes automatic, teaches students to focus, and may help them remember what they learn. So as keyboards replace handwriting, new neural pathways are created and new cognitive skills replace the old.

To maintain flexibility and continue exercising the brain, it is a good idea to get away from a task for a short period of time, and then return to it mentally refreshed. The brain thrives on variety. Also, don't schedule too tightly, introduce change gradually, take other people's agenda into account when making plans, recognize that you always have choices, and get in the habit of developing alternative plans.

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Inés Aréizaga Esteva (Spain), 25 years old  
Education: Chemical Engineer

– You have to be proactive and open-minded as a newcomer and make it clear to your colleagues what you are able to cope. The pharmaceutical field is new to me. But busy as they are, most of my colleagues find the time to teach me, and they also trust me. Even though it was a bit hard at first, I can feel over time that I am beginning to be taken seriously and that my contribution is appreciated.



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# 14 Metacognition – the managerial skill

## 14.1 Have you ever thought about your thinking?

Metacognition is the ability to observe yourself in a situation and make changes so you're better able to solve problems, build relationships and succeed in life. If you can see a situation objectively and evaluate how things are going, you are strong in this skill.

But if you don't think through the possible results of your decisions, tend to make quick decisions, often repeat the same mistakes, and don't think through long-term consequences, you are weak in this skill.

Metacognition is not an easy skill to develop because we have to step outside of ourselves – and our subjective thoughts, habits and biases – to look at each situation objectively. As David DiSalvo says in his book, *Brain change*, we have to “think about our thinking.” Although the prefrontal cortex is responsible for higher-order thinking and reasoning, multiple brain areas are involved in metacognition as well as in other executive skills.

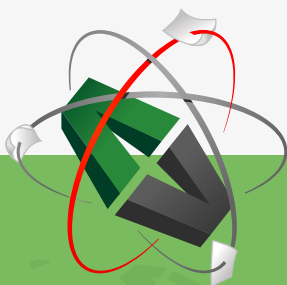
We all have memories from the past – many unconscious ones – that influence how we think, feel, and react to different situations and behaviors. With a strong metacognition skill you are able to actively examine each situation on its own merit while resisting the impulse to react involuntarily. By doing so you can more easily adapt to change, make better decisions and become more creative and successful.

Since our brain is plastic, we can train ourselves to improve our metacognition; but it takes a conscious effort to reject unconscious and false beliefs and reasoning. As mentioned in a previous chapter, the brain is more flexible than most people realize. Through practice you can strengthen any skill, and maintain conscious control of your thinking. You can't stop thoughts and feelings from popping into your mind; but you can question their validity.

I choose to view the mind as a separate entity that can control the brain. The brain is a computer that will never be duplicated in its complexity and amazing functionality. But the mind is who you are, and the brain is at your disposal. But it doesn't come with a user's manual, except for the findings of the neuroscientists, and you must learn how to operate it yourself. And just as we can be controlled by technology instead of the other way around, we can be controlled by our brain if we don't take charge.

You must do your own programming and updates. You must service your brain regularly with proper diet, exercise and mental challenges to keep it in good working order. Have a questioning attitude. Read. Continue with lifelong learning. Maintain an active social life. Never compromise on sleep. Manage stress. And question your own thinking so you don't feed it faulty information. Remember the old GIGO acronym – garbage in, garbage out.

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# 15 Stress tolerance – a 21st century necessity

## 15.1 Building stress resistance

Chuck Martin, Richard Guare and Peggy Dawson, in their book *Work Your Strengths*, include *stress tolerance* as an executive skill. I would think that being strong in many of the other executive skills would help you to tolerate stressful situations, including emotional stress such as that caused by illness. But being able to manage stress is critical since it can weaken the immune system, raise cholesterol levels, accelerate hardening of the arteries, disrupt the digestive system, and lead to overeating and obesity. And according to Tiffany Chow, in her book, *The memory clinic*, it can also increase the risk of developing dementia. So we will include stress tolerance as one of the executive skills.

Stress tolerance is the ability to thrive in stressful situations. With strong stress tolerance, you are able to take things in stride, and work well under stress. If you don't handle stress well, panic during crisis, and feel uncomfortable when things don't go smoothly, you are weak in this skill.

Working memory, as discussed previously, allows you to hang on to memories long enough for them to be consolidated as long-term memories in the hippocampus area of the brain. And if we don't protect the hippocampus from excessive stress, we may lose the ability to file these new memories, putting us at risk for Alzheimer's.

Things we should *not* do to relieve stress is turn to drugs, alcohol or cigarettes. Tiffany Chow, in her book, *The memory clinic*, claims that smoking is a risk factor for heart disease, heart attacks, and high blood pressure and she mentioned that one study reported that it doubles the risk for dementia.

It's usually impossible to relax, do deep breathing, meditate or go jogging when you're in a stressful situation. But you're *not supposed* to relax. The "flight or fight" response that you experience under stress is not something that you can avoid. It's a product of your automatic nervous system, which regulates the release of adrenaline, blood pressure, heart rate, hand temperature and other physiological changes. It's an automatic response to perceived danger. If it were someone threatening you with a knife, the response could save your life. Your increased strength and heightened awareness could get you out of danger. And the adrenaline would be used up as you take action.

But with an unrealistic deadline or an overload of projects, you're not engaged in physical activity. The excess adrenaline causes you to feel terrible. You experience palpitations, dry throat, trembling. You're nervous and upset. You weren't meant to feel the adrenaline; you were supposed to be too busy to feel anything.

Relaxing is not what you should be trying to do. Relaxation is something you acquire when you're not under stress. It's preventative medicine, so to speak. It makes stress easier to handle. What you need at the moment is stress management. You need to take control of the situation, change your attitude, be assertive and accept life's challenge.

Combine healthy attitudes with action and you have stress management. When you are faced with a stressful situation, look at it as a challenge. Take a positive approach and look at the bright side. You can't do the impossible. The important thing is to be active, take control and be assertive. Activity dissipates the adrenaline, and along with it, the worry and ravages of stress. A Yale University study revealed that those who changed their outlook on stress after watching a video urging them to rise up to whatever challenge faced them showed improved psychological symptoms and better work performance.

Talking continually to others about your problems and frustrations may appear to be a way of blowing off steam and relieving stress. But it gets the cortisol flowing all over again – further increasing your stress level.

To build stress tolerance, make sure you schedule adequate leisure time, build quality relationships with others, laugh often, keep healthy and physically fit, participate in relaxation exercises and massages, get plenty of sleep, and don't take yourself too seriously. Meditation or mindfulness can also help you change the way you perceive potentially stressful situations. A *Newsweek* special issue, *Your Body* (October, 2014) suggested that taking 15 minutes a day for silent meditation can help lower stress levels and prevent it from increasing in the first place. Studies showed that even taking a few deep breaths can lower cortisol levels.

You might also maintain a positive attitude, turn off your cell phone, and drink black tea to help develop a resistance to stress. According to the *Newsweek* article referenced above, studies show that taking three or four hours each day away from the Internet and digital communication is not only a healthy distraction, but also a partial antidote to stress. It also referred to a study by *University College London* that found that those who drank four cups of black tea a day for four weeks had a lower cortisol level in their blood when facing a stressful situation.

And believe it or not, orderliness seems to help as well. UCLA researchers discovered that the sight of clutter can induce the production of stress hormones. So get organized.

# 16 Suggestions for strengthening all the executive skills

## 16.1 Don't cut back on sleep

One strategy for strengthening executive skills that rarely gets the attention it deserves is adequate sleep. It is thought that sleep helps to forge new neural connections and solidify memories while filtering out unimportant connections. Some experts suggest that sleep disorders are actually misdiagnosed as ADHD. An article in the May 30, 2013 issue of the *Globe & Mail* (*A curious link between ADHD and sleep*), further discusses research in this area.

You should also get plenty of sleep. Sleep deprivation definitely impairs functioning of the executive skills. For example, a student scoring in the top 10% in grades dropped to the bottom 9% after only seven hours per sleep per night and seven hours 40 min. on weekends.

There is little doubt that sleep has restorative and memory-supporting powers, and if you take a holistic approach to time management, you will include adequate sleep among the strategies for improving personal productivity as well. For a full discussion of the advantages of sleep, refer to my book, *Sleep: a time management strategy*.



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...I finally learned to speak it in just six lessons"

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## 16.2 Exercise your brain

Keep your brain active and strengthen neural connections by learning new skills. You might start by doing everyday tasks differently. Use your left hand to control the computer mouse (if you're right-handed), or to brush your teeth.

Exercising your brain – even without moving from your chair – could reap physical benefits. *Cleveland Clinic Foundation* research has indicated that just *thinking* about exercising a muscle will strengthen that muscle.

In stressful situations, your weakest skills fail first and become more pronounced. Fatigue and information overload tend to weaken them further. Avoiding releasing or being able to manage stress is important. Also you should re-examine your workload. Keep organized, plan, and allocate your time to things of importance. Simplify if possible. Delegate and outsource. Pace yourself. Too much exertion without breaks taxes the executive skills. In fact studies have shown that people who exert themselves mentally, such as resisting the temptation to eat chocolate or whatever, gave up on problems sooner when presented with them immediately afterwards. (*Scientific American Mind*, May/June, 2011)

Many of these skills have to do with self-discipline and that definitely can be improved through practice. For example turn down desert once in a while, or second cup of coffee. Give up your favorite TV program or sporting event and so on. You could have a glass of water instead of a milkshake and resist that chocolate bar after golf.

Neuroscience has proven that the more you use a circuit in the brain, the stronger it becomes. The reverse is also true, so don't relinquish all your tasks to a computer. Training your memory, creative writing or any skill can be strengthened through practice. But variety seems to be the key. Improving one executive skill does not necessarily improve all the others. Doing crossword puzzles only increases your ability to do crossword puzzles. And this is true for most computer games as well.

There are exceptions, however. Exercise, for instance, stimulates the creation of new neurons not confined to the region of the hippocampus that stores new memories. Art Kramer of the *University of Illinois at Urbana-Champaign* found that a year of exercise can give a seventy-year-old the connectivity of a thirty-year old. Harvard researchers have linked aerobic exercise with improvements in food choices and the ability to resist temptation. They feel it may inspire healthier choices by altering structures in our brains that deal with regulation and impulse control while also making us happier and calmer. This could account for weight loss in addition to the calories you burn through exercise.

Other activities such as meditation and certain video games can change brain structure so that brain processes are more efficient. Meditation has been shown to have a positive effect on the immune system and cardiovascular function as well as the brain. In one study, those who meditated showed less activity in the brain area associated with negative emotions such as anger and anxiety and more activity those areas associated with optimism and confidence.

And learning a second language can sharpen many of the executive skills. Ellen Bialystok of *York University* in Canada found that the workout the brain gets in bilingualism carries over to improve such skills as problem solving and attention switching.

### 16.3 Balance high tech with high touch

Balancing high-tech with high touch can also strengthen “executive skills.” I suggest this could be done by introducing more paper into your life, which to most people might think is a backward step. But I feel we moved too quickly and too completely into the digital world. It’s as though our goal were not to increase productivity, but to eliminate paperwork. And for many of us, especially those struggling with weak executive skills, personal productivity decreased while stress levels climbed.

Using a paper planner for instance serves to ground me in reality. I can touch it and feel it and see my scheduled projects the moment I open it. Writing down an appointment solidifies that meeting in my mind, while dictating it to a handheld device makes little impact, little commitment, and little chance I will even recall it the next morning.

A pen in hand generates focus, attention, commitment, and a “do it now” mindset – something many of us lack. Written down, a name or number stays in working memory longer and has a greater chance of making it into long-term memory for later recall. Fast is not necessarily better; it’s just faster.

Similarly, I prefer to make handwritten notes while on the telephone, jot ideas on a steno pad instead of reaching for a laptop, write notes on an “Action Sheet” in meetings, and, heaven forbid, even write personal notes on hardcopy birthday cards and send them by snail mail.

There is a place for digital devices. And I do own a handheld Android, an iPad, a netbook and a laptop. And like most people I do online banking, use e-transfers, make calls with Skype, shop online, have a PayPal account, participate in social media, and correspond by email. But I also use a paper planner and a hard copy follow-up file system, a telephone log booklet, paper checklists, note pads, sticky notes as well as read hard copy books. Paperwork adds structure to my life – because paperwork IS structure.

Because we live in a digital age of speed, I’m almost embarrassed to admit that I handwrite all my books and articles. But I quickly regain my self-esteem when I recall the story of the tortoise and the hare. The objective was clearly not to run the fastest, but to win the race.

## 16.4 Watch what you eat

Diet is important for a healthy body and certain foods in particular have been found to be good for the brain. For example, blueberries are believed to reduce the risk of age-related diseases such as dementia and Alzheimer's. Avocados are thought to be good for the brain because of their monounsaturated fat, which increases blood flow through the brain and lowers blood pressure, and organ meats because they are high in brain-healthy nutrients such as vitamins A,D, E, K, B12, as well as folic acid.

Egg yolks are rich in choline. A shortage of choline has been linked to insomnia, memory problems, and fatigue. Egg yolks also contain anti-inflammatory omega-3s, as do salmon, herring and sardines. Most nuts are also a source of vitamin E, which protects the brain's iron from exposure to oxygen. According to a special issue of Newsweek published in October, 2014, 90 percent of Americans overlook vitamin E in their diet.

Any food that reduces high blood pressure or helps the cardiovascular system in any way is good for the brain, since the brain's blood supply is critical. This includes such foods as oatmeal, brown rice and grain breads.

## 16.5 Break the habit of forming habits

While habits are great for saving time and conserving mental energy, they are not so great for the brain. The same can be said for any routine behaviors to varying degrees. They provide little brain exercise. By using the same route driving to work each day, having the same morning or evening routines, and doing tasks or activities in the same way again and again strengthen the neural links required for those pathways. But links to other brain areas (that were required initially) become weak. You may be getting the work done faster, but you are losing out on a lot of brain activity that could strengthen your executive skills.

There's nothing wrong with developing the habits of planning every evening, working on priorities every morning and taking vacations every other week – because the brain stimulating variety is in the actual plans you develop, priorities that you work on, and leisure activities that you participate in. But add variety to your life, don't get stuck in a rut or make your life a series of repetitive routines. This would also make the perceived passage of time much faster – as discussed in my book, *Slowing down the speed of life*.



# 17 About the author

Harold Taylor, CSP, CEO of *Harold Taylor Time Consultants Ltd.*, and partner, Taylor in Time, has been speaking, writing and conducting training programs on the topic of effective time management for over 35 years. He has written 18 books, including a Canadian bestseller, *Making Time Work for You*. He has developed over 50 time management products, including the popular *Taylor Planner*, which has sold in 38 countries around the world. He has had over 300 articles accepted for publication.

He served for 12 years as Quality Control Manager and Plant Manager in industry, and 8 years as teaching master in the business division of Humber College of Applied Arts & Technology in Toronto, Canada before launching his own consulting firm.

A past director of the *National Association of Professional Organizers*, Harold Taylor received their Founder's Award in 1999 for outstanding contributions to the organizing profession. He received the CSP (Certified Speaking Professional) designation in 1987 from the *National Speakers Association*. In 1998 the *Canadian Association of Professional Speakers* inducted him into the Canadian Speaking Hall of Fame. And in 2001, he received the first *Founder's Award* from the *Professional Organizers in Canada*. The award has been named the "Harold Taylor Award" in his honor.

Since 1981, when he incorporated the original time management company, he has personally presented over 2000 workshops, speeches and keynotes on the topic of time and life management.