**Focus and the Organized Mind: A Cheat Sheet to Boost**

 **Productivity and Cope with Information Overload**

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Recent Findings: Attention Must be Paid

The past decade has seen significant advances in our understanding of the most basic human activity: attention. These developments have been fueled by research in the fields of neuroscience (study of the brain) and cognitive science (study of mental operations).

An explosion of neuroscience findings about the circuity underlying attention has enabled us to identify two semi-independent systems of attention, each with its distinctive functions, and relative strengths and weaknesses. Recent insights from the field of cognitive science in the study of decision-making, memory, judgment, organization and self-regulation not only allow us to understand attention better, but to translate that understanding into guidelines to help enhance productivity and fulfillment, and to reduce that particularly modern form of stress called “neural buzz”.

We are at an embryonic stage of unpacking these findings to generate practical strategies. However, leaders in the field are off to an auspicious start. The purpose of this post is to disseminate those strategies, as well as to offer a few of my own. The strategies outlined rest on two basic principles: (1) They are derived from empirical findings, and (2) Organizing our thinking to **align** with brain structure will allow us to spend our time more efficiently and productively.

This post will endeavor to:

* + - * Describe the two attentional systems and spell out their distinctive features and functions
			* Provide guidelines for coordinating the two systems, the key skill in driving excellence. In particular identifying *when* to switch from one system to the other, and *how* to make the switch
			* Offer techniques to increase our attentional capacity (cognitive weight training to build up our “attentional muscle”)
			* Outline strategies to deal with distractions, both external (e.g. noise) and internal (e.g. unproductive thoughts and feelings)
			* Suggest ways to facilitate *flow* , a particularly focused, productive and fulfilled state

As noted above, there is currently a gap between what we have recently learned and how to capitalize on those learnings, Fortunately, there have been two recent efforts by leaders in the cognitive science field to close that gap. The Organized Mind: Thinking Straight in the Age of Information Overload by Daniel J. Levitin, and Focus: The Hidden Driver of Excellence by Daniel Goleman provide lucid summaries of recent research and creative tips to apply that knowledge.

It’s About Time….

The emergence of research supported strategies to deal with information overload is fortuitous. While we’ve never had more tools for productivity, creativity and problem-saving, we’ve never been so overwhelmed — constantly bombarded by alerts, messages and the demand to master the next new technological breakthroughs. The result? That neural buzz experience of trying to walk up a downward moving escalator, which leaves one feeling frustrated, disempowered and worn out.

The technology revolution and accompanying information explosion has placed our attention under siege. On a typical day we absorb five times more information than we did in 1986. For every **half** hour we spend on YouTube for enjoyment or learning — **4000** new hours of video are being uploaded. We hold in our hands “phones” with computing and problem-solving power that just 20 years ago ran our space program, oversaw our national security needs and cost 30 million dollars. Information — from virtually all the libraries in the world, as well as from untold research facilities and think tanks — is just a few finger taps away.

Technology — fueled by “Moore’s Law” that computing power doubles every two years — is accelerating at an exponential rate. Our brains — governed by Darwin’s theory — evolve slowly and gradually. So, yeah, it would be nice to have some help. Artificial intelligence is racing ahead. Attentional intelligence needs to join the competition.

But First, What Is Attention,Really?

(This current section — which distills our current understanding of attention — is not necessary to read in order to apply the strategies to boost attention Feel free to skip

to those suggestions. However, the following material will likely increase your confidence in those strategies.)

As mentioned above, we now know there are basically two semi-independent, largely separate systems of attention Different theorists have come up with different labels for these systems. We will use the labels “*top-down*” and *“bottom-up*”.

Appreciating the different functions of these two systems will enable us to employ them more successfully. For each system we will describe it’s key characteristics, particular function, and underlying brain circuitry. We will also sketch out the ideal interaction between the two systems.

The Top-Down System (also called the central executive mode)

This is the system we associate with our rational, self-aware, deliberate, problem-solving self. A word cloud for the top down system would include terms such as planning, deliberate, beliefs, new learning, self-control, active, reflective, slow, linear and willpower.

It’s key characteristics are:

* + - * Voluntary. We choose where to direct our attention
			* Effortful. Requires and uses up energy
			* Slower, deliberate, usually linear, one- step- at- a- time problem solving
			* Long-term thinking

The primary function of the top-down mode is to focus our attention on problems to be solved and use learned skills (brainstorming, rational analysis, evaluating) to address them. It should be noted this central executive mode is not just for arduous tasks but also for pleasurable ones (conversation with a friend, playing games, digesting a film).

The term top-down is apt because the brain circuitry for this attentional mode is in the upper part of the brain in the prefrontal cortex. On the evolutionary time scale, the development of the pre-frontal cortex is more recent compared to the ancient, bottom-up brain circuitry. Of course, scientific progress and modernity are not possible without this top-down attentional mode.

The Bottom-Up System (also called the wandering mind)

This mode we associate with those aspects of human nature that we share with other species: perceiving our bodies and the world around us; rapidly detecting threats in the environment; and constantly aware of impressions, feelings, impulses and intentions. This system supports a more fluid, non-linear, intuitive mode of thinking. A word cloud for the bottom-up system would include terms such as creative, loose associations, constant, passive, just happens,

fast, multi -task, relaxing.

It’s key characteristics are:

* + - * Involuntary and automatic. Always humming in the background Thus, also referred to as the default mode
			* Not effortful. Restores energy
			* Impressionistic and intuitive. Operates through a network of associations
			* Faster. Rapid detection/judgment of pain/pleasure. Executor of habitual routines and wired-in evolutionary programs
			* Short-term thinking.

The bottom-up circuitry is primarily in the basal ganglia, a ping pong ball mass of nerves at the bottom of the brain, just above the spinal cord. The bottom-up circuitry houses our wired-in programs for survival and procreation.

A First Step Toward…

“Attentional intelligence” involves appreciating the difference between the two attentional systems and knowing when it might be desirable to switch from one to the other.

We have all had the experience of working hard (Top Down Mode) on an issue and yet unable to resolve it; and then have the “AHA” moment of a creative breakthrough when we are taking a walk, riding on a train or just waking up (Bottom Up Mode).

Excellence is fostered when we know how and when to distribute tasks; employing the top-down executive mode for those aspects of a problem the require linear, rational, step-by-step analysis; and the bottom-up mind-wandering mode when we seek novelty and creativity. We need both. As Einstein noted, “The intuitive mind is a sacred gift and the rational mind is a faithful servant”.

Our brain circuitry encourages this ying/yang of problem-solving. When one of our attentional modes is activated, the other is deactivated. Thus, when the top-down mode is active, we are better able to filter out distractions and focus better. The creative part of our brain is inhibited which fosters more linear thinking. When the bottom-up mode is activated and we are not hyper-focused, creativity and new associations are more likely. It is also important to note that the tight, focused attention characteristic of the top-down mode produces fatigue. Switching to the bottom-up mode restores energy,

This brief overview of the two systems of attention and the relationship between them launches us into the primary purpose of this post, which is to provide….

**COGNITIVE APPS TO BOOST PRODUCTIVITY AND DE-CLUTTER THINKING**

**App # 1 Switchboard Operator: Taking Control of Knowing When to Switch the Top-Down and Bottom-Up Systems**

The purpose of this “app” is to take advantage of our knowledge of the features and essential functions of the two modes so we can more wisely and efficiently switch from one to the other, depending on our moment-to-moment goals.

This app uses our “attentional intelligence” to identify *when* to access one particular mode. (Other apps will address the *how* of accessing each mode) The operating principle behind this app is that enhanced self-awareness leads to enhanced productivity,

Listed below are a set of markers that should prompt us to deliberately access our top-down mode. These markers describe a situation or a state of mind that alert us to try to throw the switch to the top-down mode.

*Top-Down Markers:*

* + - * Tasks that benefit from sustained concentration (Note these are not limited to “work” tasks. Deep conversations with friends are a top-down activity)
			* Tasks that are linear and benefit from step-by-step problem-solving (e.g. organizing our home, weekly schedule, finances, etc.)
			* Tasks that require gathering and analyzing information
			* After we hit upon an insight — usually from our bottom-up mode — which then needs further elaboration, operationalizing, etc.
			* Cognitive empathy. This involves efforts to understand someone else's world and to put that understanding into words
			* When we want to immerse ourselves in a topic
			* When we need metacognition (thinking about thinking) to inhibit unproductive mental habits
			* When we want to override automatic routines (e.g. surfing the web)
			* To counteract “hijacking” of our attention by disturbing emotions (e.g. using reason to put things in perspective, reassure ourselves, etc.)

*Bottom-Up Markers*

Remember, bottom-up is our default mode, the one we revert to naturally. It does not require effort. Nevertheless, it is desirable to know the situations and states of mind that are particularly amenable to bottom - up processing. These include:

* + - * When we have been problem solving for a meaningful period of time and our tight focused attention begins to feel counterproductive, as evidenced by fatigue, wavering concentration, and feeling stuck or at an impasse. These are signs that our top-down circuitry, like an overworked muscle, has been fatigued (depleted of glucose) and needs to be rested.
			* When engaged in an activity that relies on skills that have been well learned or habitual (e.g. playing a sport, video game)
			* When the task is to put ideas together in novel ways
			* Navigating our complex social worlds
			* When we seek emotional empathy. Tuning into the “murmurs” (sensory- motor circuitry) in our body that is evoked when we focus on another’s experience
			* To resolve important personal issues (not exclusively a bottom-up task, but the bottom-up is the repository of our learning history, values and desires and therefore serves as a “life rudder” to help address complex, important personal decisions)

**Cognitive App #2 How to Boost the Top-Down Mode**

This app outlines four basic strategies to facilitate entering into and then enhancing the productivity of the Top-Down Mode.

* + - * Reducing distractions
			* Building a routine that elicits the Top-Down mode
			* Capitalizing on reward circuitry in the brain
			* Posing questions to boost the Top-Down mode

Remember, the top-down mode uses energy and-often but not always-requires effort, For those top-down activities that are enjoyable (e,g, having a conversation with a friend, reading a book, getting absorbed by some work or avocational task) effort is typically not an issue, The above strategies apply to all top-down activities, but are particularly relevant to those we perceive as effortful.

*Reducing Distractions*

We are recurringly distracted. Distractibility leads to mind wandering. Research shows that our minds wander 50% of the time when we are engaged in a task or activity. While mind wandering is ubiquitous, there are ways to reduce distractibility and mind wandering when we want to focus on a task.

Distractions can be external or internal.

E*xternal distractions include:*

* + - * Receiving and/or replying to emails, text messages and alerts
			* Hearing the telephone ring
			* Surfing the internet
			* Playing a video game on your device
			* Listening to the radio or watching TV
			* Starting or being the recipient of live conversations
			* Noticing something on your desk or nearby that needs your attention
			* Looking at something outside the window

The key strategy for reducing distractions is to make a list of your particular and recurring distractions and devise a step you can take to eliminate or reduce the distraction, such as:

* + - * Putting your phone on airplane mode
			* Shutting off your phone
			* Close your web browser
			* Let others know you are not to be disturbed for a period of time while you are working
			* Turn your desk away from the window

*Internal distractions involve* the chatter in our minds that pulls us away from the task or situation at hand. Most of this chatter is unproductive: worries, self-criticism, recurring daydreams, memories (often of negative events), etc.

The main strategy for dealing with this internal chatter is self-awareness. Once we become aware we are distracted by such internal chatter, we are in a much stronger position to put the distraction to the side,

One useful technique is to have a notebook or piece of paper near you when you are trying to focus and simply make a mark on the paper each time you notice your mind has wandered. Noticing that your mind has wandered enables you then to choose to return your focus to work. Making repeated marks increases your awareness of losing focus and leads to better (not perfect) focusing, If you are distracted by a thought you feel is productive or important, you can make a quick note of it, knowing you have captured it and can return to it later.

*Building a Routine for Your Top-Down Work*

Consider developing a strict routine that includes setting up your environment to be free of distractions and has regular time parameters. Once we establish a practiced routine for a certain duration (one month is often sufficient), it begins to be regulated by circuitry in the lower part of the brain. As a result, the routine becomes more automatic, feels less effortful, and uses less energy.

*Capitalizing on Reward Circuitry in our Brain*

Recent developments in brain research have enabled us to identify beneficial impacts of positive emotions on our top-down functioning. These include:

* + - * Widened span of attention
			* Enhanced focus
			* Increased persistence
			* More able to overcome boredom and focus on long-term goals

There are parts of the brain (e,g, left prefrontal area) that are rich in dopamine, a neurotransmitter that is integral in helping us keep striving toward goals despite setbacks, and to remind us how great we’ll feel once we finally reach our goals,

Tapping into this reward circuitry can trigger a virtuous cycle in which positive feelings boost our top-down functioning, leading to better performance, which leads to meeting goals (intrinsically rewarding) which elicits positive feelings, and so on.

Are there strategies to tap into this “positivity” in order to trigger this virtuous cycle? One broad strategy is to choose work, avocations and situations that are in line with our deeper interests, enjoyments and values. *Know oneself and choose wisely.*

However, identifying your passion is typically not sufficient to insure perseverance and willpower. After all, the greatest rewards and fulfillment usually involve the greatest effort and necessity to postpone short-term gratification. Two specific strategies that can evoke some of our reward circuitry are:

* + - * Recognize the **link** between the effort we expend in order to meet important **long term** goals
			* Break long term goals into **short term goals**. A series of “small victories” can facilitate the reward circuitry in the brain

Posing Questions to Boost the Top-Down Mode

The top-down mode thrives when we are immersed in a subject. When that occurs, the brain constructs a network of pathways that embody the set of ideas (e.g. through reading) or skills (e.g. learning a sport) we are trying to absorb, These pathways are more easily constructed if the material we are trying to absorb has **relevance** to our own lives and invites **associations t**o previous learning.

We can be active and more productive learners by priming the **relevance** and **association** pumps with questions.

As we begin to tackle work that requires top-down functioning, four questions to evoke relevance might include:

 “How is this relevant to me?”

 “How can I apply this to me? “How might it benefit me?”

 “How will this advance my efforts at understanding and solving the problem?”

Neural pathways that are richer and more robust also occur by making associations with the new material. Memory also functions more by association than blind recall.

Questions to invite associations might include:

 “Do any associations to previous experiences or similar problems come to mind?”

 “How does this material relate to the basic problem I am trying to solve?”

*Active learning* is more focused and has greater stamina. Proactively asking the above questions is an active learning practice that will boost top-down functioning.

**Cognitive App #3: Tips To Boost Our Bottom-Up Mode**

Remember, the bottom-up mode is our default mode, the one we return to automatically and naturally when we relax our problem-solving efforts. To shift into a bottom-up mode, pretty much all we have to do is lighten up on sustaining concentrated focus on some issue; just take a break.

However, there are strategies to more fully and effectively maximize our bottom-up functioning. These strategies facilitate the two basic functions of the bottom-up mode: (1) to restore energy, and (2) to tap into our creative, non-linear thinking to help solve problems.

Bottom-up boosters include:

* + - Establish a “creative cocoon” where you block out external distractions. In particular, minimize filling up your mind with information. Activities such as surfing the web, checking your email or playing a video game take up neural energy. A much better activity is to take a walk, especially in nature. Research indicates there is something about being in nature that is particularly restorative. Also, if you are not absorbing new information, our mind is more likely to wander to creative thoughts about the problem you had been working on (the “aha” experience). It should be noted that Google and other hi-tech companies have small private rooms that they encourage employees to use throughout the workday to get a break from information overload and foster creative breakthroughs.
		- A particularly good way to restore energy? Engage in activities that involve a full focus, but are also enjoyable and relaxing: activities in which you can lose yourself. Examples might be playing with your kids, playing a sport or meditating.
		- Consider taking a short nap (10 to 15 minutes). Research indicates that these “power naps” generate significant cognitive enhancement, improvement in memory and increased productivity.
		- Use mindfulness meditation or a technique called Cognitive Defusion to cope with the “worried bottom-up” mode. There is one bottom-up activity — that we are all familiar with - that is not productive or restorative:  **ruminating.** Ruminating involves going over the same old worries, frustrations, disappointments and hurts. It typically takes the form of negative predictions (“What if…?”) or self-criticism (“If only I…”)

Rumination involves the activation of what brain scientists call the “me” circuitry. When this “me” circuitry gets stuck in a painful, repetitive groove, it is a major waster of attention.

Fortunately, we have discovered an effective tool to help us shift out of this particularly unproductive state: mindfulness-based meditation.

Mindfulness meditation has such a beneficial impact on attention and self-management that it warrants its own app (see Cognitive App#6). In this app we will outline a low-tech technique derived from mindfulness practice that targets rumination.

Cognitive Defusion is a technique developed by Steven Hayes-founder of Acceptance and Commitment Therapy- that helps disentangle people from painful, unproductive ruminative thinking. Cognitive defusion relies on the basic process of mindfulness which is to notice and try to accept without judgment where our minds wander; then try to bring our attention into the present moment by reference to a particular stimulus (e.g. attention to your breathing); then notice our minds (inevitably) wandering again; then rinse,repeat.

This noticing and accepting paradigm is more effective than trying to suppress or challenge our ruminations, which can have a “boomerang” effect of increasing such thoughts.

One cognitive defusion technique that tweaks the basic mindfulness instructions is called: **Give a** **Story Heading to Your Same Old…..Ruminations.** When you notice you are immersed in a negative, but recurring train of thought, give it a story heading, such as ‘there goes my story about how lazy I am’ or “there goes my story about accepting the wrong job” i.e. whatever story title seems appropriate. Whenever the train of thought comes up, try to notice it and give it the story heading (this will become easier over time). You will notice that you are less entangled or fused with your thoughts. You can distance or defuse yourself even further by expanding the phrase to ‘I notice my brain is telling me the story about…’

Practicing cognitive defusion has a number of advantages, including:

* + - * A sense of observing your unproductive thoughts rather than being snagged by them and buying into them
			* Free up attentional space, so you are more in the moment and/or receptive to creative thoughts
			* Increase your ability to switch between your bottom-up and top-down modes.

Other cognitive defusion techniques are listed in a free download found at [washingtoncenterforcognitivetherapy.com](http://washingtoncenterforcognitivetherapy.com)

The benefits noted above can also be attained through the straightforward mindfulness practice of noticing and acceptance of your thoughts.

**Cognitive App #4: Brain Extenders: Offload Information to Free Up Attention and Reduce Stress**

Each day we have so much information to absorb (five times the amount compared to 1986), so many choices/decisions to make, so many things to keep track of, that anytime we can reliably **offload** some of it, we can free up our attention. Remember, attention is finite. If part of it is captured by preoccupation with our ‘To Do’ lists, it can’t fully engage with problem-solving (top-down mode) or relaxation/serendipity (bottom-up mode).

We offload when we create a contact list in our phone, reserve a particular drawer for household tools, or have a piece of paper with all of our passwords. We are already aware of the desirability of such downloading. Nevertheless, recent brain research on attention, memory and categorization, as well as studies of highly productive people, suggests we should be looking for *more* opportunities to offload.

Since remembering our commitments and responsibilities has adaptive value; and because for millennia we did not have pens and paper; brain circuitry evolved to be vigilant about reminding us of our responsibilities. We are stuck with minds that are compelled to churn over such responsibilities - called rehearsal loops by neuroscientists — unless they are offloaded to a trusted person or system. This is what many busy and successful people ( e.g. CEOs, movie directors, politicians ) do when they hire personal assistants who are primarily tasked with monitoring, scheduling and tracking of day-to-day responsibilities. Consequently they can focus exclusively on the problem in front of them.

Fortunately, for those of us who can’t afford personal assistants, there are other inexpensive, low tech strategies to offload the stuff we’re concerned about into a trusted system, thereby circumventing these rehearsal loops that sap our attention.

 These strategies include:

* + - Mind-sweep

 This is a technique developed by David Allen, the efficiency expert and author of

 Getting Things Done: The Art of Stress-Free Productivity. The objective of the mind-

 sweep technique is to capture all the tasks, responsibilities, commitments and “shoulds”

 that pop up in our minds every day. Basically, the stuff we feel we have to do.

 The first step is to take (approximately) a half hour to identify and list as many of these

 items as you can. Keep the list in a notebook or electronic device that is readily

 available.

 The second step is to have a piece of paper or small notebook with you in which you can

 add new items that pop up (or can voice record them on your phone). These items have

 now been offloaded onto a trusted external system which you can then review periodically.

 By capturing these items we quiet down the rehearsal loops and become more relaxed

 and better able to focus on work or enjoyment.

* + - * Prioritize

 This is another technique developed by David Allen to help quiet the rehearsal loops in our minds. It does this by asking you to separate the stuff on your list into four categories:

 (1) Stuff you can do now.

 If an item takes two minutes or less, cultivate the habit of doing it immediately.

 (2) Stuff to be done soon — in the next day or two.

 This is stuff that cannot be deferred. Try to cultivate the habit of putting these tasks on a daily calendar.

 (3) Stuff that is meaningful but does not need to be done soon.

 Create a “someday/maybe” file where you note these projects.

 (4) Stuff that can be put in the trash.

 Put in the electronic or physical trash stuff that, upon reflection, is not that important.

* + - * Create Affordances

 Another way to shift the burden of remembering and organizing from our brains to the physical world is the use of affordances. Affordances are objects whose design features prompt our memory and organize our behavior.

 Examples of affordances:

 (1) For your keys a good affordance is a bowl or hook, preferably near the door

 (2) A tray or shelf for smart phones and similar devices

 (3) A tray or bowl for the mail

 (4) Designated drawers for designated materials ( e.g. household tools vs. batteries vs. stuff for parties

An example of a temporary affordance is to put your umbrella near the door if you hear the weather forecast calls for rain the next day. Affordances follow the rule of the designated place. By doing so they declutter our attention and working memory and shift some of the burden of remembering to the physical environment.

Note: There are companies (e.g. The Container Store, Brookstone) that offer a range of decorative products that can serve as affordances.

C**ognitive App #5: Ban Multi-tasking**

In cognitive therapy we encourage staying away from absolutes in our judgements. But the research on multi-tasking is clear: i*t’s never a good thing*. Three key findings from the research:

 (1) There is no such thing as “multi-tasking”.

 Really. l know it doesn’t seem this way, but it is true. When we are multi-tasking, we feel

 we are handling a number of tasks, like an expert juggler. But cognitive science reveals

 we are actually shifting rapidly from one task to the other. Our brains evolved to focus

 on one thing at a time. We feel we can get around that at times, but….

 (2) When we multi-task we are under the compelling and diabolical illusion that we are

 accomplishing more. But when we examine the performance of multi-taskers, we see they

 fall *behind* on a number of meaningful performance markers such as getting things done

 more efficiently; making less mistakes; keeping information in their heads neatly

 organized; and the ability to switch from one task to another.

 The illusion is we get more done when we multi-task. The truth is we don’t devote

 enough attention to any one task, and we decrease the quality of attention applied to the

 task. Our brains are just not wired to multi-task. When we try to, we get sloppy.

 Why do we persist in this illusion? There appears to be a dopamine-adrenaline feedback

 loop that gets triggered when we multi-task, which leads us to think we are

 accomplishing more than we are.

 Multi-tasking is a tempting coping strategy to deal with work demands, social media

 demands, and information overload. Tempting, but….

 (3) We pay a significant price with our multi-tasking efforts.

 As noted above, we pay a price in terms of our performance — we are less efficient. We

 also pay a price in terms of energy. Attention is a limited capacity resource which uses up

 energy. When we shift attention rapidly — as we do when we multi-task - we deplete

 energy. At a chemical level, we use up nutrients in our brains, primarily glucose.

 Also, multi-tasking usually involves making a bunch of little decisions in a brief period of

 time. We’ve learned that little decisions take up *as much* energy as big ones.

 Multi-tasking does *increase* one chemical: cortisol, which is known as the stress hormone.

What to do?

Realize the “benefits” we feel we are receiving from multi-tasking are an illusion.

Recognize it’s not how many things you can do at once that leads to productivity, but how orderly you can make your information environment. To the extent it is possible, try to set up your day to focus on one thing at a time.

Appreciate our brains have a “novelty bias” i.e. our brains are susceptible to being hijacked by the next, new shiny thing e.g. text message, link from a Facebook friend. Thus, try to set up your work environment to minimize such distractions and maximize full, concentrated engagement.

**Cognitive App #6: Exercises To Enhance Cognitive Efficiency and Focus**

 As we all know, there are specific exercises to build up specific muscle groups in our body. For example, curls are a recommended exercise to build up our bicep muscles. Doing one curl, of course, would not have much of an impact. But the habit of doing sets of curls a few times a week would have a significant impact over time.

Attention should be thought of as a muscle. It can be strengthened with the right exercises, such as:

1. Mindfulness meditation: the quintessential attentional booster.

Mindfulness meditation practice, which involves bringing one’s complete attention to their present experience with a moment-to-moment focus. This is accomplished by (1) acknowledging and observing the flow of one’s thoughts, feelings and sensations in a non - judgmental manner, and (2) noticing when your mind wanders and letting that be a cue to bringing your attention back to the here and now.

Mindfulness meditation practice is like repetitive weight lifting for the attentional circuitry (muscles). We now have a good deal of data on mindfulness, which indicates we cannot recommend it strong enough.

Perhaps the single greatest waster of time revolves around the type of mind-wandering that involves rumination about ourselves, what neuroscientists call the “ me circuitry “. This “all about me” mode is the default mode for all of us. It is the mode in which we try to piece together all our preoccupations and worries into a coherent narrative. We cannot (and should not) extinguish this mode: it is the foundation for how we create our sense of self.

However, research reveals we are unhappier when we are in this mode; and we would be better served to spend less time in this mode since many of our worries are repetitive and therefore unproductive.

Spending less time in this ruminative mode is exactly what mindfulness accomplishes. When we are immersed in a mindfulness exercise, the “me” chatter quiets down because the default circuits associated with it are de-activated. By re-training our minds to notice when we wander into this mode, we increase our ability to control our attentional filter, the switch that moves us from bottom-up to top-down functioning. More control over this switch means we have more control to focus on what we want. By enhancing our ability to notice mind-wandering, we also build up our ability to to sustain our focus, perhaps the key variable in producing excellence.

Mindfulness research points to another benefit: increased self discipline. In particular, mindfulness enhances our ability to say “no” to impulses we judge to not be in our best interest. Mindfulness does this by strengthening connections in what has been termed our “resonance” circuitry (circuitry between the amygdala and prefrontal cortex). This results in strengthening the meta-awareness skill of noticing our thoughts and impulses, and therefore not as prone to be swept away by them.

Finally, mindfulness is associated with increased empathic concern for others. This benefit appears to be related to better listening skills; to less preoccupation with “‘me chatter”; and to less susceptibility to distraction over our impulses.

2. The “productivity half-hour” technique

This is a strategy to strengthen your capacity to focus and concentrate. It asks you to arrange your mindset and environment to minimize internal and external distractors so that you can focus more sharply, particularly on more challenging tasks.

Steps of the technique:

 (1) Commit to trying to work hard on a project for 30 minutes. Set a timer or alarm on

 your phone to go off after 30 minutes.

 (2) For those (most) projects that won’t be completed in 30 minutes, break into

 meaningful implementable chunks. Try to identify a realistic objective for your 30 minute work period Do not aim high; pinpoint an objective you will likely accomplish This will trigger a small,but meaningful “neurochemical fix/reinforcer” when you meet your goal.

 (3) Eliminate distractions. In particular do not check email, texts, social media, etc. If

 appropriate, turn off your phone and computer. Let others know you should not be

 disturbed for a half hour. Find a workplace that is relatively free of distractions,

 comfortable and can be used repeatedly. Over time, the workplace itself will

 become an unconditional stimulus which will evoke the heightened focus response.

 (4) As you start to engage your task, acknowledge that your mind is likely to wander.

 Each time it does make a simple mark on a nearby piece of paper. View each mark

 as a signal your mind has wandered and a cue to return your attention to the task.

 (this step is a synthesis of the brain extender and mindfulness strategies noted

 earlier).

 (5) When the alarm goes off signaling the 30 minutes are up, take a 5 minute break.

 Get up and move around and/or do something that is easy or desirable (e.g. surf the

 web, check out Facebook). This step takes advantage of what psychology students

 know as the Premack Principle in which the easy behavior serves as an operant

 reinforcer for the more difficult behavior.

 (6) Rinse, repeat.

3. Recognize the importance of sleep

Like the multi-tasking illusion, many believe if they sleep less they can get more done. The opposite is true. Promoting a regular sleep cycle is correlated with greater productivity and memory consolidation (not to mention improved immune function and mood). The single best tip to promote a stable sleep cycle: Get up at the same time each morning, even if you got to bed late or did not have a good night’s sleep.

Research has also validated the desirability of “power naps” (5-15 minute naps). One such nap a day can significantly boost productivity.

4. Brain games

We are at a beginning stage of evaluating the effectiveness of computerized brain training games to build core cognitive skills such as memory and attention span. One thing is clear: there is natural plasticity throughout the life cycle. Cognitive enrichment activities (e.g.learning a new language) at any age enhance cognitive functioning. It remains to be seen if well designed brain games are particularly effective, but recent multi-center evaluations of brain fitness games are promising.

5. Cluster your chores by category

We all have tasks we regard as necessary but not very rewarding, e.g. paying bills, cleaning the bathroom. It is tempting, especially for busy people, to multi-task your way through such tasks. However, the research suggests another tack: bunch similar chores together (e.g. cleaning vs paperwork vs de-cluttering etc). This clustering promotes a single attentional set which strengthens focusing (“do one thing at a time”) type circuitry and uses up less nutrients in your brain.

**Cognitive App #7: Understand and Promote Flow**

Flow is a state of attentional nirvana. Identified by Mihly Csiksgentmihalyi and his colleagues in the late 1980’s. Our understanding of Flow has been enhanced by significant research. Flow is a state of full and energized absorption in an activity. It is accompanied by a desirable loss of self-consciousness and even a sense of time and space. While in it we are virtually immune from internal and eternal distractions. States of Flow are characterized by high productivity and feelings of fulfillment.

Flow is reflected in an optimal brain state: a state of neural harmony in which diverse areas of the brain are connected to elicit top-down and bottom-up skill sets. Just as importantly, areas of the brain that typically compromise focus (circuitry associated with self-criticism, fear and vigilance about bodily functions) are deactivated.

So, how to promote flow? Research suggests we are most likely to experience Flow when we engage in tasks that:

* + - * Challenge our abilities to the maximum i.e. not too easy, but also not beyond our capacity.
			* We enjoy (e.g. playing a musical instrument or sport) or that reflect a cherished

 value (e.g. being the best teacher, programmer, etc. I can be; preparing a special

 dinner for your family.)

* + - * Provide immediate feedback (e.g. tennis, surgery) and have clear goals.
			* Build on previously learned expertise that invites you to stretch your skill set

**Cognitive App #8: Become a Satisficer not a Maximizer**

A *maximizer* is someone who, when faced with a purchase or choice is trying to get the *best* option Maximizers are driven to figure out the best pair of jeans, the best salad dressing, the best retirement plan, the best vacation spot, etc. The *satisficer*, as the term suggests, is not determined to secure the best option, but one *good enough.*

For maximizers, more choice is better. If we can maximize choice, then we maximize freedom which boosts our welfare and happiness. Or so the official (unwritten) dogma of Western affluent societies says.

However, empirical research suggests otherwise. I wrote a blog post (Paradox of Choice) that outlines the adverse consequences of unfettered choice. Maximizing, coupled with a plethora of choices, results in the following outcomes:

* + - * + Paralysis. When we have many choices, we display a tendency to become paralyzed. We more often don’t make a choice at all, even when indecision may be costly (e.g. not being able to choose a health care plan).
				+ Less satisfaction with the choice we do make, With many options available, we experience an escalation of expectations. We expect a great deal and often feel, a kind of ‘grass is greener on the other side’ , regret over the choice we made.
				+ Self-blame. If we regret the choice we made, we then blame ourselves for it. With so many choices, we feel it must be our fault for not taking the best one.

And now the research on focus and excellence offers another reason to adopt satisficing: it preserves time and neural energy and therefore boosts productivity.

Information overload leads to decision overload. This is not a good fit with our brain circuitry. Turns out the decision-making circuits in our brain don’t prioritize: we use just as much neural energy for small decisions as for significant ones i.e. burn up just as much glucose and oxygen deciding on what shirt to wear as on who to marry.

If you want to save your mental energy for the important stuff, look for ‘good enough’ choices in the unimportant stuff. President Obama was on to something when he restricted his wardrobe of suits to two options (blue and brown). Depending on his schedule for the day he had a ‘good enough’ and non-taxing choice.

As mentioned above, these “cognitive apps” are supported by recent research in the fields of brain science and productivity. There is no question that *if* you apply them, you will achieve positive results. That guarantee is easy.

But of course what is difficult is *whether* you will apply them. It is difficult to start a new habit. ( Please note there is another post at [washingtoncenterforcognitivetherapy.com](http://washingtoncenterforcognitivetherapy.com) that attempts to dissect the latest research on habits and offer concrete guidelines)

Let me offer one strategy to facilitate starting a new habit.

**When is the best time to start a new habit? Try now. Now works.**

Research indicates that if you can take just a small step in applying any of these apps, that is a good predictor that you will move ahead to strengthen the new routine. A modest start begets a more practiced routine.

If you have managed to get through this post, you have already have demonstrated the focus and motivation to make further inroads.

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I hope these “ cognitive apps” are useful and you tap into them. If you have “apps” of your own to suggest, I would love to hear about them. Please do not hesitate to send them to me at vgwcct@aol.com.