YOUR BRAIN & TYPE: INDIVIDUAL DIFFERENCES MATTER

DARIO NARDI (INTJ)

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What's going on in your brain right now? You can introspect to get to know your mind—your feelings, thoughts, values, and so forth. And your personality type code is a quick way to summarize a general pattern of who you are. But what about your brain, your wet-ware? In previous articles I've described a few results from my five-year brain lab. Let's continue the journey to look at individual differences. The neuroscience evidence suggests that type is meaningful and points to genuine variations in how we use our brains.

Your Cognitive Toolkit

In my lab, I mostly studied how young adults used their neocortex, which is that thick outer layer of the brain that is quintessentially human. It is where we consciously "think" in the everyday sense. It divides into many regions and subregions that support and coordinate cognition, motivation, movement, speaking, vision, learning, memory, emotion, self-experience, and much more.

Figure 1 portrays the brain's diversity. The figure is a bird's eye view. The nose is the little triangle at the top. The ears are on the sides. The regions within correspond to real anatomy such at the temporal lobes label as T3, T4, T5, and T6 (the T stands for temporal). There are six broad lobes. In total, they house over fifty

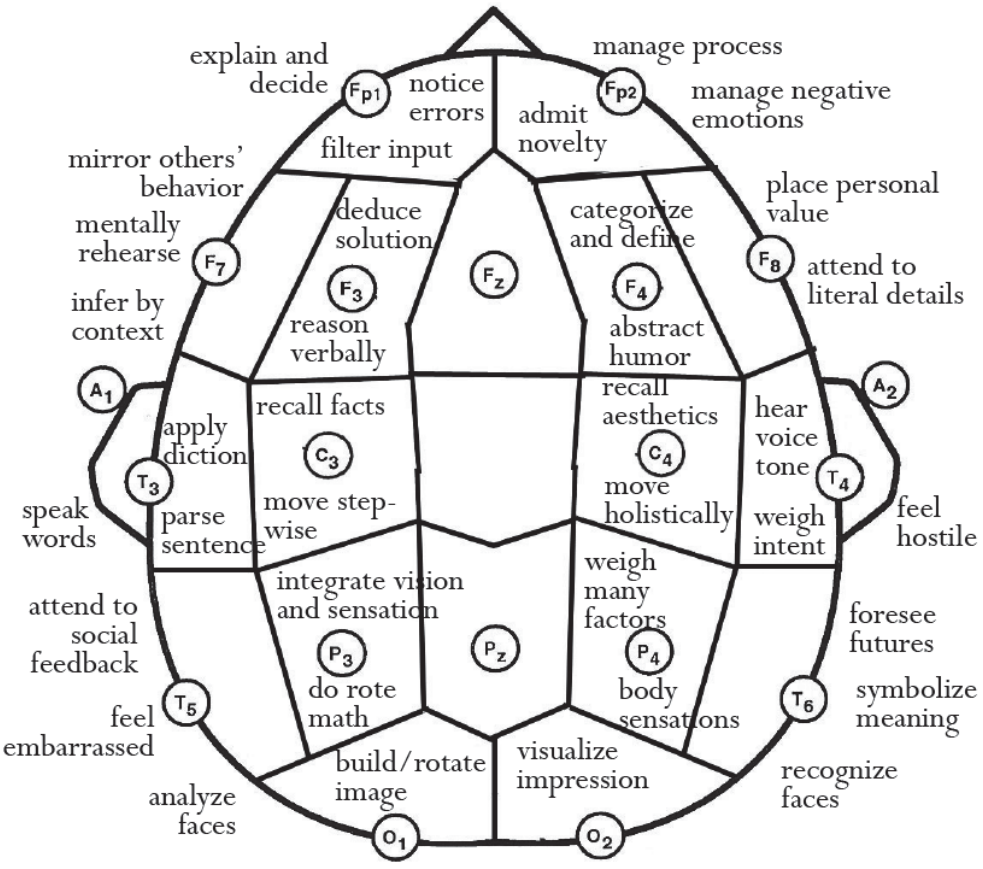

***Figure 1**: A bird's eye view of the neocortex. Its various regions help us handle a multitude of daily tasks.*

distinct "modules" (though the figure only shows half those). A module is a circuit of brain cells that helps handle a particular activity such as recognizing faces, making inferences using analogies, moving in rhythm to music, and so forth.

Many regions are involved in emotions as well as cognition. For example, region T5 on the lower left helps us attend to social feedback. It gets active when we pay attention to how others are responding to us. It might light up when we hear a criticism, notice a smile of approval, or so forth. When it's active, we also feel an emotion like embarrassment, which prompts us to maybe alter our behavior. This is just one example of many where the brain acts as a feedback device. It gets input, considers the input along with other data (memories, values, theories), and then prompts us to act (or to not act). Thus, everyday folk distinctions like "emotional self" versus "rational self" don't really exist in the brain, which is more like a forest ecology than a matrix.

We could go into a lot more detail, but why overwhelm you! What is important to know: Everyone has pretty much the same toolbox of cognitive skills, but when and how well we use those tools tends to vary according to type and also personal background including culture, schooling, and career. For example, someone with ENFJ preferences is far more likely to have an active T5 region—paying a lot of attention to social feedback—compared to someone with ISTP preferences. In short, people of the same type tend to often use or neglect same brain regions, though not entirely, because every person has a uniquely wired noggin.

Type Makes a Difference

Figures 2 and 3 illustrate that type makes a difference. The figures are based on research with my lab students, all of whom attended the same elite university (UCLA) and generally had similar studies. Men and woman participated equally. Several cultures—mainly the American, Japanese, and Persian—were present. However, these demographic factors didn't make much difference. Rather, type was key.

Both graphs are labeled the same way. The vertical axis is number of people. The horizontal axis indicates the percentage of brain activity in common. For example, in Figure 2, starting on the far left: 12 people of 56 had 0% to 10% of their brain activity in common. In contrast, on the far right: only 2 people of 56 shared 90% to 100% of brain activity. If we only look at Figure 2, we may think most people differ markedly with only 28% of people sharing even half their brain activity! But Figure 2 by itself is deceptive.

Figure 3 compares people of the same personality type. The tallest bar indicates that 16 people of 56 (28%) shared 80% to 90% of their brain activity. Wow! Of course, there were still people who varied. I would hope so. I went to great pains to help all the lab participants get to best-fit type over the course of ten weeks, from sorter results to reading type descriptions. I am confident the variation isn't due to mis-typing. Rather, the variations suggest hopeful news: The brain doesn't cause type. There isn't an "ENFP" or "ESTJ" section of the brain. Rather, your brain is a toolbox, and you tend to develop and use tools that support your preferences. You may use your tools in mostly sustainable—and sometimes very contradictory—ways.

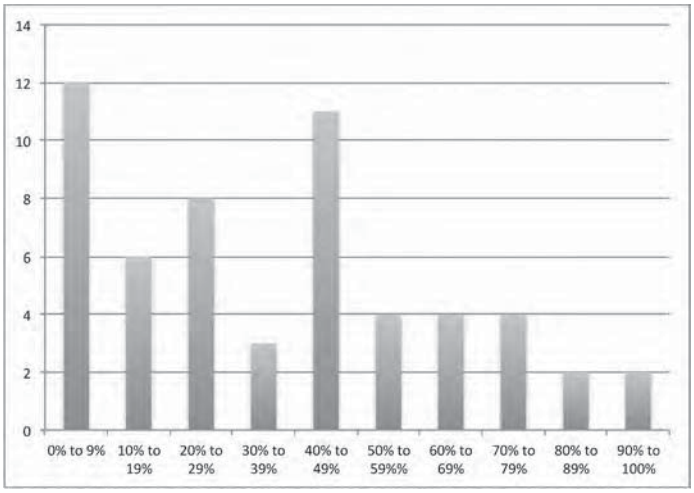

***Figure 2**: People of different Myers-Briggs types tend to have less than 50% of their brain activity in common.*

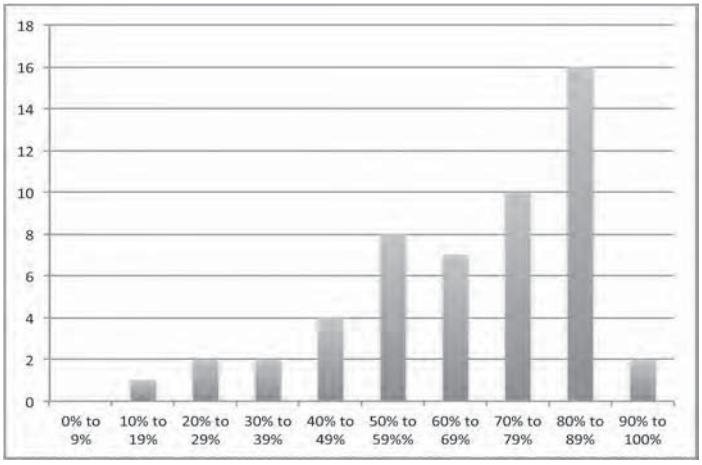

***Figure 3**: People who identify with the same Myers-Briggs type tend to have a lot of brain activity in common.*

The Adult Brain

Chances are, you are no longer a young college student. You may be in your 30s, 40s, 50, 60s, or beyond. How does type play out in the brain as we age? Until recently, I couldn't begin to answer this question. I had only studied youth. But now for the first time I can offer some findings.

The colorful brain maps in Figure 4 on the next page are from workshops with adults who are type aware and work as coaches, counselors, educators, and in other facilitative professions. I couldn't do brain scans on them. However, in the workshops, they complete a large poster. The poster is a hands-on version of an online tool called the NeuroPQ that acts in lieu of a brain scan. Over the course of an hour, they read and rate fifty-plus brief descriptions, calculate averages, and have fun coloring in

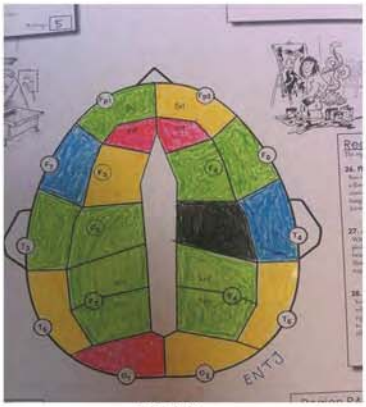

***Figure 4**: Medley of brain maps. Activity lies on a spectrum from red and yellow (high) down to blue and black (low). The left column is Thinking types. All types with Introverted Thinking (ESTP, INTP, and ENTP) show high activity among F3, F4, P3, and/or P4, especially INTP. These regions aid logical reasoning. In contrast, the Feeling types in the middle column show high activity in regions T3 and/or T4, for listening and detecting intent. Finally, the three ENFPs in the right column all show high F7 for mirroring, imagination, and analogies.*

their map. As hoped, the results look similar to the real brain maps of people of the same types. Since there is limited page space and I don't have posters for all sixteen types, I show some posters from people of the same type, to illustrate natural variations. By the way, even when regions differ in use (color), they show similar ratios, with the same regions relatively higher or lower. Ideally, I hope to have true brain results someday.

If you feeling curious, you can correlate the posters with the regions shown in Figure 1 (on the previous page). Or you can get your own results by visiting the NeuroPQ website (http://www.neuropq.com) where it's available for free for a limited time.

Three ISFPs

Let's explore three specific people, students of mine from the brain lab who all settled on ISFP as their best-fit type. In Myers-Briggs terms, the ISFP code indicates preferences for Introverting, Sensing, Feeling, and Perceiving; while in Jungian terms, the code indicates a hierarchy of cognitive processes, theoretically in this order:

Introverted Feeling as dominant, in a lead role.

Extroverted Sensing as auxiliary, in a support role.

Introverted Intuiting as tertiary, in a relief role.

Extraverted Thinking as "inferior", in an aspiration role.

Debate lingers whether the Jungian hierarchy is prescriptive or merely typical, whether a type indicator can actually tap these cognitive processes, and so forth. Certainly, I hope studying brain activity can help us resolve these questions about the Jungian model and maybe support the Myers-Briggs preferences too.

Now, what did all three ISFPs have in common? All three shared strengths and inactive areas. Specifically:

- Two were male and one was female, all college age, and all were anthropology students with "A" grades.
- Activity in region Fp1 was greater than in Fp2. That is, they all engaged in decisionmaking more than process management.
- Low activity in regions F3 and F4. These two logical reasoning centers are usually high for Thinking-Perceiving types and low for Feeling-Perceiving types.
- High activity in F8. This region helps us access our identity, evaluate importance, and recall details with high fidelity.
- High activity in regions T3 and T4. These help us attend to word content, voice tone, and others' intentions.
- Showed "yellow band" activity typical of Sensing types. Yellow band indicates the neocortex—the brain's outer layer—is really open to input from the limbic system and other lower layers of the brain, and from the body.
- Showed "tennis-hop" activity that is typical of all Sensing-Perceiving types and present in nearly everyone while playing fast-paced, tactical video games.
- Showed "solid blue" while listening, composing, and sensing objects. They would show this even when listening to a group or the ambient environment. This flow state shows for everyone when they do their favorite creative, expert activities.

Overall, the commonalities include quick responsiveness to sensations, strong listening skills, and a focus on identity. The results also enrich our understanding of type. For example, sensing involves more than absorbing information through the five senses; it includes openness to bodily data and rapid engaging opportunities in the local environment. Now, what about individual variations?

Katie: The female ISFP, Katie, is a dancer. She showed high activity in region F7, which helps us mirror others behavior and consider what-if scenarios. She also showed high activity in region C3, which aids step-wise motion and factual recall, and high activity in region C4, which handles whole body motion and drawing ability. Interestingly, Katie's MBTI(R) result was "ENFP" even through she settled on ISFP. Since ENFPs are known for mirroring others and asking what-if, we can see why. But we shouldn't confuse a singular cognitive skill with a type's themes and repertoire.

Ian: The male Ian is an improvisational stage performer. He had high activity in region T5, for analyzing faces, and in regions P3 (tactics) and O2 (abstract visualization). He also showed a back-and-forth pattern between regions T6 and P4, which relate to strategizing for the future and considering many factors at once. His MBTI(R) result was "INFJ", though he settled on ISFP. His activity differed from Katie's yet made sense for his career needs while improvising on stage: He must consider multiple possible routes to continue scenes and jokes while acting in the moment.

Brett: The other male "Brett" is a motorcyclist and thrill seeker. He showed many similarities with Brett, but with ever more focus on the future and thinking about time and consequences. His MBTI(R) result was ISFP.

All these results suggest that type plays a big part in our mental lives, but not the only part. Background, gender, and career impact who we are. Moreover, nonpreferred qualities— for ISFPs, Intuiting and Thinking—may show up in different ways. This may explain why type instruments are called "indicators" and are not infallible.

Your Nearest Neighbor

After contrasting the three ISFPs, I wondered how their brain activity, taken as a whole, compared to the other fifteen types? I searched for their nearest statistical neighbor in terms of brain activity.

Here's what I found: ISFP and INTJ were most similar to each other. Also most similar to each other were ESFP and ENTJ, ENFP and ESTJ, ENTP and ESFJ, and so forth, for ten of the sixteen types. Had I a larger sample size, might I have found this result for all sixteen?

This result suggests one's "near opposite" type is very close cognitively even when it may feel very far in our conscious lives. Moreover, since these lab participants were all young adults ages eighteen to twenty-five, the evidence suggests that we possess the resources needed for type development from early on, even if we start the developmental process later in life. Finally, the Jungian hierarchy likely has truth to it, even if imperfect. We cannot rely solely on pencil-paper sorters. The brain also points to who we are.

References

Nardi, Dario. *"Neuroscience of Personality: Brain-Savvy Insights for All Types of People"*, Radiance House, 2011.

Nardi, Dario *"8 Keys to Self-Leadership: From Awareness to Action"*. Telos Publications, 2005.

Berens, Linda & Nardi, Dario. *"Understanding Yourself and Others: An Introduction to the Personality Type Code"*. Telos Publications, 2004.

Note: In the printed version of *TypeFace* the red areas of Figure 4 are annotated 'R'. It is, of course, much clearer on the PDF which may be seen in the members' area of BAPT's web site.

TYPEFACE

The quarterly magazine of the
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LINKING THE TYPE COMMUNITY

EUROPEAN APT CONFERENCE REPORT INSIDE

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YOUR BRAIN & TYPE 2: JUNG'S FRAMEWORK IS SPOT ON

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Was Jung right? The popular 4-letter code introduced by Isabel Briggs-Myers is based on Dr. Carl Jung's framework of eight mental functions, or what many today call function-attitudes or cognitive processes. Jung rolled out his dynamic understanding of the psyche in the 1920s. He talked about preferences—for example, a "dominant function" with an "auxiliary function" – and he focused on fundamental patterns and processes. Is Jung's framework correct, and what can we glean from it?

In the last issue, we looked at how people of the sixteen types show similar brain activity even as individual variations matter. Nature and nurture – one's type and also one's education, career, relationships, and hobbies – play big parts. This issue, we look at the neuroscientific support for Jung's framework. It's there in spades, and the last two pages offer fresh definitions of the eight processes based upon brain activity.

The Research Process

Over the years, researchers and theorists have pushed to either clarify or refute Jung's model, and some have delved the neuroscience literature and proposed where we might find "type" in the brain. When I began my own quest six years ago, I kept various hypotheses in mind and wondered what I might observe from first-hand research into the workings of the neocortex.

Relying upon both observational data and statistical analysis, I investigated the brain data from various angles: dichotomous preferences, 8 cognitive processes, 4 functions, and other groupings of 2, 4, and 8. Had I just looked at the preferences – for example, Feeling types versus Thinking types – I would not have found much. Mainly, the introverted or extraverted expression of each function – for example, introverted Thinking versus extraverted Thinking – shows up quite differently, and often in oppositional ways. You can find background details in my book, *"Neuroscience of Personality"*. What's important here: of all the angles explored, the evidence and refinement of Jung's framework is the most definitive and exciting.

The eight cognitive processes have shown up in two ways: 1) consistent inclination for use of particular brain circuits, and 2) holistic patterns across the whole neocortex. Let's take a look!

Favorite Brain Circuits

We each rely on favorite brain circuits. As we saw in the last issue, the brain hosts many small modules. Each module is a neural circuit that helps you perform a task. Some tasks are concrete, such as recognizing faces, hearing voice tone, and moving a hand. Other tasks are abstract, such as evaluating ethics, adjusting to others' feedback, and mentally rehearsing a future action. There are easily five-dozen modules just in the neocortex, which is the brain's outermost, thick layer and seat of consciousness. We each have all the circuits. However, we tap modules that support our preferred Jungian cognitive processes.

Figures 1, 2, and 3 compare the brain activity of three people over several hours. I use pseudonyms to highlight that everyone's brain is unique, and the figures are somewhat exaggerated to highlight significance. Figure 1 is from "Maria", an INFP, while figures 2 and 3 are from an ESTJ and ESTP, respectively. The types INFP and ESTJ have opposite 4-letter codes. However, Jocelyn the ESTJ looks like a blend of her neighbors. In short, INFP shares more with ESTJ than it does with ESTP. This result may surprise type enthusiasts armed only with 4-letter codes. But the Jungian framework explains the results. ESTJ and INFP share cognitive processes – though one's light is the other's shadow – while INFP and ESTP share no processes, even with that "P" in common. This trend held for people across all sixteen types. *(To see the figures in full colour, go to www.bapt.org.uk and access the Members' Section).*

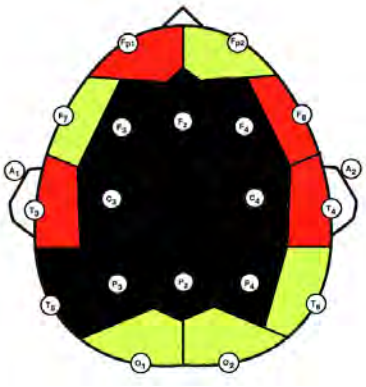

Figure 1: "Maria" INFP

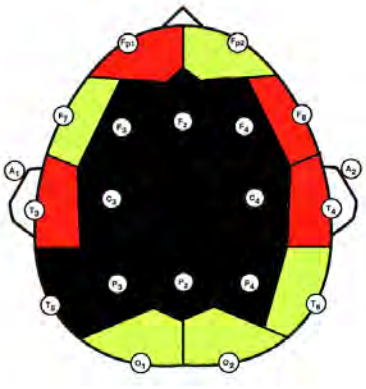

Figure 2: "Jocelyn" ESTJ

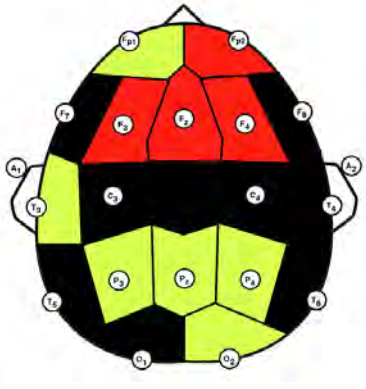

Figure 3: "Ross" ESTP

Psyche as Symphony, Brain as Orchestra

There are whole-brain patterns. For example, the solid blue map in figure 4 correlates with a state of "flow" where all modules are in synch. The person is awake and relaxed, and is likely engaged in an activity of creative expertise, whatever that might be. In contrast, the multicolored map in figure 5 shows a chaotic brainstorm. Every module is in play, flashing like the lights of a Christmas tree. Then there's figure 6, a solid green that correlates with a "disassociated" state, which occurs when we engage in problem solving or try to distance ourselves from negative feelings or a bad result. There are many more patterns.

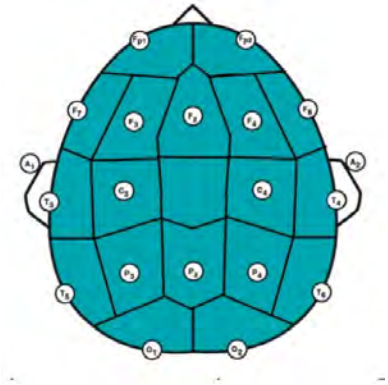

Figure 4: Solid blue "Flow"

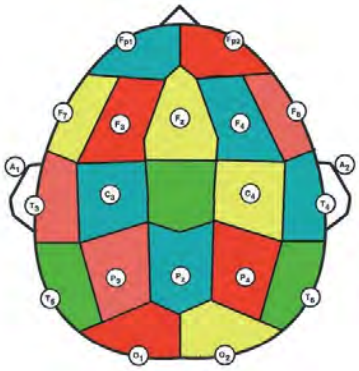

Figure 5: Asynchronous

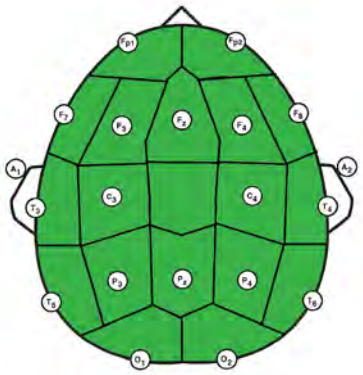

Figure 6: Solid green

We may experience any and all of these holistic patterns, though situations and psychological preferences prompt us differently. Consider, when do you get into your "zone"? What's it like when you are at your most creative and productive? Does your personality type profile do a good job highlighting how, when, and why? Probably. And so it is in the brain. To meet our needs, the brain's elements work in concert. As an analogy, if one module is a musical instrument, then the brain is a symphony orchestra that affords complex performances. The research supports eight ways the brain works in concert. These eight are highly effective and sustainable, and we necessarily come to rely on some more than others. *(To see the figures in full colour, go to www.bapt.org.uk and access the Members' Section).*

Eight Cognitive Profiles

The table on the next two pages presents eight profiles within a larger framework. The profiles use everyday language, referring to "mental resources" rather than brain jargon, to be more accessible. Also, I've integrated qualitative observations from my lab to evoke a well-rounded understanding. That said, each of the eight refers to "mind" to highlight that no one process is smarter for us. Typically, people can rate the profiles along a scale as part of a self-assessment and then sort down to a balance of two. Finally, I usually hide any reference to type codes, but I've drawn back some of the curtain to reveal Jung's wizardry.

Table: The Eight Jungian Processes

<table>
<tr><td colspan="2">More Active Left Prefrontal Cortex</td></tr>
<tr><td><u>Expedite Decision-making</u>

Proactively meet goals. Often look sure and confident. Organize and fix to get positive results soon.</td><td><u>Refine Decision-making</u>

Clarify what's universal, true or worthwhile. Often look quietly receptive. Trust own judgments.</td></tr>
<tr><td colspan="2">Assess using criteria or principles</td></tr>
<tr><td>Thinking (extraverted) – TJ types
Measure and construct for progress

Make decisions objectively based on measures and the evidence before you. Focus on word content, figures, clock units, and visual data. Find that "facts speak for themselves". Tend to check whether things are functioning properly. Can usually provide convincing, decisive explanations. Value time, and highly efficient at managing resources. Tend to utilize mental resources only when extra thinking is truly demanded. Otherwise, you use what's at hand for a "good enough" result that works. Easily compartmentalize problems. Like to apply procedures to control events and achieve goals. May display high confidence even when wrong.</td><td>Thinking (introverted) – TP types
Gain leverage using a framework

Study a situation from different angles and fit it to a theory, framework, or principle. This often involves reasoning multiple ways to objectively and accurately analyze problems. Rely on complex/subtle logical reasoning. Adept at deductive thinking, defining and categorizing, weighing odds and risks, and/or naming and navigating. Notice points to apply leverage and subtle influence. Value consistency of thought. Can shut out the senses and "go deep" to think, and separate body from mind to become objective when arguing or analyzing. Tend to backtrack to clarify thoughts and withhold deciding in favor of thorough examination. May quickly stop listening.</td></tr>
<tr><td colspan="2">Assess using appropriateness or worth</td></tr>
<tr><td>Feeling (extraverted) – FJ types
Nurture trust in giving relationships.

Evaluate and communicate values to enhance social relationships. Like to promote social / interpersonal cohesion. Attend keenly to how others judge you. Quickly adjust your behavior for social harmony. Often rely on a favorite way to reason, with an emphasis on words and values. Prefer to stay positive, supportive, and optimistic. Empathically respond to others' needs and values, and may take on others' needs as your own. Need respect and trust. Easily embarrassed. Like using adjectives to convey values. Enjoy hosting. May hold back the true degree of your emotional response about morals/ethics, valuing talk as more effective. May try too hard to please.</td><td>Feeling (introverted) – FP types
Stay true to who you really are.

Listen with your whole self to locate and support what's important. Often evaluate importance along a spectrum from love/like to dislike/hate. Patient and good at listening for identity, values, and what resonates, though may tune out when "done" listening. Value loyalty and belief in oneself and others. Attentive and curious for what is not said. Focus on word choice, voice tone, and facial expressions to detect intent. Check with your conscience before acting. Choose behavior congruent with what's important, your personal identity, and beliefs. Hard to embarrass. Can respond strongly to specific, high-value words or false data. May not utilize feedback.</td></tr>
</table>

The Eight Jungian Processes Continued

More Active Right Prefrontal Cortex

Energize the Process	**Monitor the Process**
Seek out stimuli. Often look random, emergent, and enthusiastic. Attend to the here and now.	Reflect on data and perceptions. Often look focused and preoccupied. Attend to reference points.

Tangible, experiential awareness

Sensing (extraverted) – SP types	**Sensing (introverted) – SJ types**
Immerse in the present context	***Stabilize with a predictable standard***
Act quickly and smoothly to handle whatever comes up in the moment. Excited by motion, action, and nature. Adept at physical multitasking with a video game-like mind primed for action. Often in touch with body sensations. Trust your senses and gut instincts. Bored when sitting with a mental/rote task. Good memory for relevant details. Tend to be relaxed, varying things a little and scanning the environment, until an urgent situation or exciting option pops up. Then you quickly get "in the zone" and may use your whole mind to handle whatever is happening. Tend to test limits and take risks for big rewards. May be impatient to finish.	Review and practice to specialize and meet group needs. Constant practice "burns in" how-to knowledge and helps build your storehouse. Specialization helps you reliably fill roles and tasks. Improve when following a role-model or example. Easily track where you are in a task. Often review the past and can relive events as if you are there again. Carefully compare a situation to the customary ways you've come to rely. In touch with body sensations. Strong memory for kinship and details. Rely on repetition. Check what's familiar and comforting with clear uses. Tend to stabilize a situation and invest for future security. May over-rely on authority for guidance.

Symbolic, conceptual awareness

iNtuiting (extraverted) – NP types	**iNtuiting (introverted) – NJ types**
Explore the emerging patterns	***Transform with a meta-perspective***
Perceive and play with ideas and relationships. Wonder about patterns of interaction across various situations. Keep up a high-energy mode that helps you notice and engage potential possibilities. Think analogically: Stimuli are springboards to generate analogies, metaphors, jokes, and more new ideas. Easily guess details. Adept at 'what if?' scenarios, mirroring others, and even role-playing. Can shift a situation's dynamics and trust what emerges. Mental activity tends to feel chaotic, with many highs and lows at once, like an ever-changing "Christmas tree" of flashing lights. Often entertain multiple meanings at once. May find it hard to stay on-task.	Withdraw from the world and draw on your whole mind to receive an insight. Can enter a brief trance to respond to a challenge, foresee the future, or answer a philosophical issue. Avoid over-specializing and rely instead on timely "ah-ha" moments or a holistic "zen state" to tackle novel tasks, which may look like creative expertise. Manage your own mental processes and stay aware of where you are in an open-ended task. May use an action or symbol to focus. Sensitive to the unknown. Ruminate on ways to improve. Look for synergy. Might try out a realization to transform yourself or how you think. May over-rely on the unconscious.

Decoding the Table

The table is organized to highlight key relationships:

- Each profile's header includes the relevant Jungian term and two letters to inform which types fit. For example, "TJ types" refers to Thinking and Judging in the 4-letter code.
- Types with Thinking or Feeling as a dominant process sort onto the left page and show more activity in the left prefrontal cortex, which links to decision-making.
- Types with Sensing or Intuiting as a dominant process sort onto the right page and show more activity in the right prefrontal cortex, which links to process management.
- The four functions – Sensing, Intuiting, Thinking, and Feeling – sort into quadrants while extraversion and introversion sort by columns. The columns are highly relevant.
- Close reading the profiles and their headers will reveal key oppositions and overlaps. For example, introverted Sensing and introverted Intuiting succeed by opposite means.

References

Nardi, Dario. *"Neuroscience of Personality: Brain-Savvy Insights for All Types of People"*, Radiance House, 2011.

Nardi, Dario. *"8 Keys to Self-Leadership: From Awareness to Action"*. Telos Publications, 2005.

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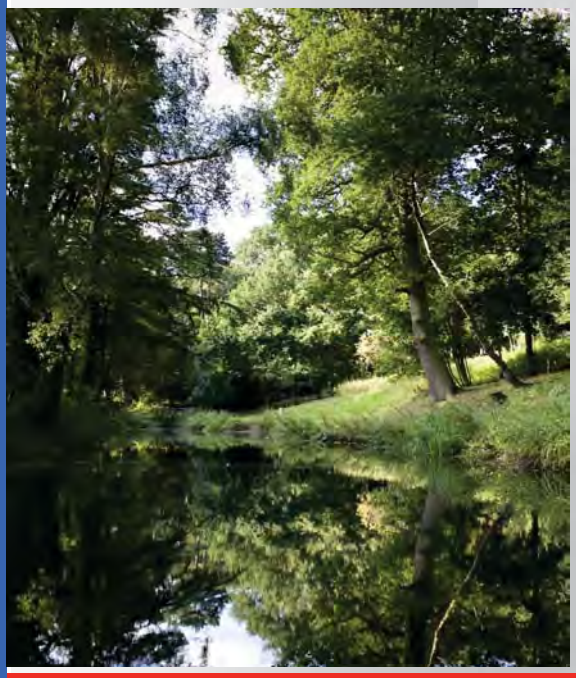

BAPT CONFERENCE

1st—3rd March 2013

(Preview: Pages 5-8)

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YOUR BRAIN & TYPE 3: EMOTIONAL DYNAMICS & TYPE

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How do you feel? This innocuous little question leads to a rich landscape that can be equal parts pastoral utopia and harrowing minefield. The question solicits our current emotional disposition, but grammatically it asks how we *go about feeling*. That's where the brain enters, and it is as much an emotional animal as it is a cognitive machine. In this installment on the brain and type, we explore the neuroscience of emotional dynamics—how we feel—with links to personality.

Where We've Been

The Jungian / Myers-Briggs approach to personality is fairly cognitive. It describes how we prefer to perceive and decide. Even when we talk about Thinking versus Feeling, a Feeling preference refers to trust in values, identity, and beliefs when making decisions. Feeling is often described as subjective, personal, and social. Moreover, whether Feeling or Thinking in preference, all people experience emotions.

Beyond this, there is some literature on type and emotional intelligence, often referred to as EQ or EI. For example, Roger Pearman gives us a look in *"Introduction to Type and Emotional Intelligence"*. Similarly, Bill Davies helps people explore their emotional sides with personality type in mind. In these cases, emotional life may feel like a really useful "add on" to the 16 types.

This past summer I spoke at the International Enneagram Association's global Conference. The Enneagram proposes 9 types that are based on traditional notions of virtues and vices. It also focuses on psychological defenses and emotions. As someone steeped in Jungian type for two decades, approaching the Enneagram was a little challenging. For example, in concurrent sessions, people freely talked about life challenges in emotional ways I rarely see at type conferences. One of the Enneagram's benefits: It acts as a "container" in which people feel relatively safe to explore emotions. The Conference inspired me to look into emotions and Jungian type.

While conducting brain research, I've noticed some links between the brain and emotions. However, I try to keep a "safe" lab environment, just as we like to keep drama-free work places. Also, my type training has steered me away from emotions; and with a Thinking preference, perhaps I have downplayed their importance. Nor have I been enamored by EQ. However, newly inspired, I've revisited the brain data. I hope you will feel similarly inspired by some key insights into "emotional dynamics".

The Limbic System

Traditionally, the limbic system is called out as the seat of emotions. Figure 1 shows a side-view of the brain, with the limbic system. It's the brain's middle layer and takes the lead on primal tasks including:

- Attachment and pair bonding, such as an infant to its mother.
- Body language, including sexual signaling.
- Deeply seated prejudices and superstitious feelings such as fear of darkness and disgust at toxic-looking substances.
- Instinctual reactions such as the fight or flight response.
- Encoding of data from short-term memory into long-term memory.

From this list, notice emotions such as anger, attachment, disgust, fear and lust. All mammals have a similar limbic system, and these emotional responses evolved to help us survive: to flee from lions, stick with our kin, avoid rotting food, and so forth.

The last entry on the list, memory, might surprise you. We often vividly recall memories with a strong emotional charge. The proximity of memory and emotions is the reason why. Memory is the brain's way of recording events so we may reference them later, to learn and better survive.

Interestingly, the activity of the limbic system is,

in itself, unconscious. We don't decide to initiate a fear response or manage how life's events encode into memory. Only with the aid of our higher brain—the neocortex—do we come to perceive the limbic system's activity, maybe make sense of it, and attempt to belay or redirect its basement-like workings.

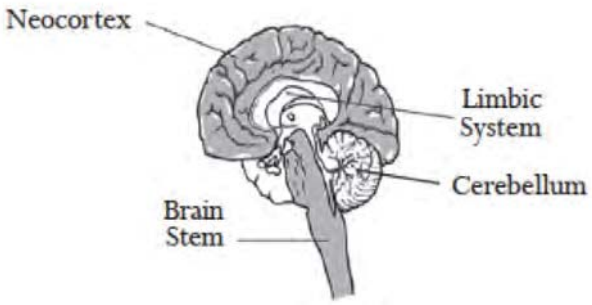

Figure 1: The limbic system

I study the neocortex, the brain's outer layer, rather than the limbic system. The EEG technology I use generally misses signals from deep in the brain, though strong reactions may register on an EEG. This shortcoming has benefits. The neocortex is often called the brain's cognitive layer but it also mediates emotional responses. How does it do that? Before we dive in to answer that, two regions of the neocortex deserve special attention.

The front of the neocortex—just behind the forehead—is your brain's executive region. It functions like a CEO; or rather, like two CEOs, one for each brain hemisphere, with one CEO more active. The two collate and manage a lot that occurs in your brain, including the limbic system. Thus, they often need to balance urgent primal impulses like infatuation with cognitive tasks such as solving math problems. Sustaining this balance can be challenging. Moreover, the CEOs themselves change: they form up one way in childhood, undergo extensive renovation during adolescence, and then settle down again in one's mid to late 20s. Hopefully, this fact evokes some sympathy for teenagers, and we have all been teenagers! Even as adults, with mature CEO brains, will power has limits.

Favorite Emotional Circuits

We each rely on favorite brain circuits. As we saw in prior issues, the neocortex hosts many small modules. Each module is a neural circuit that helps perform a task. Some tasks are concrete, such as recognizing faces, hearing voice tone, and moving a hand. Other tasks are abstract, such as evaluating ethics, adjusting to others' feedback, and mentally rehearsing a future action. There are easily five-dozen modules just in the neocortex, which is the brain's outer-most, thick layer and seat of consciousness. We each have all the modules. However, as my lab research has strongly suggested, we tap modules that support our personality preferences.

Now, when you use a specific module, a feeling often comes with it. For example, a region called T5 helps us notice and respond to feedback from other people. It helps us consider how someone is responding to us, or will respond if we act. We might notice or predict a frown, words of support, or a confused glance. From there, the T5 region promotes feelings like embarrassment and curiosity to push us to adapt so that we improve the social situation. For example, when I step into a Japanese home and forget to take off my shoes in the foyer, I may receive a hint of disapproval and feel discomfort. The feeling is like a doorbell. It encourages me to consider what I've done wrong, doff my shoes, and enjoy a nod of approval.

Everyone has different activity in T5. Feeling type males have the most activity, followed by Feeling types in general and then SJ types. Males with Thinking-Perceiving preferences, particularly INTP and ISTP, show the least activity here. The difference here on the EEG machine between an ISFJ and an INTP can be startling. At every moment, a typical ISFJ is attending to others' feedback; experiencing various feelings that help him or her interpret and improve the social environment. If the feelings are unpleasant, such as embarrassment, then the ISFJ likely alters his or her behavior to enjoy a better response. In contrast, an INTP may only notice blatant social feedback, or may not know what to do with the feedback once received, and thus rarely feels compelled to alter his or her behavior.

Emotional Responsiveness

We may respond emotionally to situations in a smooth or abrupt way. Often, our response varies by personality type. Figures 2 and 3 below illustrate two ways we tend to respond: smoothly or abruptly. For each of us, for each brain region, a different amount of stimulus activates that region. I call this phenomenon, "threshold to activation". That is, what is the point past which a region gets active? *[Note: For those members who receive 'TypeFace' in printed format, you will need to go to the PDF on BAPT's web site to see the following figures in colour – Ed.]*

Figure 2 illustrates a low threshold for region T5, which is typical for an ENFJ. It's the smooth reaction. When there is low stimulus, such as a subtle glance from someone, the region gets a little active as it pushes us to consider a low-key response. With medium and high stimulus, the brain gets more active for a commensurate response. Like a well-worn river channel, the ENFJ can handle the tide of input whether the tide is low or high.

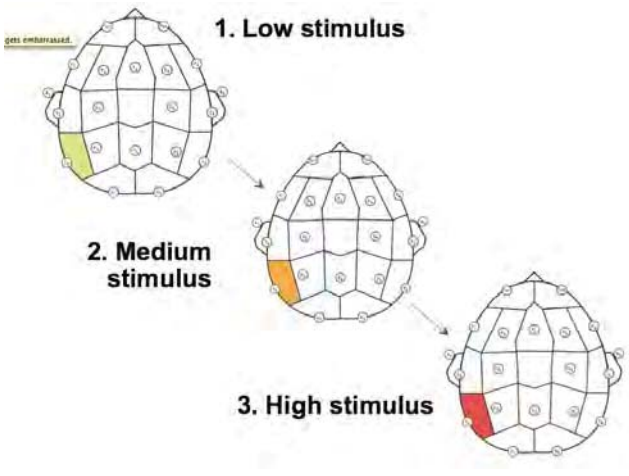

Figure 2: An ENFJ gets embarrassed in region T5

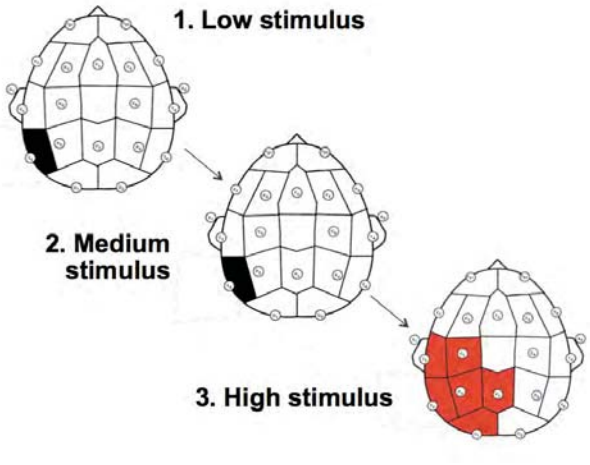

Figure 3: An INTP gets embarrassed in region T5

In contrast, Figure 3 illustrates a high threshold for region T5, which is typical for an INTP. It's the abrupt reaction. The region ignores low and medium stimuli. Perhaps the person fails to notice the subtle social feedback. However, with high feedback, the region and its neighbors explode with activity. It's as if a tidal wave is washing over a whole quadrant of the neocortex. Perhaps the person blushes, stumbles, fails to see something major, ends up speechless, or so forth. These responses aren't accidents. This T5 has neighbors. Region T3 helps with hearing, speech, and regulation of sexual responses. Regions C3 and P3 help with factual recall, arithmetic, and visual-spatial integration. Region O1 aids vision. Like a plain that sees little rain, the rush of emotion from social feedback washes all over the place, causing chaos.

Even when a region is a well-developed favorite, it can get overwhelmed. For example, someone may typically feel quite confident. But when the brain region linked with confidence is overwhelmed by evidence of failures, other brain regions kick in and move that person to sadness, hostility, amusement or so on. We each have favorite modules and tend to move to backup responses in a predictable way. That is, we each have our own set of emotional dynamics.

Whole Brain States

Besides individual modules, the neocortex shows whole-brain states, as exemplified in figures 4 through 7 below. These whole-brain states play a major role in emotional life.

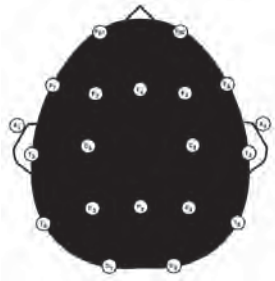

Figure 4: No activity (solid black)

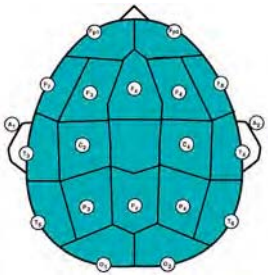

Figure 5: Flow State (solid blue / "delta")

In Figure 4, the neocortex shows minimal activity. We all show this when watching television or movies. Given our busy cognitive lives, "brainless" passive time is understandable. However, while in this state, we are not thinking critically about what we see and hear. That silly or subversive television show is bypassing reasoning skills to appeal directly to the limbic system, perhaps encoding lessons into memory that are not in our best interest.

Figure 5 shows the neocortex in a state of "flow". We are awake and relaxed. All regions of the neocortex are dominated by "delta" waves, which appear as blue on an EEG. People show this pattern when engaging their area of creative expertise, which might be based on our background or personality type. For example, INFPs show this when listening and INTJs show this when envisioning the future. The feeling of this state is perhaps best described as "zen" while we are utterly immersed in our creativity activity.

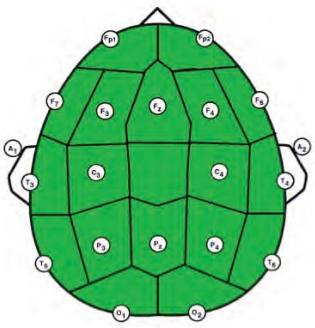

Figure 6: Disassociated (solid green / "theta")

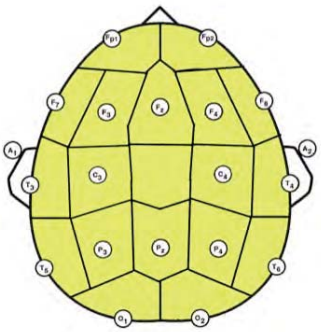

Figure 7: Associated (solid yellow / "alpha")

Figure 6 links to a "disassociated" state. All regions are dominated by "theta" waves, which appear as green on the EEG. We show this pattern when problem solving or when we encounter unpleasantness such as losing at a game. Types with introverted Thinking—namely, ISTP and INTP—show this pattern most. What's going on? Research suggests that every region of the neocortex is blocking out signals from the limbic system—impulses and memories—to engage in purely cognitive activity as part of "being objective".

Finally, Figure 7 shows an "associated" state. All regions are dominated by "alpha" waves, which appear as yellow on the EEG. We all show this pattern when listening to our favorite music with closed eyes, among other pleasant activities. With it, every region of the neocortex is granting easy access to signals from the limbic system. For SJ types, the favored signals are likely memories. For SP types, the favored signals are likely gut instincts. This state is "being subjective" in a Sensing rather than Feeling way.

It All Weaves Together

At this point, you may feel some dissonance. Aren't our senses, intuitions, thoughts, and feelings all separate phenomena? For the brain: not at all. These terms are convenient fictions that help us make sense of our personalities. In reality, every-

thing tangles together. In the neocortex, perceptions feed thoughts. Along with thoughts come feelings that focus attention and prompt particular actions. Those actions evoke responses from our environment, and we perceive our impact depending on where our attention lies. And we have many of these loops occurring simultaneously, because the brain can handle a lot in every moment.

Exploring Your Emotional Dynamics

On the next two pages you will find twenty brief descriptions of emotional dynamics. Please read and rate each dynamic on a scale from 1 to 5, where 5 indicates perfect fit. Focus on how often you engage the dynamics. As you go, the questionnaire asks you to explore a few dynamics in depth. Afterward, you will have a chance to debrief and make use of the questionnaire's results.

1. Confident: You stay ***confident***. You happily propose and pursue goals, take healthy ***pride*** in your achievements, and focus on capabilities and potential. You often climb to leadership positions or, conversely, go it alone because a group-first mindset does not suit you. You may harbor a grand master plan or high self-importance.
1 2 3 4 5

2. Optimistic: You happily filter out distractions. You ignore unlikely obstacles, criticism, and ideas irrelevant to the task at hand. This region links to ***productivity*** and ***happiness***, but at the price of a less examined life. Thus, when presented with chances to reflect, you prefer to go to the next practical task to get work done.
1 2 3 4 5

3. Secure: You feel secure in your identity, beliefs, and attitudes: your ***likes***, ***dislikes***, and ideological leanings including loved-ones, religious beliefs, and favorite activities, foods, and objects. Who is your second best friend? Do you believe in an afterlife? You hold surely to what is right, wrong or in between regardless of the situation.
1 2 3 4 5

4. Modest: You are realistic, grounded, ***modest***, and socially restrained. You trust what is tangible and ***prudent***. You don't get carried away with delusions of grandeur, get-rich schemes or bizarre thinking, and you avoid cursing, lewdness, and promiscuity. You remain a steady, temperate realist who is sensible and decent.
1 2 3 4 5

5. Conforming: You quickly adjust to others' expectations, judgments, and needs. When you receive negative feedback—whether verbal, visual or physical—you feel ***embarrassment*** or ***shame***, prompting you to shift your behavior to get positive feedback. You can get caught up in pleasing others and conforming to social expectations.
1 2 3 4 5

Before you continue…
Select one dynamic above and describe:

a) Benefits of use:

b) Pitfalls of use:

c) How it meets your type needs:

6. Perfecting: You notice errors and mistakes. You quickly detect what doesn't fit a norm or expectation and feel driven to make corrections. An error could be in spelling, use of a theory, or whatever. You feel ***discomfort*** or ***anxious*** until all errors are gone. The upside of perfectionism is accurate work and perpetual improvement.
1 2 3 4 5

7. Planful: You often consider multiple time lines. You project what will happen, what didn't happen, what might happen, and/or what should happen. You weigh these possibilities when planning, maybe ***worrying*** about bad future outcomes, regretting past choices, or feeling ***relief*** over good choices and pathways into the future.
1 2 3 4 5

8. Vigilant: You have a strong sense of personal space, boundaries, and individuality. You know and—as needed—defend where you end and where others and the rest of the world begin. Rarely do you feel oneness with others, society or the universe. You start interactions with ***skepticism*** and stay alert to intrusions of your ***privacy***.
1 2 3 4 5

9. Suspicious: You are ***alert to possible threats***, especially when you are in new, dangerous or uncertain situations. Mainly at such times, you tend to ***fear*** that someone may be shadowing you: watching, following, and maybe trying to interfere. You may even feel an urge to turn around, as if someone is watching.
1 2 3 4 5

10. Irritable: You feel easily ***irritated*** or ***annoyed***, mostly when you perceive a violation to your values, feel inconvenienced, or detect bad intentions. You may get verbally hostile especially to oppose someone who is deceitful or getting away with harming others. You often feel better after working out your aggression physically.
1 2 3 4 5

Before you continue…
Select one dynamic above and describe:

a) Benefits of use:

b) Pitfalls of use:

c) How it meets your type needs:

11. Empathic: You often experience life from other people's point of view. You focus on others to feel what they feel, see what they see, and so on. Thus, you can experience deep ***empathic connections***. You even feel others' joys and hurts as your own and may act to relieve their hardships. You feel surprised when you mistake someone's experience.
1 2 3 4 5

12. Sensitive: You notice and analyze facial expressions—such as the meaning of an approving nod or dissenting frown—and when you don't get any cues, you are ***curious*** about what others are thinking or feeling. You are really ***attentive***, always watching for hints of feedback. You likely easily analyze animals' expressions too.
1 2 3 4 5

13. Ethical: You consider the ethics of your own and others' actions. You compare motives against the larger situation and actual outcome to determine the ***moral rightness*** (or not) of one's actions. For example, cheating on a test is likely not okay due to ***bad intent*** while a thief stealing medicine to save a loved one could be okay.
1 2 3 4 5

14. Reflective: You stay open to new information, including distractions and criticism, and you delve deeply into feedback without anger or denial. When presented with chances to apply an idea to yourself, you self-reflect and perhaps alter your behavior. Research links this region to ***self-awareness***, but also ***occasional or mild depression***.
1 2 3 4 5

15. Impressionable: You notice and arrange themes, patterns, and relationships in photos, paintings, and other visual media. You keenly sense how colors, shapes, and other elements fit aesthetically, whether for a painting, room or person. Note: Just as you ***delight in beauty***, ugliness or visual ***disharmony disturb*** you.
1 2 3 4 5

Before you continue…
Select one dynamic above and describe:
a) Benefits of use:
b) Pitfalls of use:
c) How it meets your type needs:

16. Enthusiastic: You enjoy novelty, brain-storming, surprises, opportunities, and fresh ideas. You keep scanning for whatever is new and interesting, juggle and ***enjoy*** multiple activities at once, and are ***enthusiastic*** for fresh intellectual and sensory data. Sometimes, you may seem careless, off-task, off-topic, hesitant to finish, or indulgent.
1 2 3 4 5

17. Appealing: You like ***romance*** and excel at it. In situations where romance or sex are possible, you ***act appropriately*** to get started in a comfortable way. Thus, dating, relating, and intimacy are easy for you. Also, you enjoy a healthy libido and never act in an off-putting, bizarre manner, such as indiscriminate sexual advances.
1 2 3 4 5

18. Seductive: You move smoothly with your whole body to gracefully express yourself. Your moves are unplanned and unpredictable yet feel natural and right, such that you can hypnotize others with your free-form dancing to improvised rhythms. Generally, your body language is casual and ***alluring***, even ***seductive***, without trying.
1 2 3 4 5

19. Uncanny: You easily imitate people, which helps you quickly establish rapport, learn by watching, and infer others' needs. This involves mirroring behavior, either of a person in front of you or in your mind's eye. Thus, you seem ***sociable*** and a quick learner. However, you may over-rely on others and easily feel ***lonely***.
1 2 3 4 5

20. Amused: You deliver subtle ***humor*** and know when a joke, pun or other turn of phrase or odd idea is actually ***funny***: "Nostalgia isn't what it used to be," and "I asked God for a bike, but I know God doesn't work that way, so I stole a bike and asked for forgiveness." You just "get" conceptual humor and can ad-lib your own zingers and retorts.
1 2 3 4 5

Before you continue…
Select one dynamic above and describe:
a) Benefits of use:
b) Pitfalls of use:
c) How it meets your type needs:

Interpreting Your Responses

You may wish to hear how each of the 16 types tends to rely upon particular emotional dynamics. That research is in progress. What I can say: Type matters. Also, each of us shows individual dynamics picked up from parents, peers, professional training, and media culture.

What I feel after delving into the neuroscience: patience and opportunity. The brain generates emotions to help us survive. There are no good or bad emotions. Simply, each emotion signals us to consider a change, to help us. At least, that is how we have survived for eons. Today's world presents its own challenges, as some expressions of emotion are more socially acceptable than others. Moreover, we can get stuck in favorite emotional dynamics. Now, when I or someone else suddenly gets caught in emotional quicksand, I ask: *What need is the emotion signaling?* If I'm worried, that means I foresee danger in the future. The solution is not to chant, "It'll be okay", but to take action to improve future odds. Consider, as you review your responses, where do you find calls for patience and/or opportunity?

Practicing Greater Satisfaction

Among the emotional dynamics that you rated in the questionnaire, target one to focus on. Simply put, where do you want more satisfaction?

Your target: To be more or less

The brain is a habit-making machine. Reaching your target involves cultivating a new habit. How you behave, think, and feel all support each other. To form a new habit, first consider what situations trigger the emotion. Then visualize yourself starting to experience the emotion and choosing to flex: to tap its benefits, shift to a different emotion, or take a time out with deep breaths, as appropriate. As an aid, you may draw upon memories when this emotion served you well. You might visualize that now. From now on, you can visualize when getting up and when going to bed**.** The brain research suggests you may take from three weeks to several months of daily practice to form a new emotional habit. Doing so may involve drawing up all the strengths of your personality type preferences, and perhaps some shadow areas as well.

References

Berens, Linda & Nardi, Dario. *Understanding Yourself and Others: An Introduction to the Personality Type Code*. Telos Publications, 2004.

Nardi, Dario. *Neuroscience of Personality: Brain-Savvy Insights for All Types of People*, Radiance House, 2011.

Nardi, Dario. *8 Keys to Self-Leadership: From Awareness to Action*. Telos Publications, 2005.

Pearman, Roger. *Introduction to Type and Emotional Intelligence*. Consulting Psychologists Press, 2002.

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