

What's Up With Johnny?:
Executive Functioning and the Production
Paradox

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WHAT'S UP WITH JOHNNY? Executive Functioning and the Production Paradox

It is an oft-told tale that follows, a sad commentary on the befuddling experience of “bright” students who can’t seem to get with the program as school becomes more academic in a linear, sequential, complex, metacognitive way:

Johnny was an excited preschooler. He knew the names of ten different birds, loved to hear stories read aloud, made the most imaginative paintings, and was a sought-after friend on the playground. His energy seemed inexhaustible, and his curiosity knew no bounds. Johnny’s parents were delighted with his inquisitive nature and his love of learning. He certainly seemed “smart” by anyone’s standards!

Ah, the excited concrete learner – Piaget’s little explorer who takes on the world at face value and seems to devour facts and experiences! In the immediacy of the moment, the world is Johnny’s oyster – or cardinal, or stegosaurus, or circle dance, or sandcastle. Life was good...

Things got a bit rough in kindergarten – when did they start naming letters and coloring inside the lines so early? And why did the schedule have to be so rigid and crowded? Johnny hated circle time – he had so many things to say about everything – and was regularly asked to leave the circle and go into time out. His paintings were still imaginative but not about the topic at hand (like Thanksgiving or snowflakes or mommies), and they often were left unfinished.

Time and results – here we go! Letters in order, directions in steps, and projects with time limits. Freud’s thesis in Civilization and Its Discontents – the necessary channeling of the libido (“life force”) or Id into socially acceptable activity – plays itself out in the life of a five year-old (complete with the eventual “usual unhappiness” of life).

A DIGRESSION: At this point, the reader may see the old naturalistic fallacy coming: the Wild Child or Noble Savage or Hippie Commune Kid left to grow up without all of those neurosis-inducing mandates is healthy, joyous, and free! You are perceptive regarding my heart (in which I will always strive for a sanctuary for the Child of the Light growing into the goodness inherent in all of us) yet not regarding my head (in which I realistically perceive that growth in this culture includes the “meaning making” inherent in our schools with all of its accompanying demands on time and results). Sigh...

Now Johnny is in second grade. His enthusiasm for school is gone. He spends lots of time trying to catch up with the work, much of which is sent home to be completed after school since he never did it at his desk! He has forgotten the names of the birds and hates to paint (he is too messy, the art teacher says, and he spends his recess inside cleaning up). What happened to that smart boy, his parents ask, and how do we get him back?

The die is cast, alas. Report cards reflect production, not potential, and efforts grades are based upon compliance, not enthusiasm. Good teachers are befuddled as they bend over backwards to avoid words and phrases like “lazy” and “unmotivated” and “underachieving” to describe Johnny. Parents struggle to get Johnny out the door, often with his complaints of a stomachache ringing in their ears. The school psychologist has been contacted and an evaluation is in the works: How smart is Johnny really? Why can’t he do the work? Is this his parents’ fault for being too lenient at home? What about an attention deficit/hyperactivity disorder (ADHD) – does he need to take medicine? And what was that I read about executive functioning?

I am that school psychologist. Welcome to my world...

EXECUTIVE FUNCTIONING:

- 1) “a collection of processes responsible for guiding, directing, and managing cognitive, emotional, and behavioral functions, particularly during active, novel problem solving” or perhaps...
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- 2) “a set of multiple cognitive processes that act in a coordinated way to direct perception, emotion, cognition, and motor functions” or perhaps...
3
- 3) “the ability to develop and maintain an appropriate problem-solving strategy across changing stimulus conditions in order to achieve a future goal” or even perhaps...
4
- 4) “a powerful mixture of flexibility and discipline that lets us both imagine the possible and determine the practical...An ideal pairing of two very different sets of executive skills to create the perfect organizational partnership.”
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In the midst of the psychoeducational battery that is the standard for school testing now stands another parameter – executive functioning – as a potential source for understanding. Not a “stand-alone” concept (like the elusive “g” of early IQ fame that was to capture what intelligence “is”) nor in fact a single “conductor” of strategies, executive functioning skills are multifaceted and messy – like Gardner’s multiple intelligences – with no single site in the brain (the “homunculus” of ancient philosophy) that correlates to a clear, physiological organizing principle or set of synapses (although the prefrontal lobes are definitely involved).

Encompassing perception, cognition, emotion, and motor functioning, these skills may in fact help us to understand Johnny and his school experience. Our task becomes imperative as Johnny gets older.

As we look to this unfolding tale, let me state my pedagogical belief now: as classroom teachers, we need to explicitly model, point out, structure, instruct, and practice executive functioning skills. We might indeed need to “be our students pre-frontal lobes” sometimes as we move toward the production aspect of school. This is not babying them, or coddling them, or even dumbing down for them – this is survival for them. Even those who “get it” early and easily can use this support from us.

Furthermore, our efforts need to be positive and affirming, avoiding at all costs the use of shame and embarrassment as pedagogical tools for compliance. Shame can stimulate the amygdala – a tiny part of the brain shaped like two almonds (“amygdala is Greek for “almond”) – which then can initiate fight/flight/freeze sequences of neurotransmitters that flood the cerebral cortex and effectively shut down learning!

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Current brain research suggests that the dorsolateral prefrontal cortex and superior temporal gyrus (areas associated with executive functioning, with its accompanying emphases on decision-making and production) do not mature well into the 20’s for most individuals. Indeed, it seems, my friends, that the auto insurance companies – using their own actuarial data – have had it right all along: watch out for those drivers under 25!

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Let’s look at these individual executive functions – through the story of Johnny – and see how we can incorporate these ideas into our classrooms. I will use the eight function model used in the BEHAVIOR RATING INVENTORY OF EXECUTIVE FUNCTIONING (BRIEF) assessment tool, with interspersed references to the models of McCloskey (who has twenty-two discrete functions in his model) and Eide and Eide (who talk about the Chief Creativity Officer and the Chief Operations Officer).

As we return to the upcoming evaluation, the goal, in a nutshell, is simple: identify and celebrate the strengths, address the challenges, and bring success back to school.

The eight executive function parameters on the BRIEF are as follows:

- 1) Inhibit
- 2) Shift
- 3) Emotional Control
- 4) Initiate
- 5) Working Memory
- 6) Plan/Organize
- 7) Organization of Materials
- 8) Monitor

INHIBIT:

Johnny wants to do well – to do “the next right thing” as he is often told by his parents – yet there is a challenge with inhibition: his imagination and self-will seem irrepressible! With his parents NOW is the time to tell the story, be creative, and follow the movie in his head.

Let us start with the “inhibit” function, the ability to exercise impulse control. This is one where these children are often seen as ADHD candidates – they call out, interrupt, get up and walk to the pencil sharpener, and so on. There are emotional and maturational issues here: remember the marshmallow experiment in Goleman’s treatise on emotional intelligence? (“I’ll give you two marshmallows in ten minutes if you can sit here and not eat this marshmallow until I get back...”)

What to do? Have a lesson on STOP-LOOK-THINK at the beginning of the term. make a visual cue (a card with a stop sign/eye/light bulb) and tape it to each desk, then refer to the card (tap the desk, say “Johnny, stop, look, and think”) without using the child’s name. If that doesn’t work, set up a behavior plan with one target behavior,

always laid out in positive terms (“wait to speak until it is your turn” instead of “don’t interrupt”) and absolutely clear as to whether it is present or not (i.e., avoid phrases like “be a good listener” as too vague and open to interpretation). Run the plan for two weeks maximum, and count 80% compliance as success. (By the way, impulse control is a major issue in our culture – just look at the level of addiction, road rage, and the like: don’t we owe it to our students to teach them how to succeed here?)

SHIFT: Johnny can still get focused at times – often after a long transition period. Then, unfortunately, the class is ready to move on to another activity, and Johnny is upset and non-compliant. Once his parents stopped to think about this – there are almost twenty “shifts” in school every day!

The shift function is critical in school as well as in the lives of most of us who work for and with others. Once we can focus – and thus use our attention in appropriate and selective ways – we can learn how to move that focus around, like a spotlight, to illuminate the tasks at hand. Attention remains a key – and a critical factor in ADHD issues – yet now we must manipulate and sustain that attention as well.

Giving a “heads up” about a change in activities is useful here, as well as the use of various timing devices (hourglass, kitchen timer, visual timers where the colored area of the face disappears as time elapses, etc.). Also, teachers have found transitional activities – stand up and stretch, sing a song, do a breathing exercise, get a drink – can help a lot.

EMOTIONAL CONTROL: Johnny can be an emotional wreck at times – and who can blame him! Social behavior by second grade already demands executive functioning skills, and empathy is hard to achieve when you are struggling with your own feelings. Now the well-liked preschooler can be avoided by his peers sometimes, since his behavior can be unpredictable.

The emotional control function is clear: as Goleman has pointed, our “emotional intelligence” (or EQ) can have as profound an effect on our learning as our IQ.

For this function McCloskey has several aspects of note: the ability to sustain an effort once a task is begun; regulating social behavior; regulating emotional control; enabling self-observation and self-analysis; enabling the capacity to take the perspective of others in order to infer how someone is thinking or feeling at a given point in time.

There is a saying I am quite fond of whose origin is unknown to me: old age is mandatory, but maturity is optional. The emotional control aspect of human development and the need for maturity seems at once both culture-bound (watch the energy and emotional level of expression in a variety of classrooms in a variety of schools to see how variable this can be)) and innate (since empathy and interpersonal relationships are part of the “developing mind” that brain researchers now talk about as the interplay between neurons, cognition, and relationships).

Classroom teachers can teach emotional intelligence by creating a safe yet structured environment that emphasizes four precepts: the ability to name and control one’s feelings; the ability to solve problems creatively; the ability to form relationships that can become friendships; the ability to be optimistic. We need to teach these precepts.

INITIATE: Johnny may have the best of intentions, but he can’t seem to start a new task. Transitions have always been hard, and getting down to work seems a monumental struggle. Even with activities he enjoys – like painting and playing a game – Johnny can’t seem to focus.

The initiate function is commonly missing in bright and creative students who cannot take that world inside their head and put it aside for that math paper or the social studies map questions. Here again McCloskey has some further elaborations: the ability to interrupt and return to an ongoing activity; flexibility in shifting attention and cognition to a new set of tasks; accurately predicting at the outset what will be needed in terms of time and materials; directing motor activities to the new task; keeping in mind the “big picture” while beginning with the details.

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Classroom teachers can work wonders with the initiate function by paying careful attention to transitions and “ice breakers” for activities. By eliminating the daunting sight of a blank piece of paper and having at least a format outlined or an opening sentence or a drawing can be quite helpful. Parents can create work rituals at home (best followed by the entire family): like Mister Rogers coming home and changing his shoes and putting on his sweater, having a routine that leads one to the desk for homework is quite useful. Games can also be played to shift gears and re-engage after interruptions.

The prediction of effort needed is often challenging: students often underestimate the time needed to complete a task and overestimate their own abilities. Here again, teacher instruction (with activities like predicting how long an assignment will take, then timing oneself and discussing the results) is useful and important.

WORKING MEMORY: Johnny used to relish his performances for family and friends at home, rattling off his address, phone number, days of the week, months of the year, and so on...now he can barely keep two step directions clear in his head, and the relative importance of details (like what to bring home for HW tonight versus what his friend is having for dinner tonight) seems all jumbled.

Working memory – what the Eides call “the Juggler” – allows us to handle lots
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of information at one time. Embedded in this memory function are many abilities:
encoding information coming in from the senses; providing a framework of time and
space for other brain functions to complete complex tasks; “setting the table” for doing
“the next right thing” on a multi-step project. McCloskey breaks this down even further:
the ability to mentally manipulate information; the ability to engage previous knowledge
in addressing the task at hand; the ability to know which items to move into long-term
memory.

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The teaching of memory techniques – like acronyms, rhymes, songs,
chunking, lists, associations, visualizing, patterns – is an essential part of engaging
all types of learners. Using movement enhances memory, as does color, touch, smell,
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and music. Each of us has developed a useful memory style by now, but many children
are still discovering their gifts and preferences. We must set the table with many different
offerings for these hungry minds!

ORGANIZE/PLAN AND ORGANIZATION OF MATERIALS:

**Johnny seems to live in the moment – a goal in Zen Buddhism
but a challenge in second grade! Planning ahead is a mystery
still, and the organization of desks, books, and pencils is a skill
not yet developed. Of course, the time spent looking for what he
needs to complete the next activity takes away from his completion,
and once again the cycle of disappointment and failure is initiated.**

To plan and organize one’s actions requires a myriad of skills: a sense of time
and space; a good sense of boundaries (between activities, between our space and the
personal space of others, and between essential and non-essential elements of information
that is available to us); a desire for completion of tasks in a reasonable period of time. To

plan and organize our materials requires a sense of order as well as a realistic appraisal of what we need to complete a task. In some families these skills are being taught from infancy. In other families these skills are not highly valued. Each educator creates a “culture” in the classroom that either resonates or doesn’t resonate with the family’s modus operandi. Thus, we must actively teach these skills: how to begin a long-term project or term-paper (with carefully defined steps all along the way); how to set up a study schedule for a typical week; how to plan a trip to the library that will be successful in finding every resource we need; how to organize a desk/locker/bookbag/room/study space. Many middle schools assume students have these skills when they arrive for sixth grade, and many students find themselves failing classes due to poor organization skills. Is this truly what we want to accomplish?

MONITOR: Johnny, on a good day, thinks he has done well on all of his work. On a bad day, however, everything is wrong and he is “stupid.” There is no clear sense of feedback – either from within or from His parents and teachers – that doesn’t feel critical if it’s not all Positive.

The monitor function fascinates me – in my spiritual exploration, I have been intrigued by the Russian sage Gurdjieff and his idea of “the Witness” as our true self who is connected with the Divine and observes from a place of detachment the daily comings and goings of our everyday selves performing our everyday lives. Every student can use a Witness or Monitor that keeps tabs on things. (Remember how New York City mayor Ed Koch always asked, “How am I doing?”)

McCloskey sees this function as follows: monitoring the speed of information

processing; finding the right balance between speed and accuracy when working; making use of hindsight and foresight in evaluating one's work. Learning to set up a feedback loop within ourselves is a vital skill in all aspects of life: from the "give and take" of non-verbal cues in a relationship to the honest appraisal of our efforts halfway through a project, we do best when we are problem-solvers.

Teachers can model self-evaluation by speaking openly of how a lesson went, asking for student feedback and planning the next lesson accordingly. In addition, students can be asked to grade their own work, evaluate their participation in a group project, and map out a plan for changes they will make in the future. In a classroom that is emotionally safe (remember the amygdala!) and where honest and specific feedback is encouraged and practiced, students will develop the monitor function as a valuable tool for life.

Having looked at the eight executive functions identified on the BRIEF protocol, Let's now look at another model by Eide and Eide - the "Creative Corporation," a combination of the talents of two very different "corporate executives" – the Chief Creative Officer (CCO) and the Chief Operating Officer (COO). Whereas the CCO is the idea person/talented one/"big picture thinker" we often associate with children like Johnny, the COO manages memory/attention/initiate/shift/plan/monitor functions. This is an appealing model because it looks to the creativity inherent in learners and weds this creativity with the "executive functioning" aspects that make one a "good student."

WHERE DO WE GO FROM HERE?

If, as Steven Pinker suggests, the mind operates on the computational theory – a model that suggests “information processing is the primary activity of the brain” –¹⁹ then executive functioning skills emerge as even more important in the success of Johnny in both school and life. Acting like programming tools that channel and direct the flow of inputs to the proper areas of the brain and then facilitate the impulses in getting back to the production department, these skills harness the raw energy of the creative process like solar cells turn sunlight into electricity. These skills do not seem to be innate but instead seem to emerge from the necessity presented by the classroom or the culture at large. These skills also can be taught, and in fact need to be taught in explicit ways to ensure the success of all.

The tale of Johnny has progressed to the evaluation, and the results (perhaps not surprisingly) suggest the following: above average to superior cognitive skills, no specific learning disability (evidenced by either a significant discrepancy between ability and achievement or a significantly below grade level performance on specific skill sets), no clear diagnosis of ADHD or an emotional disorder, and no clear and specific path for academically-based remediation besides “he needs to better use his own talents and skills.” McCloskey notes three basic types of students who get referred for evaluations:

- 1) learning disabled with good executive functioning skills: these individuals often do not get picked up in the classroom until fifth grade or so (when the complexity of the work overwhelms the good work habits);
- 2) learning disabled with poor executive functioning skills: these individuals are

referred early and often;

- 3) non-learning disabled with poor executive functioning skills: these individuals (like Johnny) are first seen as “underachieving and then get referred for possible LD diagnoses.

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We are looking at production issues here, and once again we need to train these students so that they can use their gifts and abilities in ways that can be seen and shared.

We also realize why these executive functioning issues rarely show up clearly in a battery of tests: in one-on-one sessions with (usually) compassionate evaluators the students rarely need to engage these functions, since everything (for the most part) is laid out and organized for them.

QUESTIONS TO PONDER:

What does IQ and intelligence really mean for children who are struggling in school with poor grades? Since IQ tests rarely engage executive functioning in all of its aspects, how useful is this abstract sense of “ability” when working with children who have production issues? An answer of “not very useful” seems to be embedded in the new IDEIA federal education law for special education, which takes a hands-on, pragmatic approach to trying new strategies (“response to intervention”) before completing an evaluation. In a global sense, I still find value in IQ testing: it provides a wonderful and complete “snapshot” of a learner engaged in a variety of activities. Nonetheless, in our “bottom line” culture, it’s what you do that counts, not what you can do.

How do we teach executive functioning as well as the curriculum?

Teachers often feel burdened by curricular restraints, let alone the testing required by the No Child Left Behind Act. The paradigm shift, then, becomes one of incorporation instead of addition: a classroom can engage and teach executive functions while subject area learning is going on. Techniques outlined here and elsewhere suggest that this is both doable and effective. I would even venture to say that a thorough incorporation of executive functioning skills can make a school “failure-resistant” for the vast majority of students, since those who seem “lost in the fog” will be engaged in production at every step of the way through active instruction and structuring of activities.

How do we develop “brain-friendly” classrooms?

The Learning and the Brain Conference (co-sponsored by the Mind, Brain, and Education Program at the Harvard Graduate School of Education) was dedicated this past spring (2007) to the development of teaching methodology that is informed by current brain research. Thus, the idea of a “brain-friendly” classroom is timely, and the role of executive functioning is offered here in that context.

One simple formula developed by Willis suggests the **RAD** model for classrooms:
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use the **R**eticular activation system to your advantage through novelty and surprise (so that shift and focus are engaged and the reticular system of filtering out most stimuli when the working memory of the brain is “full” is not engaged); **A**mygdala health (through the development of a safe classroom environment where shame and embarrassment have no place and there is no need for fight/flight/freeze responses);

Dopamine generation (the generation of the brain's "feel good chemical" through movement, positive reinforcement, and many opportunities for success and creativity). Here again, as with executive functioning, research-based ideas for effective teaching use our latest knowledge base for success for all children.

HOPE: I recently learned that one of the "best" school districts in my area decided to give an outdoor recess (which had been taken away for more instruction time) to fourth graders during the administration of state competency tests so that they could do their best. If this logic holds true, why not give recess every day?

Teaching is an art and a science, a job and a calling. The best educators are life-long learners, and it is in this spirit that this paper is offered.

ENDNOTES:

- 1 - Freud. 1930.
- 2 - Gioia et al. 1996: p. 1.
- 3 – McCloskey. 2007: p. 2.
- 4 – Heaton et al. 1981: p. 1.
- 5 – Eide and Eide. 2006: p. 214.
- 6 – LeDoux. 1996: p. 284-285.
- 7 – Giedd. 2004: p. 103.
- 8 – Goleman.1995: p. 80-82.
- 9 – Goleman. 1995: p. 34
- 10 – McCloskey. 2007: p. 2.
- 11 - Siegel. 1999: p. 2
- 12 – McCloskey.2007.: p. 2.
- 13 – Eide and Eide. 2006: p. 213.
- 14 – McCloskey. 2007: p. 2.
- 15 – Sprenger. 2006.
- 16 – McCloskey. 2007: p. 2.
- 17 – Eide and Eide. 2006: p. 214-219.
- 18 – Levine. 1990: p. 40-42.
- 19 – Pinker. 1997: p. 83.
- 20 – McCloskey. 2007: p. 2
- 21 – Willis. 2007.

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