

# Treatment with the Brain, the Body, and the Central Nervous System in Mind



A new conceptual  
framework for  
understanding and  
changing human behavior,  
based on the most recent  
research on the role of the  
body, the brain, and the  
central nervous system.

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## Acknowledgements

I would like to begin this section by acknowledging what I am not. Despite my affinity for and interest in the central nervous system, I am neither a neuropsychologist nor a neurologist. I am also not a researcher who has made profound discoveries about how the brain, the central nervous system, and the body drive human behavior. What I am is a developmental psychologist who has invested a good deal of time reading what others have written. I am always attempting to relate what I've read to my work with adults and children who have extraordinary challenges in their ability to manage their behavior. I find myself in a similar position to John Travolta in the movie *Saturday Night Fever*.

When asked if he made up a new dance step John Travolta responds,

"Yes I made it up." And then he adds:

"Well first I saw it on TV, then I made it up."

I guess something very similar can be said of me. While I didn't see it all on TV first, I read it in books and journals, heard people talk about it, and then made it up. My point here is that these ideas are not my own and in the following I have attempted to acknowledge the people who inspired these ideas.

Over the past forty years there has been a revolution in psychology. We have grown through the behavioral 60s and 70s, past the cognitive-dominated 80s and 90s, and into the affective or emotional era. Unlike most revolutions, this one didn't start in the streets. It started in labs, among theorists, and eventually in pictures from fMRI equipment.

Scientific information, even information as profound as this rarely actually gets back to the people who need it most. This book is about bringing it back to the streets. It is about taking what we have learned about the brain, the central nervous system, and the body, and helping people who work with challenging people every day to use these insights and information to better understand how to help them manage their behavior.

Although I am a developmental psychologist I spend most of my time working for a living. I see "patients", "clients", or "consumers" every day. I have been a home care provider for people with extremely challenging behavior, for nearly forty years. I have been on the crisis pager for so long, I was on before there were crisis pagers. Suffice it to say I have spent most of my adult years working and living with people with very challenging behavior, and trying to understand and help them.

One of the many things I have learned from them is that most of what we call treatment does not occur in my office. One hour a week with me is great however it leaves 167 hours out in the world with others. That's where the real possibilities for change occur. This book is an attempt to help those who spend that other 167 hours with challenging people to have the information they need to help them change.

I recently heard a talk by Martin Seligman, a psychologist who has had a great influence on how I think about human behavior. He said he was interviewed by CNN about psychology and told he could respond with a one word sound bite. They asked him what the state of psychology is today.

He said, "good."

They said that after some thought they would allow him two words and so again they asked about the state of psychology today.

He said, "not good."

So they got expansive and decided to give him three words.

He said, "not good enough!"

I like to think he was right on all three counts. The state of psychology in terms of providing care for developmentally delayed individuals is "good". It is good in that we have certainly discovered a great deal over the past 50 or so years about how to help people with developmental disabilities and challenging behavior. The greatest change has been in the move from an institutional model, to individualized, community based care for people. This is not only much more humane but also much more effective. Here in Vermont we haven't had an institution for nearly 25 years.

It is "not good" in that despite the change in how we provide services and supports for people our clinical models and the way we provide treatment for very complicated problems is often quite naïve. Often treatment is based on "behavioral models" that are long outdated, and don't apply to complex conditions like trauma and developmental disorders. When they lead to interventions like restraint they can be downright dangerous, as well as ineffective.

It is "not good enough" in that all we have learned clinically over the past six or seven decades has mostly not been incorporated into how we provide treatment. Umberto Eco said, "For every complex problem there is a simple solution, but it's wrong." We continue to attempt to manage very complex problems with very simple solutions. This book is an attempt to remedy that.

Let me actually begin acknowledging the people who were able broaden my view of human behavior and help me understand the role of the brain and

the body in human behavior. The following is mostly a personal historical bibliography of what has influenced me.

I must begin with Dr. Joseph Hasazi, who brought much of this information to my attention and appreciation, and helped me understand its importance and relevance. After 35 years he remains my mentor and friend.

I had the opportunity to listen to Bessel van der Kolk's wisdom for a whole week about 20 years ago. I immediately got his book, Traumatic Stress, and realized that trauma and changes to people's nervous system subsequent to their experience, drive people's behavior much more than consequences. Read his book, and anything else you can find he has written. If at all possible, go see him. He is quite an inspiration, and incredibly knowledgeable.

Martin Seligman, and his theory of learned helplessness, helped me broaden my notion of what drives human behavior and understand a key component in treatment. Treatment often focuses on what people can't or shouldn't do, instead of what they can. It can foster helplessness, which inhibits people's natural drive toward improvement and change. We must help people feel in control and capable of change, focus on what they can do, not on what they can't or don't, and help them move ahead.

Daniel Goleman also had a great influence on me. In 1995 he published Emotional Intelligence. He helped me understand that thinking about human behavior in terms of brain systems, one for danger and immediate mobilization, and one for processing rational thought, would make treatment more efficient and effective.

Antonio Damasio was also a great inspiration and helped me begin to understand the critical role of the nervous system and its effect on the body and human behavior. His 1994 book, Descartes' Error, is a must read. Elegant.

Joseph LaDoux is next. His description of the brain, and for me especially the limbic system, helped me understand how critical it is to put

the brain and the entire central nervous system at the center of the behavioral equation. His book, The Emotional Brain, is a classic.

Marsha Linehan developed Dialectical Behavioral Therapy (DBT) and wrote the book and manual on treatment of borderline personality disorder. She helped me to understand how critical it is to have very practical approaches to managing the emotional system and contributed to our skill based approach to managing emotions.

I don't think anybody knows more about the frontal lobes and executive function than Russell Barkley, especially as it relates to ADHD. His book, ADHD and the Nature of Self Control, provides a model of executive function and how it pertains to self-regulation or self-control. Developmental disabilities are developmental disorders, but rarely are the developmental effects on the frontal lobes and self-regulation considered in treatment.

Peter Fonagy (pronounced Fongay) sat in for a speaker I had hoped to see, and I was quite disappointed until I heard him speak. Then I was an immediate convert. He has quite an exceptionally broad understanding of how attachment, or human relationships, effect and shape how people behave. His book, Affect Regulation, Mentalization, and the Self, provides a developmental model in terms of how people gain the capacity to manage their feelings, understand how others (and themselves) think and feel, and how all of that is captured in the sense of self. It is an informative way to think about providing treatment within a developmental or "stage" model.

Every book on development should contain a tribute to John Bowlby. He is the father of Attachment theory, and his trilogy, Attachment, Separation, and Loss, have provided us, and many researchers, foundational works on the connection between early relationship experiences and later behavior. His insights, and the insights of the many generations of researchers he inspired, are critical in providing treatment to the developmentally disabled.



Beverly James's book, The Handbook for Treatment of Attachment Problems in Children, provides a good overview and insight into providing trauma treatment to the developmentally disabled. Since many of the people we support, who exhibit challenging behavior, have been traumatized, it is critical to understand and be able to treat trauma from a developmental perspective.

For these who want to better understand some of the research on consequences, and perhaps a different way to think about the consequences of using consequences, Alfie Kohn's book, Punished by Rewards is very informative. Currently the behavioral economists have gotten into the game and Dan Ariely stands out among them. Dan Pink's book, Drive, is a compendium of recent research that helped me see what really motivates people.

Daniel Siegel is the father of Interpersonal Neurobiology. He has written many books, but his first, The Developing Mind: Toward Neurobiology of Interpersonal Experience, is a true classic that weaves together brain function, relationships, narrative, and how interpersonal experience shapes the organization and function of the brain. He has since gone on to write many books on the mind and psychotherapy that integrate the role of the body and the central nervous system with the mind. Read them all if possible. Be prepared to read The Developing Mind many times to glean all its wisdom.

Steven Porges has provided a rather recent addition to my knowledge or understanding of the central nervous system and the neural platforms it creates for behavior. His book, The Polyvagal Theory, provides a hierarchical model of the nervous system, in which each level is designed to promote different behaviors, including social behaviors.

Peter Levine is a trauma therapist whose insights on working directly with the behavior in order to "complete" the trauma response has provided practical applications of body based trauma treatment. His book Waking the Tiger outlines the specific interventions to heal trauma.

Pat Ogden, author of, Trauma and the Body: A Sensorimotor Approach to Psychotherapy, has made an exceptional contribution both in terms of understanding the neuro-behavioral action systems of the body, and the role of the body in treatment and therapy. Her body based treatments are provided within a stage model, and are directed at the sensorimotor system, as well as higher order emotions and thoughts.

I want to also give the nod to Allan Schore, who has clearly made a large contribution in term of the effect of development through attachment relationships, and the shaping of the brain through these experiences, on behavior. He makes it clear that so much of what we do today is related to our early attachment experiences. So often we deal with problems in the moment as if they are rooted in the moment, rather than their true source, the relational past. He views the problems we face in treatment (therapy), as deeply embedded in the nervous system, and its dysregulation, and therefore sees treatment as the establishment of (self)-regulatory abilities. His most recent book is The Science of the Art of Psychotherapy.

Although the authors and works listed above have been instrumental in my thinking about how to help people manage themselves and their behavior, they are not always accessible to the average reader. To take the collective knowledge contained in them and use them effectively in treatment would require a tremendous time commitment for caregivers. I have attempted to take their considerable contributions and put them together in a single volume so that they are accessible, and available in a single place. I have also translated much of the scientific language into more common language, and provided examples and stories, so that caretakers can more easily understand and relate to them. I should say that the authors listed above provide a very abbreviated, although critical, list of works that have helped to shape my thinking.

I have always had the thirst for understanding why people behave the way they do in a much more complicated and realistic fashion. The first professional presentation I ever did was at St. Marks church in Burlington VT. In the midst of a very "behavioral" audience, I presented on Abraham

Maslow and Carl Rogers, both Humanistic psychologists. I thought their work could be applied in the treatment of the developmentally disabled. While the crowd seemed to have a positive response to my talk, one of my university advisors approached me as I left the podium and said,

"Congratulations, you have just set the field of developmental disabilities back 20 years!"

Not exactly what I expected to hear, and somewhat alarming if you are hoping to complete a graduate degree. I do think it speaks to the fervent, almost religious devotion, some people have to their treatment models.

My pursuit of different ways to think about the behavior of the developmentally disabled, and especially those with challenging behavior, has led me to the study of psychology and the vast amount information that has been gathered and examined by the researchers mentioned above. Although their contributions have been great, they would have been without benefit to me without the help of all the friends who have challenged me and helped me apply these concepts. So, thanks to Pat, Dennis, Mary Jane, Dave, Brandon, Bill, David, Bob, Alan, and all the others who have helped me try to understand and apply these ideas. This too represents a much abbreviated list of contributors. There are literally too many to mention. Thank you to all.

My greatest thanks and acknowledgement has to go to all the people, "clients", "consumers", "patients", friends, and family, who have helped me take the theoretical constructs described above and put them into practice in order to better understand and help others. This work has mostly occurred in three very supportive "families", or organizations, Resources for Community Living, Upper Valley Services, and the Francis Foundation, without which none of these stories would exist. This work is as much all of theirs as mine.

I would also like to acknowledge the special contribution of my son Leo, and our eternal intern Mike, for all their efforts thinking about,

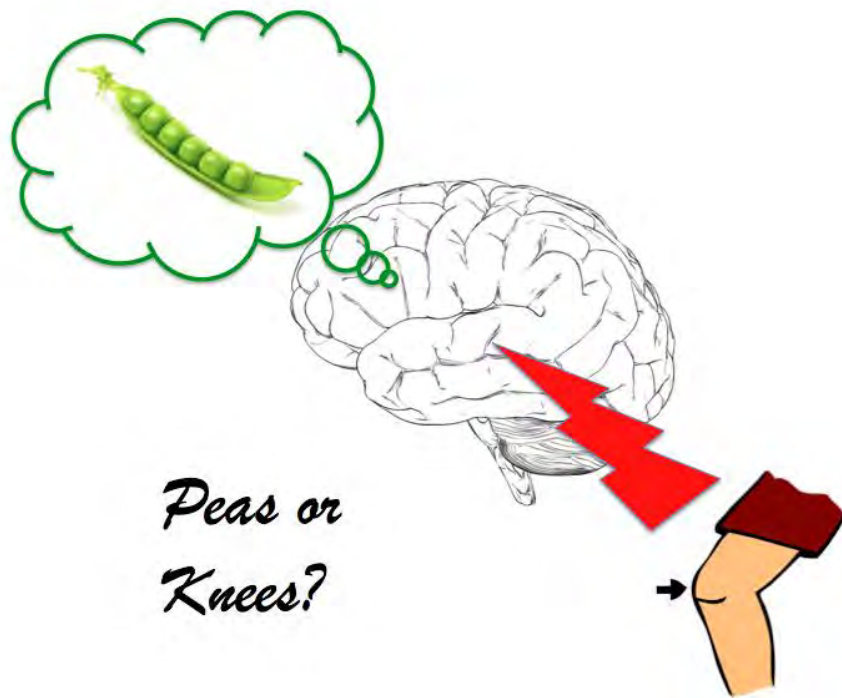
critiquing, editing, and helping me create this work. It certainly would not exist without their much appreciated efforts.

Thanks to my dear wife for her patience, interest, and guidance in all the lifelong pursuits that led to this book. If it weren't for her I would probably be writing a book about the emotional life of large bovines, or maybe even "My Life Among the Jellyfish", which I have been threatening to write for years. Her guidance and willingness to live a life full of wonderful and challenging people, (including me), has been extraordinary.

A book about why people behave the way they do without acknowledging why I behave the way I do would be silly. I have heard it said that the best way for people to handle their problems in the present is to select the right parents. I would like to take it just a step further and go back another generation to my grandparents and a few generations forward to my own children and grandchildren. So grazie to Elia Vecchione (my grandfather), Elena Vecchione (my grandmother), and to Leonard Alfred Vecchione (my father), Mary Margaret Juliana Cluess Vecchione (my mother), Leonard Elia Vecchione (oldest son), and Elia Vecchione (younger son, who taught me early on the benefits of an intact nervous system, and not just by jumping out from blind corners to terrify me), big Elia (my first grandson), Little Elia (my second grandson), and Leo "Sammy the Bull", our most recent addition. I also need to acknowledge my two daughters, in some circles called daughters-in-law, who have been such a wonderful addition to all of our lives.

*From the Vecchione Compound, Duxbury Vermont, April (the cruelest month) 2013.*

*Much appreciation and love to all.*



## "Knees" or "Peas": A Critical Distinction

### **A Brief Overview of Consistency, Brain Systems, and Behavior**

Let's take a moment to encapsulate much of what this book is about with a brief example. In the child rearing literature there is much said about the need for consistent responses to children's behavior in order to help them, essentially, behave the way we would like them to. Reasonable. However; just maybe...not true.

If any of us would turn to historical evidence of consistency by our parents, we would find lots of examples where their humanity outmaneuvered them, and they responded inconsistently (to our behavior), based on their "state" or ours. In fact, in the attachment literature, which is the study of the effect of early relationships on later behavior, there is the expectation that parents will respond at times incorrectly to our signals. This creates the opportunity for repair between the child and the caregiver. Repair is a skill that should be modeled early, used often, and carried into adult life, where it will be invaluable.

When I think about consistency I would suggest that parents and caregivers respond (mostly) consistently to our emotional state, or theirs,

not our behavior. This is a major shift in thinking in that it puts emotions or the "state" of our nervous system in the center of the behavioral equation. In my estimation, that's exactly where it should be. The brain, the central nervous system, and the body provide the neuro-behavioral platform from which behavior springs. Now the knees and peas example.

Most people would agree that under most circumstances swearing is "bad" behavior. A consistent response to swearing should cause a change in the amount of swearing. At least theoretically. At least in our presence. Here's an example we can all relate to, that shows how and what we actually respond to in others (and ourselves). It involves responding consistently to the emotional state of the person, and at times inconsistently to their behavior.

Let's say you have a child who is running, maybe even when he should be walking (bad behavior?), and the child falls and scrapes his knees up enough to lose some flesh. Depending on the age of the child this will probably generate tears. Assuming the child is old enough to model the behavior of others, a brief epithet like "oh s#\*t" might also be generated. Most parents would run and pick up the child, try to comfort him, and provide whatever first aid was necessary, all the while attempting to soothe the child and return him to a more comfortable emotional state.

I would guess very few parents first impulse would be to address the behavior, and say something like "That is inappropriate language. You need to go to your room to think about what you just said." The parent would most likely be mobilized by the physical and emotional needs of the child, and the child's "state", not the child's behavior. They would unconsciously realize the emotional system of the brain is driving the behavior, and this would not be a good time to buff up on social skills or rules.

Now let's say the family is sitting around the table having a good old-fashioned dinner together. Let's say the young fellow we were worried about just a little while ago was at the table enjoying dinner with everyone. He's just had his share of the pot roast and mashed potatoes, and is looking for

some peas to go along with them. He turns to his Dad and says, "Pass the god\*#!\*n peas."

The young man is likely to leave the table abruptly, under someone else's power, and find himself in his room dealing with a pretty steamed up parent. Why? The behavior in both of these situations is the same. The young man uses language that is "inappropriate" for his age (or maybe any age). However the context in which it occurs, and the emotional states of all the participants is quite different. In the first situation the behavior is likely to be completely ignored. In the second situation it is likely to be addressed immediately. Consistency?

This example should help us consider how we actually organize and prioritize our responses to other people's behavior, as well as how consistent our responses are, and to what. We respond based on the context that the behavior occurs in, and everyone's emotional state. Not just the behavior.

Let's not miss the emotional state of the parent in both of these examples, and what behavioral systems are turned on by the state of their emotional system. In the knees part the child is quite distressed, and that increases the parents arousal, and activates the care-taking system in the parent. The parent responds and their priority is to deal with the physical, medical, and emotional consequences of the fall. Appropriate? Of course.

In the peas part, the child's arousal remains low, at least initially. His frontal lobes, or reasoning system, are running the behavioral show. The parent's arousal system, however, increases dramatically once again. This time the "socialization", not the care-taking system, is turned on. The "socialization" system is appalled by the child breaking familial and cultural norms and swearing at the table. The parent once again responds but now to the very same behavior it ignored in the previous example.

In both cases the parents' behavior is being driven by their own arousal, but in very different directions, based on the arousal and condition of the child. Remove the child and reason with him when it's peas (thinking

system engaged), provide him safety and comfort when it's knees (emotional system engaged). This is the key to successful treatment.

Consistency in real life is based on the arousal that the situation causes and the "behavioral systems" that are turned on by that arousal in both the child and the parent. In fact what we will soon see (over the next hundred pages or so), that there are systems in the brain, the central nervous system, and the body that are organized to drive either survival or advancement behaviors.

Survival behaviors often drive "challenging" or "bad" behavior. They come in freeze, flight, and fight varieties. They are housed in the emotional brain, or limbic system. They are what is activated in the "knees" example, when either danger or threat is present to the child, or when the person is in need of help or comfort. (Knees = emotional reactions)

The other major brain system that drives behavior is the thinking system, or frontal lobes. It is designed for advancement and when it is turned on the person is capable of thinking and evaluating situations it finds itself in. You can talk to it because it is capable of processing language, which the emotional system is not. It gives the person the capacity to stop, think, and decide what kind of behavior, in the present, will serve its' long term needs. (Peas = thoughtful reactions)

The most critical component in helping people generate different or better behavior, is using the state of their nervous system as a guide to how to respond. Knowing when it is "knees" (emotional reactions) and when it is "peas" (rational reactions), and what to do, and not to do, to respond effectively to each, are the major themes of this book.



CAVEAT: It is not always as clear which brain system is driving the behavior as it is in the knees and peas example. Each individual's brain systems will have been trained by their experience of how to respond in different situations. What looks like peas to us (opportunities for advancement), may indeed be knees to them (danger or threat). The only way to know is to look at the behavior closely, and if you can see freeze, flight, or fight behavior then you know the emotional system is driving things. If not, the frontal lobes may still have the rudder.

BOTTOM LINE: We know if it's peas or knees by behavior. We need to know if it's knees (emotions) or peas (thoughts) that are driving behavior in order to effectively intervene and provide treatment. Read on to see how to provide "treatment with the brain in mind", and craft your interventions based on which brain system is driving things, for the maximum positive effect.



## **Introduction for Caregivers**

A word or two, perhaps of wisdom, for staff and caregivers: on this care taking journey you will receive much advice and guidance. At times you will be told what to do and how to do it. I suspect much of this advice will be helpful and result in better behavior out of your charges. However, some of it will be bad advice or direction and will make your charges worse. Knowing when the direction is good or bad can be a real challenge.

I had lots of experience before I began my formal education in psychology. I want to tell you about two experiences I had which profoundly affected me early in my career. Actually, it was before I considered what I was doing a career. The first was an experience I had while studying in an intensive intern program in special education. It helped me to wonder about who to listen to for guidance in how to care for others. The second was when the "programs" I designed to help a young man just made his behavior a lot worse. It made me see that helping others is no simple undertaking.

### **A Master's Level Field Trip**

I was working toward a master's in special education. Many of our classes were at the state hospital but occasionally we had a "field trip". One of our classes was scheduled at a residential program that served young people who had Autism.

The professor began the class with a young man sitting next to him at the table. He was a client who lived in this residential facility. He asked the young man to engage in a specific task, which involved sorting some coins. In the middle of the task, the young man engaged in some stereotypical behavior, which involved flapping his hands and making noises.

When he did so, the professor reached over and slapped him very hard on his thigh. I have to admit I was shocked. The young man jumped when he was struck, and I nearly fell out of my chair. Neither one of us saw this coming. The young man quickly got back on task. I remained confused, and I think it's fair to say, shocked.

I looked to the professor for an explanation. He had clearly hit the young man because he had gone off task. He said that he had hit him to get his attention. Then he said something that profoundly affected me. He said if we weren't willing to do what he had just done, then we weren't cut out for this kind of work. You have to be willing to do what needs to be done to help these people.

I remained confused and somewhat disheartened. I went home and told my wife that despite our investment in my education, I just might not be cut out for this kind of work. I was pretty sure I wouldn't be able to smack people. Even if it was helpful.

That's the interesting part. I never questioned whether what the professor did was right or wrong. He was the professor and I assumed he was doing the right thing. I assumed that's what I would need to do if I wanted to be successful, and help others. I certainly don't believe that anymore.

So here's the lesson I eventually learned. Be careful what you believe, and what you do. All the information or direction you get will not be correct. Sort through it with your heart as well as your head. Don't follow any theory, philosophy, or person, blindly.

### **Lester Alan Robertson**

Despite having lived in a children's home and a group home for years, I had very little education, training, or professional experience. Unfortunately, not very different than most care providers. So I decided to enter a master's program in special education to learn the tricks of the trade and improve my ability to help people. Since I also wasn't earning enough money to support my family, there was the added incentive that with more education I might actually be able to earn a reasonable living.

So I enrolled in the program and found a paid internship in a new program that was being developed for formerly institutionalized adults with developmental disabilities. I was hired to be the program manager, which

meant I was in charge of developing the "behavior" programs for the six people who lived there. One of the clients who was to live there had a profound, I mean PROFOUND, impact on how I have come to think about providing treatment. Thank God I was young enough to learn the lessons he set out to teach me!

His story is not so different than many of the stories of people we served at that time. He had "behavior problems". Because of his behavior problems, he had been shunted back and forth between the state hospital, for people with mental illness, and the state institution for the developmentally disabled, for many years. Prior to coming into our community-based program, he was in the state hospital, and had spent a significant amount of time in isolation due to the behaviors he presented at the hospital.

When he came to us we had the predictable "honeymoon" period that people talk about. It was always a stretch for me to think about it as a honeymoon, as I had actually been on one a few years earlier, and didn't see any similarities between the two. When I first heard the term used, I laughed out loud, as I thought it was a joke. My colleagues looked at me with surprise, and asked if I didn't believe in the honeymoon period. I quickly regained my composure and nodded knowingly that I too understood that reasonable behavior could be dismissed as a honeymoon.

So after a few weeks of fairly "good" behavior, we began to have some difficulties with him. I remember one of the first "interventions" I developed as program manager. The program I was enrolled in was very "behavioral" and there were interventions that were used to correct these behaviors. I remember my first class with our main professor. He told us that we would study the available literature and create binders full of effective interventions that we could then use with clients to "help" them with their behavior. Lester soon taught me it just wasn't that simple.

Lester would often go in and out of the house and leave the door open. Not terrible, but something we could work on with him. So I searched my

binder and found an "overcorrection procedure" I thought might be useful. It's simple enough to do. If you don't do something correctly, like close the door when you go in or out, then you have to go and close the door numerous times, to "overcorrect" for your lack of door closing behavior. It is a simple contingency, or consequence, for the behavior that should make it more likely that you will close the door. I wrote up the "program", handed it out to staff, created a data collection system, and started to hassle, I mean treat, Lester.

I think maybe Lester didn't believe in overcorrection, because when we asked him to go back and close the door five times when he left it open he would get quite annoyed. I remember one particular time when I "applied the procedure" Lester took to slamming the door pretty hard. Actually, he overcorrected the overcorrection, and slammed it quite a few more times than five. I suggested that if he didn't do it correctly I might have to do a "hand over hand" procedure in which I would guide him through it manually until he got it right. He didn't appreciate my further attempt to "help" him. He slammed the door even harder.

Then my mother came for a visit. I brought her to the home to meet everyone and in the midst of her visit, Lester walked out and left the door open. I quickly opened my binder and got out my data tracking sheet to show her how well researched and scientific our program was. I explained what I was about to do and attempted to give her some insight about the "overcorrection procedure". Then I intervened with Lester and attempted the overcorrection procedure. More door slamming. My mother looked at me with an unscientific smile, and asked if we had ever simply talked to him about closing the door, and reminded him if he forgot.

How mommy-like. How unscientific. Since our scientific approach wasn't actually working very well, I decided to humor her and give it a shot. It actually worked much better. Lester began closing the door on his own and he always closed the door if he got a gentle reminder. He also quit slamming the door. Hmm... I could not find that procedure anywhere in the binder.

So time went on and after a while Lester became less and less compliant to our requests. He also began to act out and do things like knock things off the table for no apparent reason. Nothing terrible yet, but clearly it was time to turn up our interventions before things really got out of control. Soon we introduced a short time out for non-compliance or acting out behavior. When the short time out lost its' effectiveness we increased it to five minutes. Then ten. Then we added a task as a consequence if he wouldn't do his time out "appropriately".

Our willingness to escalate the situation seemed to have no bounds until Lester began to smear feces around the home and all over himself. Then we were really challenged to go to the literature and see what kind of intervention we could devise to control that behavior. So late one night, with our binders spread about before us, we searched our articles for a solution. Thanks to a significant contribution of a red Italian beverage, we were forced to face the reality of the situation, and admit we didn't know what we were doing. We decided that for the time being we would back off for a few weeks, and do nothing, until we could find a suitable intervention.

We talked with staff and our response to the fecal decorating would be to clean him up, get him fresh clothes, and go on with the day without any other consequences. Clearly, we would just do this until we could devise a more appropriate intervention. Then the worst possible thing happened, especially to someone who was investing heavily in science and school to be better able to help people. The smearing stopped. Stopped altogether. Very unscientific and disappointing. Doing nothing seemed to work better than anything else we could find in the research literature.

Of course I can't really say we did nothing. We were kind. We cleaned him up without comment or criticism. We went on with our day without the loss of anything. Sounds like Mommy behavior. Hmmm... I began wondering if the educational path I had chosen was really a path to helping people. Perhaps this behavior change business was much more complicated than I was led to believe. Maybe there was more to human behavior than just consequences. After my experiences with Lester, and

other willing teachers, I switched my educational program to developmental psychology.

### **Summary**

Ultimately, there are some simple and critical things for us to do when helping and guiding others. Here's my advice: whatever approach you adopt, behavioral, psychoanalytic, developmental, etc., when you are trying to help someone change their behavior, **be the person you want them to become**. No matter what you are told, always model for them the behavior you want them to have. Model kindness, integrity, loyalty, non-violence, helpfulness, compassion, and non-judgmentalness. Don't bully, control, use physical interventions, restrain, take things away, be mean, thoughtless, reactionary, or unsympathetic. Then you will be, and see, the change you want to see in the world.

Be the change. Good luck out there.



# Treatment With The Brain in Mind

The teacher entered the room a few minutes late for class. He had been on bus duty, a bus was late, and that resulted in him being delayed. The students, however, were on time. Rather than settle down for class, they settled down to social discourse, as high school students are likely to do.

The teacher arrived and asked the students to settle down and to get their books out. Most students were moving in that direction, with the exception of Seth. He was still talking to another student. The teacher's patience was growing thin, and he confronted Seth.

"Quiet down and get out your book, now." He said. It seemed like he took Seth by surprise and Seth stopped talking but did not move along. He looked shocked, put up his hood, and didn't respond. (Hoodies are a popular form of escape these days, although "hoodie freeze" looks a lot like non-compliance.)

This is not quite the response that the teacher was after, so he stayed on Seth and told him that if he didn't get his book out, he would have to suffer the consequences. (Apparently the teacher was not up on his neuroscience. He didn't realize that the limbic system, which had taken control of Seth's behavior, doesn't respond to future consequences, at least not positively. It does, however, respond to threat, which explains the rest of the story.) Still no movement. So then the teacher approached Seth and raised his voice.

"Take that hood off, and get your book out!" He said, sternly. Still no response. While Seth remained in a freeze, the teacher's arousal level escalated.

"Take that hood off now!" He demanded. That's when Seth attempted to escape and headed for the door. "Where do you think you're going?" The teacher asked.

"The f..k out of here." replied Seth, in as courteous a voice as his limbic system would allow.

That's when the teacher stepped in front of Seth and blocked his way out of the room. Seth had a full head of steam worked up, and when the teacher stepped in front of him, they bumped chests, as great apes will do. The teacher did not appreciate his part in the re-enactment of Tarzan, and he had recently been trained in restraint. So he grabbed Seth and put him on the floor. Then he called for help and other staff jumped in to keep Seth "safe," and on the ground, restrained.

Seem like an unlikely event? Not really. This type of scenario happens every day in schools and programs all across the country. Why? The reason this occurs so often is simply because people don't understand the way the brain functions and how it rules behavior. When the limbic system is activated, in this case by escalating threat, it shuts down the frontal lobes, or thinking system, and reacts with all the limited powers God gave it: freeze, flight, and fight behavior.

Powerful, but limited.

If authority figures recognize and respect the way the limbic system functions, then they allow freeze and flight in order to avoid fight. Eventually the frozen will defrost and the escapees will return. That's when important lessons can be learned, when the frontal lobes are back online and the person can think again. That's when it's time to talk about what happened, and what everyone can do to avoid a replay in the future.

Let's look at what happened from the perspective of the major players, Seth and the teacher. While most of the students did not overreact to the teacher, Seth did. Seth's brain and body overreacted to the confrontation. From a neuroscience perspective we could say that

Seth's body generated a feeling, a somatic marker in his body, that informed his limbic system and brain that he was in danger. That feeling was generated unconsciously, biased his perspective, disrupted his memory, and diminished his capacity to reason. In that moment, Seth was transported, without his knowledge or awareness, to past experiences of confrontation, and he froze.

Why did Seth produce this unconscious feeling when the other students did not? Undoubtedly, it has to do with his past experiences of confrontation. Seth just replayed for the teacher, based on his experiences, what happens when confronted. His experiences told him what is likely to happen when people confront you. Danger.

We know that, based on Seth's experiences, confrontation equals danger. His body stores that information, and then with the right set of circumstances, informs his brain that danger is coming. His brain selects one of the only three behaviors available to it when danger is involved: freeze, flight, and fight, in that order. (This order is important because it will help us figure out how to respond to these behaviors.) As each one of these behaviors is interrupted or challenged, the escalation cycle continues until the whole process ends in violence. Had the teacher seen this developing, and understood that hoodies can mean freeze as well as non-compliance, the problem might have ended there.

Let's examine this episode from the perspective of the teacher and his goals. Clearly, he wanted to re-establish order in his room and get the lesson going. However, by confronting Seth, he had gotten the opposite result. Let's also be clear that the "tool" he was using to re-establish order was intimidation, not necessarily the best way to de-escalate people. The teacher's behavior was driven by his rising escalation and dysregulation, not his frontal lobes.

In an attempt to establish order, he had created further chaos. Once the violence began, we would assume that everyone who had been compliant with the teachers requests, by quieting down and getting out their books,

would also have had their limbic systems activated and their ability to concentrate and learn diminished.

What would have happened if the teacher had respected Seth's freeze, hadn't confronted him, and moved on with the rest of the class? ***Although the teacher may have been worried that this would have been a step toward establishing a state of total anarchy in the classroom,*** most of the other students probably would not have even noticed. The order the teacher desired could have been re-established and the teaching begun if he simply moved on with his goal and left Seth to defrost. (This is a good example of Stage 1 treatment. More about this later.)

Now, if the teacher were really good at helping young people learn to self-regulate, the conversation with the class, probably the next day, would go something like this: He would first discuss his part in the "unfortunate incident," and not talk about Seth's "behavioral outburst." Essentially, he would take what might ordinarily be labeled a behavior problem and examine it in the larger social, emotional, and behavioral context. He would admit that when he got to class he was harried because of the bus delay, which of course everyone would already know. If he were really good, he would discuss his arousal's role in the problem and its effect on both his limbic system and frontal lobes. (This is Stage 2/3 treatment, and possible once everyone's arousal was under reasonable control, and their frontal lobes were back online.)

Then the teacher would discuss the situation and admit that he had not realized that Seth was frozen. If he had understood the state of Seth's nervous system, he would have left him alone and not continued to push. This would amount to an excellent science lesson. That would lay the groundwork for a discussion about what they could all do in the future to avoid a replay of the day before. It would most likely involve both Seth and the teacher identifying and accepting the state of their nervous systems, increased self-awareness on everyone's part, and a pre-planned escape plan should Seth (or the teacher) need it. With all that work done, and everyone

taking responsibility for their part in the problem, it would be a good time for apologies, both from Seth and the teacher.

All this would have led to a tighter class community, a better learning environment, and fewer "behavioral problems" in the future. Amen.

Unfortunately, even in programs for severely emotionally disturbed and traumatized youth, treatment is not delivered with "the brain in mind." What follows is an explanation of brain function and how the systems and functions of the brain help organize us internally, and determine our behavior. If caregivers charged with helping others with their behavior view that behavior through the lens of the brain, and how it drives behavior, people's behavior would soon make much more sense. Our treatment would also be more effective.

The next two sections deal with the multiple systems of the brain. When we think and talk about the brain, we are generally talking about the frontal lobes, the thinking part of the brain. Like the U.S. Congress, the brain is bipartisan. It has two systems, the much-admired frontal lobes, and the often undervalued, sometimes denigrated, limbic system.

Psychological treatment is generally aimed at the frontal lobes, mediated through language, and designed to bring the unconscious to mind. This is supposed to help people become more self-aware. This is a "reasonable" approach to treatment. It is based on the idea that the person is operating from a neurological and physiological position where his frontal lobes are operating, memory is intact, and language systems are working. In other words, the "reasoning" system is turned on. (It is what we will later describe as Stage 2 or Stage 3 treatment.)

When the limbic system is running the show, it shuts down the frontal lobes and the language center of the brain and interferes with memory. It won't allow the frontal lobes to get involved. The frontal lobes are, therefore, unavailable for the treatment described above. You can't talk or understand your way out of limbic system-driven problems because they are physiologically based. The limbic system is not designed for discussion, but

for mobilization and protection. This takes the form of freeze, flight, and fight.

Stage 1 treatment is aimed at the physiological and neurological organization of behavior driven, primarily, by the limbic system. The treatments are not language-based, but rather involve the understanding and management of the neural platforms from which spring freeze, flight, and fight behaviors. The aim is to manage the body and behavior when the person is escalated, and to load new and more productive behaviors into procedural memory, so these responses can be available to the person in place of less desirable behaviors. Stage 1 treatment is the prerequisite for Stage 2 and 3 treatments. When escalated, we de-escalate first and then talk. More often than not, unfortunately, people who are dysregulated do not receive "treatment with the brain in mind."

# Human Behavior & the Bipartisan Brain



If you want to understand and change human behavior you have to have some rudimentary understanding of how human behavior actually comes about. One of the most important players in human behavior is the brain. (We are really talking about the brain, the body, and the central nervous system, but for simplicity sake, let's call it the brain.) One of the brain's many jobs is to capture a person's experience and adapt itself physiologically to what has happened to the person. In other words, it is the job of the brain to be prepared for what has already happened. The brain has to be prepared, and prepare the body, in case it happens again.

So, if the person has been neglected or abused, never mind mugged (aka: restrained), the emotional system may become hyper-aroused, hyper-vigilant, and hyper-reactive. The person's arousal, or level of activation, will

remain high, so that it can keep a close watch on what is going on around it. It is prepared to react quickly should a dangerous situation, or something perceived as dangerous, present itself. That will prepare the person to react quickly when the cues are presented that abuse, neglect, or restraint are about to happen again. A brain with this type of experience will only be interested in surviving in the moment, and will have no ability to anticipate future consequences, or use them in the moment to decide how best to behave. (Obviously when the brain, body, and central nervous system are organized this way they are not available for academics and learning.)

Ok, so back to the brain systems that drive behavior. We have a bi-partisan brain. It has two principal players, the emotional system (limbic system), and the thinking system (frontal lobes). Unlike the Democrats and Republicans, the two parts should *work together* to make the best decisions about what behavior a person should emit during a particular situation. However, much like our bipartisan politicians, there is often a built in imbalance of power. The limbic system is master.

It can take charge of the body, the brain, and our behavior very quickly. Surprisingly, when we talk about the brain, we are almost always talking about the frontal lobes, when the powerhouse is really the limbic system. It is also the system most likely to cause the kinds of behavior just described, as well as most other behaviors that disturb us. It is where freeze, flight, and fight behaviors come from. The built-in imbalance of power can actually become more imbalanced due to experience. The more the person has *experienced* things like danger, neglect, and abuse, the more likely it will be that the limbic system will fire off and take charge of the situation very quickly. Experience plays a powerful role in organizing our brain, our central nervous system, and our behavior.

Here's an example that helps us recognize both the power and the long-term effects of experience on the limbic system. I had a friend who had her home broken into. It was frightening, but not tragic. She was not at her home when the vandals broke in and nothing of any value was taken. There was some minor damage, like juice poured in the cabinets, but nothing



major. Despite the fact that she wasn't there and was never in any real danger, she had a hard time with it and refused to be at home without her husband for quite a while. You might say that she was vicariously traumatized. When I say that, I mean traumatized by something that didn't happen directly to her. (Makes you think about what happens when kids witness restraint in school, huh?)

After a few months she started to feel safe again. After a while she was comfortable being at home alone. The break in was eventually "forgotten" or at least no longer in the forefront of her conscious mind. Her unconscious was still fully loaded in case it happened again. And of course it did. She came home about six months after the incident. Her husband was not at home. The front screen door was open and blowing around. That was enough to set off a full blown limbic response. The hair on her neck stood on end and she began to cry. She tried to approach the house but she froze, and couldn't go any closer. She walked away from the house, got back in her car, and left the area (flight). She called her husband who hurried home. The husband arrived and checked the house. All was well. No vandals, no danger, no break in. Just a limbic response, to a single cue, or trigger: the swinging screen door.

If we had attempted to help her with her behavior, the freeze, and flight would not have made much sense to us unless we knew the rest of the story. Fortunately, in her case, she had insight, and was able to talk about it. More often than not, people we are trying to help with their behavior have similar experiences, but don't have either the insight or words to express their neural response. They can't identify the triggers, we don't look for them, we miss the story, and we intervene with consequences for their behavior. Unfortunate.

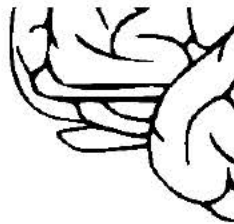
The rational and emotional systems were installed in the brain for very different purposes and for very different situations. In order to provide reasonable treatment, we must be able to recognize which part of the brain is driving the behavior because that is what determines which interventions we use. Behavior driven by the frontal lobes will respond to

thought and reason. Behavior driven by the limbic system will respond to de-escalation techniques. (Much more on both of these in the treatment section.)

So let's take a look at how these two systems work and how they take control of our behavior.

## The Brain's Alarm System

### The Emotional Brain



The emotional system developed for very different reasons than the frontal lobes, and operates in a very different way. It is not there to think, but rather to feel. It is the seat of the emotions. Emotions are impulses to act. They are "action plans" built right into the body to respond to situations where taking the time to think might prove fatal.

**Best use:** Lions and Tigers and Bears. Oh my.

**Worst use:** Dealing with angry people.

Behaviors originating in the emotional system are about twice as fast as the behaviors from the frontal lobes. If the emotional system is in

charge, it will have the body emit a behavior before the frontal lobes can think their way through the situation. The behaviors available for the emotional system for immediate survival are limited to freeze, flight, and fight. That's it, and in that order.

The emotional system is not concerned with the future. It is too occupied with saving us in the present. It doesn't consider the long-term consequences of our actions. It wasn't made for that. It overrides impulse control, shuts down problem solving, and does not respond to motivational strategies. It does not listen and doesn't make informed choices. It actually shuts down our ability to think, abandons the future, gets overwhelmed by the past, and acts in the present to preserve us. *Even if we aren't in danger!*

So let's look at a previous example. We had a young person who was talking when he should have been listening. The teacher confronted the student and rather than the frontal lobes lighting up, the limbic system got kicked on. Later, we'll tackle why this person's limbic system might have kicked on while other students were able to access and maintain frontal lobe control. (My guess is that in the incident between Seth and his teacher something very similar happened to the woman whose house was broken into. The cue in her situation was the swinging front screen door. In Seth's case the cue (confrontation), led to a limbic response, which without the rest of the story, just looked like non-compliance.)

One of the first things that the limbic system did was shut down the frontal lobes and the language centers of the brain. Seth was no longer able to hear what was said and wouldn't have been able to process the language even if he heard it. At the same time came a surge of adrenaline, which drove his blood into his large muscles, shut down his immune system, and prepared to evacuate his body of any waste material, all in preparation for freeze, flight, or fight. So Seth could no longer hear what was being said and his body prepared itself to act. I will point out for the first of many times that the physiological reactions that prepared Seth to act, and re-act, were all unconscious. He was carried away by his body and central nervous

system, in its attempt to help him survive a situation that it experienced as arousing and dangerous.

There was neither time nor ability for Seth to accurately evaluate what he needed to do in the situation to get what he wanted or needed. He clearly didn't want to end up on the floor with staff on top of him. (Just a side bar on experience: our best guess is that Seth has been restrained at least hundreds of times. That experience no doubt informed him in this situation what was to come. And then his experience in this situation confirmed it.) Before his frontal lobes could even begin to think his way through the situation his body acted. He temporarily froze, but freezing also depends on experience. If the person has been allowed to freeze in the past then that might be the end of it. If he is left alone to defrost then his frontal lobes will *eventually* come back online and he might be able to "make a good choice," when his frontal lobes are working again.

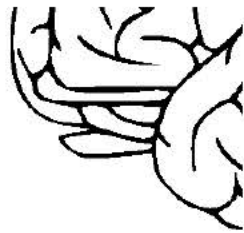
If he is badgered or forced to respond, then his body will up the ante and look to escape (flight). He might try to walk away, or go somewhere to calm down. If his flight is interrupted, if someone stands in front of him to block his way, if he is threatened, or just feels threatened, then his body is left with a single response: fight. That might take the form of a verbal outburst, a thrown chair, or something worse. If he feels threatened anywhere in the process, his brain will assume that neither freeze nor flight will be helpful responses, so his body will most likely escalate to fight.

Seth never had a chance. His brain was primed to respond to confrontation as threat. His emotional system took control of a situation it deemed dangerous and used the responses it had available to survive. Unfortunately, it probably just made the situation worse. He tried to freeze, but it was interrupted. He tried flight, but that was also interrupted. He ended up where we never want to force people to go: fight. If the teacher had understood what was happening in terms of Seth's brain, he could have helped Seth behave in a different way and foster a different outcome.

Our limbic education begins with a series of very powerful lessons. The rarely thought of limbic system has tremendous power. It takes charge quickly and escalates in response to escalating threat which it interprets as danger. Talking, demanding, threatening, or providing consequences just make things physiologically and behaviorally worse.

# The Thinking System of the Brain

## The Rational Brain



The frontal lobes are there so that we can “think” our way through situations. The frontal lobes take about twice as much time to do their work as the limbic system does. They are really interested in the effect of behavior we emit now, on our future welfare. It is where impulse control, motivation, and problem solving are located. It can be accessed through language. It is capable of choices. When the frontal lobes are operating the person can “think” about what they can and should do in the present, to get what they want *in the future*. They also help people avoid what they don't want. They can make sense of consequences, keep them in mind, and use them as a guide.

**Best use:** Having friends, being successful at school and work, planning for the future.

**Worst use:** Getting away from alligators.

Let's again use the previous example of the student talking in class, and run the response through the frontal lobes instead of the limbic system. Most of the students, (beside Seth) were able to keep their frontal lobes firing and their limbic systems at bay. When the frontal lobes are operating, and you ask a student to stop talking, he will hear what you are

saying. Then impulse control can take over and stop him, temporarily, from responding. He will evaluate your request, decide what he wants out of the situation, and what he wants to avoid. Then the frontal lobes will review the past situations they have found themselves in and decide how best to get to their goal. This is critical for us to remember, because the blueprint for the future is the past. The blueprint from the past for Seth was very different than it was for the rest of the students.

They will use information not only about the request, about the person making the request, the environment the request is being made in, how successful they have been in this type of situation in the past, the entire social situation, and much more. Then they will make a "choice", and emit a behavior. Hopefully the behavior will be an apology, in the right tone, followed by socially appropriate non-verbal behavior, and no verbal behavior. It was for most of the students. Not Seth, however.

Pretty complicated, huh? The correct response was based on frontal lobes that have had good experiences in the world, and that are intact and function well. The positive response was also based on the fact that the frontal lobes did their work without any interference from the limbic or emotional system. And it's important to remember that all of this brain activity is mostly unconscious and generally not something any of us are even aware of as it happens!

So you can see how critical it is for staff to understand brain function if they hope to help others improve how they behave. Being able to understand which part of the brain is driving the behavior leads to supportive and positive interventions. If the limbic system is driving the behavior then we need to de-escalate. The non-verbal strategies or "Tools", or the verbal strategies or **MANAGE** approach, can be used to de-escalate. (Stage 1 treatment)



The de-escalation tools include managing the environment, arousal regulating strategies, engagement and disengagement strategies, distraction and redirection, and limit setting. These are “non-verbal” strategies, that is, things that you do. They often require language to be delivered but are not primarily language based.

## Building Emotional Alliances

- Step 1: Manage Yourself, Model Reasonable Behavior, and Make a Plan
- Step 2: Agree, Acknowledge, and Listen
- Step 3: Navigate the Thoughts and Perceptions
- Step 4: Aid in Generating Solutions and Solving the Problem
- Step 5: Generate Reasonable Consequences and Take Personal Responsibility
- Step 6: End by Repairing Relationships

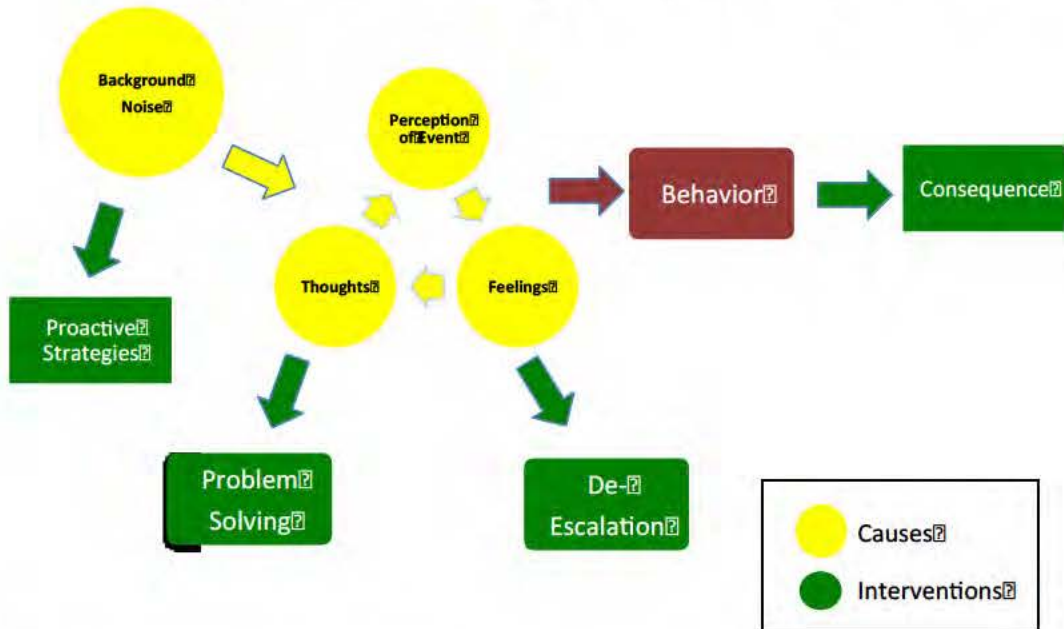
Verbal de-escalation is based on “Building Emotional Alliances” or the MANAGE approach. Building Emotional Alliances creates long-term attachments and trust, at an emotional level.

This is a stepwise approach to de-escalation that includes a blend of de-escalation and reasonable approaches. It begins with strategies that promote regulation, followed by strategies that promote reasoning. It is a developmental approach to problem solving and pro-social behavior. (Much more about both of these later in the treatment section.)



If we successfully de-escalate, then we can re-engage and help people think. If the frontal lobes are driving the behavior then we can talk and reason, and help the person “Map” (evaluate and understand) their behavior, and subsequently make good choices (Stage 2 and 3 treatment).

## The Map of Strategic Self Regulation



The “Map” is a map of human behavior. It begins with the causes of human behavior which include perceptions, thoughts, and feelings, and the “background noise” (or experience) that informs them (yellow). Those are the factors that generate behavior (red). The areas for treatment or intervention follow in the green and include consequences that follow the behavior, de-escalation for feeling driven behaviors, problem solving for rational behavior, and pro-active strategies for the background noise or historical, experiential problems.

The need for a model of human behavior that includes ways to deal with both of these systems was brought home to me recently. I asked someone what model of treatment they were using and they kind of just smiled and said that they didn't really use a model, and then they told me this story. The man was a special educator with a great deal of experience and common sense. Without knowing it, and based on a great deal of

personal experience he was using both the "Tools" and the MANAGE approach to avoid violence and restraint, and help a student de-escalate. On the rational end he helped the student identify the problem that drove the behavior, resolve it, and make amends and plan for the future. Wow.

He was called because there was a crisis in one of the classrooms. He arrived and found an often challenging student close to losing control in a classroom full of students. The first thing he did was manage the environment (One of the "Tools".) He asked the other students and the teacher to leave the room. He took a social situation, in which the student was surrounded by peers, and turned it into an interpersonal situation, between the student and himself.

When the teacher and other students were gone he took a seat, assuming a non-threatening position (another engagement strategy). He made his position clear through his body language. There would be no violence. He noticed a change in the students state. He began to de-escalate. Then he finished the student off with a little humor (one of the arousal regulation strategies in the "tools".) He told the student that he was 18, and that he (the special educator) was 48. He said if there was a restraint that the student would be playing basketball that afternoon, and that he would be limping around for weeks. There had to be a better way.

The special educators goal was to de-escalate the student (MANAGE step 1, manage yourself and set a goal.) While the special educator did his work the student continued his verbal outbursts. The special educator did not respond to them in a confrontational manner but rather listened and acknowledged his anger and emotions (MANAGE step 2, agree and acknowledge)

The student responded to the interventions the special educator used, and his reasoning system came back on board. They were able to talk about what had happened before the behavior (MANAGE step 3, Navigate thoughts), and identify the problem that was driving the behavior (MANAGE step 4, problem identification and resolution). They were then able to talk

solutions and what they could do about it. They did not yet focus on the threatening behavior the student had produced.

Finally it was time to take personal responsibility for what had happened. The special educator talked with the student about how he made others feel and what he needed to do to make repairs. He also talked with him about how to proceed in a more productive way in the future (MANAGE steps 5 & 6). Although the special educator was clearly skilled at intervening in emergencies, he would have a hard time describing for others how to intervene in this kind of situation. His approach may have appeared haphazard and idiosyncratic from the outside. However it was not only successful but actually quite organized. Without the model his success would be hard to replicate for others. With a model or framework within which to think about what he had done, and why he had been so effective, he could teach others to respond in equally effective ways. The model that drives our interventions is a model of the brain and it's multiple systems that drive behavior. Our interventions are organized to respond to the system, emotional or rational, that is driving the behavior.

Back to the brain. In an ideal world these systems, both emotional and thinking, are intact, work correctly, and have had good experiences in the world. If that is the case, they will work together to emit the most productive behavior for the person. These two systems will work together to warn the person when they are in danger, and help them problem solve when that will be effective. Their perceptions will mostly "fit" ours. They will think that the school teacher is upset. They won't think they are in danger. However if these two systems didn't come into the world intact, or have had bad experiences once they have gotten here, then they will produce behavior that we might prefer not to see.

Caretakers response can help determine the type of behavior we see. The good news for caretakers is that if we are paying attention, and know which system is driving the behavior, then we can respond in ways that help the person produce better behavior. If we threaten when we should de-escalate, or attempt to reason when the brain is not available for that

function, or refuse to reason and negotiate when the brain is available, we will drive behavior we would rather not see. On the other hand if we reason and negotiate when the person is available, and refuse to threaten but rather allow them the time to freeze, and the space to flee, we will help them produce better behavior.

## Potato Chips and Bicycles

Here's an example of doing it right and doing it wrong. This is an interesting case because both of these examples occurred with the same young man, in the same program, but with different caregivers and very different results. It is interesting to think about why such different responses would occur in the same program as one of the big tenets of any program, and certainly any behavioral program, is consistency. Think about this as you read the examples and try to speculate on why staff would have reacted so differently.

Let me give you some background first. This young man was in a residential program for emotionally disturbed "acting out" children. He had a very difficult traumatic past and was taken into custody when he was quite young as a result of ongoing neglect, and physical and sexual abuse. Among the multiple diagnosis that he had were ADHD, Reactive Attachment Disorder, Emotional Disturbance, and of course Oppositional Defiant and Conduct Disorder. I say of course to the last two as anybody who acts out gets these. Oppositional Defiant Disorder means you are a pain in the neck. Conduct disorder is pain in the neck, with hitting! No matter the diagnosis, primary symptom we see in behavior problems is dysregulation. Dysregulation involves speedy escalation, high levels of arousal, and freeze, flight, fight behaviors. This describes Joe well.

When I first met Joe I went out to his residential program. When I arrived he was quick to greet me and wanted to take me outside to watch him play soccer. He was dressed appropriately for a 10 year old in shorts, a tee shirt, and cowboy boots. We went out and I watched him kick the ball around by himself and after a while, when he decided I was ok, he took me for a tour of the place. He showed me his room, which had no furniture other than a bed, and had a fairly significant pile of clothes and toys in the corner. It didn't seem like much of a home, I thought.

He then took me down to the "game room", which was more of a den than a game room since there weren't any games in there. It seemed like an

out of the way place for the kids or staff to go to have some quiet time. It seemed like that for just a minute until we heard someone screaming. Really screaming. Like he was being attacked screaming. Joe and I looked across the hall into another room where a student in the program was being restrained, and screaming for all he was worth.

I asked Joe about it and he said the room was called the "quiet room". Hardly. Anyway when we looked across the hallway the door was abruptly shut. That left the little boy and the staff person in there to finish up whatever was under way. Joe had very little reaction, at least that I could see. On the other hand I found my heart racing and I had a great impulse to run across the hall and dive into the fray. I was able to muster some impulse control and stayed put. It did make me wonder what adjustments Joe's nervous system must have made in order to be so non-reactive, or appear so non-reactive, to this violence.

The reason I was visiting Joe was to take him out of the residential program and find him a placement in the community. In order to do so, I had to get to know Joe and try to find a good match for him in terms of foster parent(s). It was also important for Joe and I to get to know each other so that when he came out of the residential program he would have someone he could already rely upon and trust, and wouldn't feel all alone, scared, and not sure what to expect. We visited every week for a while and got to know and feel comfortable with each other. Then I brought potential foster parents with me so that I could see them together, and Joe would get to know them, as well as me.

On one of our outings we brought Dan along. He was a nice man and seemed like a good potential foster parent for Joe. We went out to lunch and I watched their brains interact. Joe's brain moved at lightning speed. Joe said he wanted a hamburger, wanted to get a toy later, had a toy he wanted to show Dan, and wanted Dan to play soccer with him after lunch. All in one sentence. Dan's brain was a lot slower than Joe's. At the end of that string of thoughts Dan looked puzzled and asked Joe what it was he wanted for lunch, having missed most of the rest of it. After watching them

interact for some period of time I realized that perhaps this wasn't such a good match.

So here's the bad example. We had a nice time, Dan left, and we headed back to the residential program. After lunch and some soccer Joe wanted some down time so we headed for his room and his Gameboy. On the way we passed an unguarded bowl of potato chips which was on the table. As Joe passed by he grabbed a small handful of chips, swallowed them, and without missing a step headed straight for his room and his Gameboy.

A young woman who was a staff member saw Joe take the chips and stopped him. She asked him if he had taken some chips without asking. With nothing but the residue of the chips on his tongue and the Gameboy on his mind, Joe said he had, and then continued to walk toward his room. She stopped him again, and told him that because he had taken the unguarded chips without asking he wouldn't be getting a snack tomorrow. It seemed a little crazy to me. No it seemed a lot crazy to me. 10 year olds (and the rest of us) don't pass unguarded bowls of potato chips without sampling. Perhaps the staff person had set a trap, and Joe had been caught in it.

If you recall, one of the diagnosis that Joe has is ADHD. People with ADHD live in the moment and don't anticipate the future very well. So if you were going to use a consequence with Joe then it should have been in the moment. If you attempt to deliver a consequence to Joe tomorrow for what happened today you would just be asking for trouble. What would you expect to happen tomorrow when everyone else has their snack and Joe is denied his? Will he be able to relate it back to the potato chips today, or will he not be able to make the connection and just explode. My guess is just explode.

Anyway back to today and the potato chips. With no immediate consequence, no anticipation of what will happen tomorrow, and barely any memory of the potato chips, Joe showed no reaction to the punishment and continued to head for his Gameboy. The staff person was not happy about the lack of reaction she had just gotten, or perhaps she had just studied

ADHD, so she decided a more immediate consequence might get his attention. She told Joe that he that he needed to take a 10 minute time out for each chip he had eaten. (By the way, my guess is that although this staff person would probably deny it, her responses were emotional and unconscious.)

At that point I was sure I knew what would happen next. I assumed that like any child his age, when the consequence was put in the moment, and the potato chip was no longer even a lingering memory, he would be struck by the injustice and explode. He didn't. He just took the consequence and went to his room to do the time out. They never even agreed on how many chips he'd had, or how long the time out would be. I guess if you get handed crazy consequences often enough, eventually they come as no surprise. Very sad. When people talk about institutionalized behavior this is what they are talking about.

Now here is the good example. So you remember that after seeing Joe and Dan together I decided that it wasn't a good match. Well, although I never told Joe that Dan was a potential foster parent, Joe got the idea anyway. So when I came in for one of our next visit without Dan, Joe got very upset. He ran into the garage and pushed a bike over, which then knocked down a series of bikes which were all lined up together. Although Joe may have "intended" to push the first bike over he hadn't really intended to knock over all the bikes. Well the young man who was Joe's staff person that day followed Joe into the garage and witnessed the bikes falling over. He followed Joe but didn't chase him, and he never said a word to Joe. When the bikes went over I think Joe was as surprised as anyone, and he sat down on the floor of the garage. The young man got down on Joe's level and sat next to him on the garage floor, and still never said a word. Joe seemed to calm somewhat and started to look around, probably unsure of what would happen next. Time out? Restraint? The quiet room?

The young man made his intentions clear soon enough. He turned to Joe and told him that he knew Joe was disappointed that Dan hadn't come. He then asked Joe if he still wanted to visit with me, and Joe said he did.



Then the young man got up and offered a hand up to Joe. Joe took his hand and got to his feet, still unsure of what would happen next, as the bikes were still scattered about. "Let me give you a hand picking these bikes back up", he said to Joe, and they proceeded to pick up the bikes. Once they had the bikes set up he said thanks to Joe and told him to have a good time with me.

I don't think this young man could have done any better a job with this situation than he did. He didn't over react and allowed Joe an escape. He followed Joe, but again didn't interrupt his escape, and didn't talk to Joe's frontal lobes, since they were switched off anyway. He never directly addressed the "bad behavior", most of which was clearly unintentional. He got down on Joe's level as soon as he could putting himself in the least threatening position he could, and allowed Joe the time he needed to get his arousal back under control. (Great stage 1 work.)

When Joe's frontal lobes began to come back on line and you could see him wondering what was next, the young man helped him identify the feeling that drove the behavior and helped him connect it to the problem, which was that Dan hadn't come. Then he gave Joe some choice and control, which are excellent de-escalation tools, and asked him if he still wanted to visit with me. When Joe replied that he did then he helped Joe to his feet and then for the first time addressed the behavior. He didn't raise his voice, threaten Joe, or make a big deal about the consequence. In fact, he assisted Joe with the consequence. When the bikes were picked back up, Joe gave the young man a hug and hurried over for our time together. (Great Stage 2/3 treatment.)

When you compare the these two situations it should be very clear that if we are concerned about future behavior, that is, using experience to change how Joe might respond in the future, the help and support that Joe got from the young man would likely change what he did in the same circumstance in the future. So if Joe were with that young man, and was disappointed, it would be much more likely that his arousal wouldn't spike as high as it had in this situation, and he would be able to get through the

disappointment without knocking the bikes over. He might need an escape, but I can imagine the escape wouldn't need to be as long and the freeze as deep. This was one excellent intervention.

What about the potato chip intervention. My guess is that if this situation had any impact on Joe it certainly wouldn't be to improve his future behavior. The only lesson I can see that he might have learned was that it really doesn't matter what you do, since what you do is unrelated to what happens to you. Joe didn't understand what he had done wrong or why he had gotten those consequences. He didn't even know exactly what the consequences were. By the way my guess is that this is a lesson that Joe learned early in life. It doesn't matter what you do, bad things will happen.

At the beginning of this story I asked you to speculate about why the approach of two different staff, presumably both following the same game plan, would have such different responses. My speculation is that both staff had modified the play book. Neither seemed to be following the institutional play book too closely. The institutionalized play book was clearly behavioral. When the kids do things you don't want them to, you punish them, when they do things you want them to, you reward them. The young lady followed this plan, and then expanded on it. The young man took a more humane and developmental approach, and delivered it with compassion and empathy.

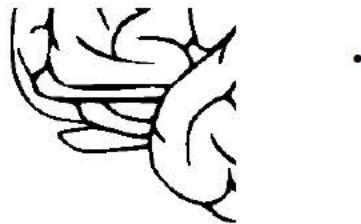
I believe (ok, speculate), that the young man had a wonderful developmental experience in his own life and naturally and unconsciously applied what he had learned to his work. I can speculate that the young lady may have had a similar developmental experience (but maybe not). Whatever her experience she clearly had taken the institutional playbook to heart and followed the company policy: Consequences, delivered by people in control, produce changes in behavior.

As Paul Harvey used to say "and Now, the rest of the story." Dan went on to be a wonderful match for another young man. No surprise. The other young man had extreme anxiety and Dan's slow but sure responses went a long way in helping him remain calm. Joe as you may recall had ADHD,

and a very fast moving brain. He was matched with an adult man who also had ADHD. Their brains worked together at lightning speed. I was privy to many of their conversations and awed at their capacity to communicate on a level I couldn't even follow!

# The Brain as an Anticipation Machine

## The Anticipating Brain



- It mostly anticipates what it has already experienced.
- It gathers information from the perceived (and “remembered”) social and external world as well as conscious and unconscious memory and processes.
- It then decides on, and prepares for, what it believes is coming next.

Talk about a mouthful! Let's break it down and take these statements one at a time. **The brain is an anticipation machine:** It literally has its eyes on the future trying to predict what is coming. It prepares us for what is to come so that we can be ready to deal with whatever it is. It uses the past to predict what is about to happen in the present. So it anticipates whatever it thinks is coming based on experience and similar situations from the past. We could say the brain spends most of its time looking forward to what is coming, but always through the lens of what has already happened. What it will see coming is what it has already experienced. (This also

explains the difference between the Seth and the other students referred to earlier.)

So, the brain is looking forward, through the lens of the past, to identify what is coming and whether it is dangerous or just a problem. Where does it get the information to make that decision? **It gathers information from the perceived (and “remembered”) social and external world as well as conscious and unconscious memory and processes.**

It gathers information from inside and outside simultaneously and mostly unconsciously. The brain gathers information in the present from the external world, that is, from things that are happening around it. It also has many other sources of information that inform it of what is about to happen. The other sources of information are internal, so no one on the outside can see them, and are often unconscious so the person themselves may even be unaware of them. They include memories, in the form of feelings, sensations, and behavior. A person's perception of what is happening is driven as much by the past and experience, as it is by what is happening in the moment.

**It then “decides” on, and prepares for, what it “believes” is coming next.** “Decides” on and “believes” are very rational ways to think about what happens. Since the sources of information include the emotional and memory systems, and other unconscious processes, it may not be a very rational process at all. If it anticipates danger it will turn up the sympathetic nervous system and prepare the body for freeze, flight, and fight. If it anticipates a problem that is resolvable, it will turn up the frontal lobes, exercise some impulse control, and problem solve.

I have once again broken the processes of the brain down into pieces that may sound independent of each other. They are not. This is a very fluid process that occurs seamlessly within these systems. They work together, and behind the scenes, to produce what it decides is the best behavior in the moment.

This reminds me of a story about a young man who nearly got into some trouble. I got involved when I received a crisis call and the caregiver reported to me that the young man had pushed him and run off. In many places and programs that would be considered "bad behavior" and the response would be to stop the young man and attempt to contain him or keep him in the residence, maybe even restrain him. In many places this is where the story would end. The young man behaved badly, so he should suffer the consequences.

This is really just where the story begins. The story did not present itself, it required an investigation. The caregiver reported that when things got escalated he had let the young man go, and allowed him an escape. He did not follow him as he knew that this might have been interpreted by the young man as an attempt to interrupt his flight. So far so good. We knew that he would come back when he had a chance to cool down, so we decided to just wait for him to return. Interestingly enough, we looked forward toward what he might do, by looking backward to see what he has done. We had plenty of experience with him and knew when he walked away, he would return when he calmed down.

We had a very brief report from staff that indicates something happened. The something for the staff person was pushing. The substance of what happened, was what led up to the pushing. The pushing was really only the final event, in a chain of events, that culminated in the push. Something happened that caused the young man to get dysregulated, and eventually need as escape. Finding out that information was critical. The something was clearly some subjective experience that occurred in his mind and body that we weren't privy to. That's where the answer lied. (We won't spell this out right now but this is actually the mapping process, involving helping the person to investigate their perceptions, thoughts, and feelings of the events, as well as the background noise, or previous experience, that inform them of what is about to happen.)

True to form Jr. returned when he cooled down. We got together the next morning to talk about what had happened the day before. We began

our discussion with the fact that he was not in trouble. I asked him why he wasn't in trouble and he said because he had walked away. (At that point I really wanted to ask why he had pushed Jim but I knew that would come later and addressing the behavior at this point would have only ended our fact finding mission.)

So we reviewed the events of the day before. He had come home early from his program. When he arrived home he said that his home provider was upset that he was early, so he went to his room to avoid him, and played video games. He was in his room for a while when the home provider came in and "told" him to clean up his room. He said he ignored him and just kept playing his video game (remained frozen). He said a while later the home provider came back and told him if he didn't clean his room he would take his video system away until it was clean. This led to a tennis ball being bounced off the wall for a while, and the home provider calling for help. Jim arrived, attempted to read Jr. the riot act, and Jr. took off.

Clearly what Jr. thought was coming next was trouble. He had gathered information from his environment and filtered it through his experience and come up with danger, violence, and restraint as the inevitable outcome (and in many places he has been this certainly would have been the outcome). The precipitating event was actually coming home early, and the emotional effect Jr. assumed it had on staff, followed very quickly by his own emotional reaction to how he thought they would feel. Remember all of this action was unconscious.

Reading Jr. the "riot act" was not a particularly productive or effective thing to do. In fact it was probably the wrong thing to do in terms of helping him de-escalate and be reasonable. His response to the riot act now, was dependent on his experience and the outcome of the riot act from the past. If Jim had helped him see that some of the unconscious premises of his behavior were false, like it was fine that he came home early, that would have been helpful. Escalating caregiver responses actually confirm the unconscious premise that Jr. was working with, that they were upset.

Walking away was not only the right thing to do, it was probably the only option Jr. had left.

Finally I had to ask the question that intrigued me most. I told Jr. that I was happy he walked away, what a great skill that is, and I added that I just didn't understand why he pushed Jim on the way out. He looked at me in the way that made it clear how obvious the answer to my question was and said, "He stepped in front of me and wouldn't get out of my way. I was just trying to walk away." "Right", I said, "Of course."

Although I believed that Jr. had accurately shared his perceptions, I wasn't sure his perceptions were accurate. I got together with the caregivers, Jim and Lawrence, to review their perceptions. We had our discussion with the "brain in mind". Lawrence was there when Jr. got home. He knew that Jr. was not in the best mood and greeted him but then left him alone. Once we talked he realized that Jr. was in a freeze state and that allowing him an escape to his room had been a good idea. After a while he decided to try to engage him and went in his room. Rather than attempting to distract him and engage him in some mutually enjoyable activity, to free him from his freeze, he decided that he would ask him to clean his room. Lawrence realized that was probably a mistake. Jr. just headed into a deeper freeze.

He left again and gave him some more time. When he returned he asked him to clean his room, but this time added the threat of removing his game system. The threat caused instant escalation. He left again, to the tune of a tennis ball bouncing off the wall, and called Jim to come and talk with Jr. After our discussion, Lawrence could see the reason for the initial arousal, and his role in promoting further escalation. He could also see that his attempts to allow him to de-escalate by disengaging were probably useful. He knew that asking him to clean his room, and the final threat of taking his game system away, had put him over the top.

When Jim arrived he tried to talk Jr. out of his situation. The only problem with that approach was that Jr.'s frontal lobes weren't available.



He couldn't think or process the words that Jim was saying. He just found Jim's words irritating. Jim kept talking and Jr.'s escalation continued. At that point they both raised their voices, each said things they shouldn't have and didn't mean, and Jr. headed for an escape. Jim stepped in front of him, and precipitated the push.

When we review the story, there certainly was anger and misunderstanding, but had it been handled differently there wouldn't have been any "bad behavior". The pushing was actually due to the caregiver not allowing him to walk away, when that was the best thing he could do. It was also clear that the pushing was no isolated event. It came at the end of a series of events which included mistakes by everyone.

There were really two basic problems that emerged when we talked about the situation. The first one was that Jr. used his experiences from the past to help him anticipate what would happen, right from the moment he got home, to the moment he walked away. Lawrence and Jim were using the information from the moment, rather than the past. What emerged from the different data base's, were very different perceptions, and subsequently very different perspectives on the behaviors. Jim and Lawrence were also using his behavior rather than his state to guide their responses. They weren't keeping the brain in mind when they reacted. Had the caregivers used their knowledge of brain function, identified what system was driving Jr's. behavior, and used the de-escalation tools, things would have ended differently.

Just a quick addendum on walking away, flight, or escape, and Jr. When I met Jr. he was a young teenager with as strong a fight response as one could have. I saw him on more than one occasion throw himself at another student without any fear of what might happen. His experience told him strike first and hard and you might walk away. I don't want to even imagine what kinds of experiences he had that taught him this was the way to survive.

Anyway we spent a good many years trying to help him not only see the value of walking away but get it loaded into his procedural memory so that it would be his first move. This required a good deal of work on his part, lots of discussions, and caregivers who could not only help him walk away but not interrupt his flight.

Long before this incident took place I was at the office and a call came in that Jr. had a disagreement with a caregiver, that apparently involved some loud and colorful language, and had walked off. I headed down the road to see if I could find him and a few minutes later I came upon him, sort of slinking along the road. I pulled over and our eyes met. He had the "am I in trouble look on his face". I rolled down the window and said "Congratulations." He just kind of looked at me funny, so I said congratulations again. He came closer and I said, "You did it, you walked away." "Congratulations." That's when confusion and apprehension melted away into a smile. I went on to reinforce the idea that walking away may be the single most important thing to learn in life, which it certainly was for Jr., as the alternative (fight) is certain to bring on serious trouble.

Maybe the most important thing we can do as caregivers is make sure we encourage and allow people to walk away when they need to. A wonderful way to begin might be to model this for them. Another important point is that the blueprint for the future is the past. In this case it wasn't clear to the caregivers how large a role the past was playing in the present. Their actions then conformed to, and confirmed, the old blueprint, rather than creating a new one.. *Be cautious. The blueprint you create will be the plan for the future.*

## Behavioral Treatment and the



## Emotional and Thinking Systems

### The Stage Model

Understanding the function and purpose of the different brain systems is the foundation of the Strategic Self Regulation Program. It guides how we respond to the behaviors we are concerned about and provides a framework for understanding behavior. It dictates how we respond based on the "neural platform" from which the person is operating. The state or stage the person is in, is based on the brain system which is driving the behavior.

The central nervous system is at the heart of our behavioral equation. It explains behaviors that otherwise don't make sense. In fact it puts the central nervous system right at the core of treatment and respects the biological predispositions and developmental experiences the person has had.

The treatment strategies in Strategic Self Regulation Therapy are organized based on the state or stage of the persons body, brain, and central nervous system, in what is called the State or Stage model. A person can be organized neurobehaviorally to be rational or irrational, to think or to feel, to mobilize or to communicate. Treatment is organized to respond to these states with either de-escalation types of interventions or more rational, thoughtful treatments.

It is probably worth taking a minute here and clarifying things with an example. Suppose we have a behavior of concern, like swearing. That certainly can be of concern. Now let's look at that same behavior coming from different neural platforms, or "states". Let's suppose you have a young person who is running, falls, and cuts up his knees, gets quite dysregulated, and swears. Chances are when you intervene you will deal with their emotional state, and knees, and not their choice of words. However, if you are sitting around the dinner table and a young person says, "Pass the f\*#en peas", you will react very differently, and focus on the unacceptable choice of words. Although the behaviors are the same, the neural state from which they emerge are very different, and our response priorities are based on their state, not their behavior.

The stage the person is in refers to the predominant state of their nervous system. A person is Stage I if they are often dysregulated and engaged in freeze, flight, or fight behaviors. Stage I treatment is concentrated on de-escalation, emotional skill building, creating escape plans, and developing self-soothing activities. A Stage II person is able to manage their feeling states most of the time, but is missing basic skills. Stage II treatment involves building skills in the realm of social, emotional, cognitive, perceptual, and behavioral domains. It also involves teaching and effectively using communication, negotiation, and problem solving skills. The goal of Stage III treatment is integration. Treatment involves sharing subjective experience, negotiating reality through story telling, and ultimately rehabilitating the self.

The stage or state model helps us prioritize treatments, by the state of the nervous system. However at any given point the person will be getting treatments from all stages. The model sets priorities but even if a person is Stage I , and we are focused on de-escalation and calming techniques, there will be periods when the person's frontal lobes and reasoning system will be engaged and the work of skill building and integration will continue. Stage treatment means that the focus and priority is on a particular stage, even while other treatments are being delivered.

One of the major difference in this approach is the psycho-educational component. All brains have the same basic wiring scheme. The behaviors they drive are exactly the same. What's different is because of a combination of biological and experiential factors the alarm system of the brain may get turned on by very different things (AKA triggers) in people who become dysregulated quickly.

The frontal lobes also have experiences. Those experiences inform the frontal lobes about the meaning of what is currently happening. They may have learned things that are not particularly productive for them. For example, they may have learned that the best way to deal with things like conflict, are disengagement, rather than reasoning and problem solving. (Dealing with these kinds of kinds of "cognitive models" or captured experiences are the work of Stage 2 & 3 treatment.)

Unfortunately this is rarely the message that has been delivered to people who are struggling and are emotionally and behaviorally dysregulated. I recently asked a person who has some pretty extreme acting out behavior why it is that she behaves that way. She quickly responded that she does it for attention and because she likes to manipulate people. (Undoubtedly exactly what she has been told). She believed the explanation that she was given, I did not. (We'll get into the brain in more depth in a bit and that will provide a much better explanation for her behavior than either attention seeking or manipulation.)

I responded just as quickly that I thought that that wasn't true at all. I told her that she has the same nervous system as everybody else and when her emotional or alarm system goes off she has the same choices as everyone else. Freeze, flight, fight, in that order. I then told them the following story (which by the way is true), about my own dysregulation and freeze, flight, and fight behaviors. I think this story illustrates the power and the wisdom of how the brain is organized, the balance between the two brain systems, and the power of its response systems. Maybe even how best to respond to it.

## My Trip Down Steven's Brook Road



Vermont is a beautiful place to ride a bicycle. The mountains rise and fall, the hills are green and lush, and the dirt roads are quiet and peaceful, mostly.

One of my favorite rides is down through the Mad River Valley. It meanders down Steven's Brook Road, through the quaint village of Moretown, along the Mad River, and up to East Warren. Beautiful ride. And then all the way back. The last 3 miles are mostly uphill, and can be a challenge after 30 miles of riding, at least for me.

Near the end of that three-mile stretch is a house with an often unleashed dog. On one particular day as I rounded the turn the dog came steaming out of the underbrush barking, growling, and looking very much like he was going to bite me. My arousal went through the roof, and I started yelling and kicking at the dog. Fortunately he backed off. This wasn't the first time he had come after me.

With my limbic system in full control of my behavior, I headed home swearing I would get even with the dog. Really, get even with the dog. By the time I got home I hadn't calmed much, if at all. I went inside and informed my wife that I was going to get a gun and strap it to my bike. She sort of smiled and said she can just see the headline now. Mental health director turns cowboy, or something of the like. The humor helped settle my limbic system and my frontal lobes began to come back online. That's when she asked me if I had spoken to the owner of the dog. I admitted I hadn't, and a few days later headed over to speak with her. (Seems like a better first step than buying a gun.)

She was very reasonable and agreed to leash the dog. I once again resumed my pleasant rides through the Mad River Valley. It took a little while but my hypervigilance began to diminish. After a while my body no longer reacted to passing the house. The hairs on my neck stayed in place. Within a few months the random attacks were barely memories. My physiological response was on hold but it wasn't gone. It was really just waiting. (Remember the example of the lady whose house was broken into. Her physiological responses also seemed gone but they weren't. Although it was six months later, when the right "triggers" were there, she had a full blown physiological response. We can expect the same from the people we are trying to help with their behavior. When the "right" cues are there they can have a full blown limbic response which to us may look like it comes out of nowhere.)

Then of course the inevitable happened. As I finished the last leg of a bike ride, I came around the turn by the house dreaming of a cold beer, completely unprepared for what was to come next. Out of the underbrush came the dog. He was snarling, growling, snapping, and inches from my ankle. I wasn't at all prepared for this and my arousal once again went through the roof. My limbic system took over and resorted to the only behaviors available to it. It rejected freeze for obvious reasons. Without any rational input it shifted right into flight. I pedaled furiously to get to the other side of the road. However the road had recently been visited by the town grader and had a soft shoulder. When I hit the shoulder I rolled the bike, and ended up on my side with the dog nearly on top of me. So let's see, freeze of no value, flight attempted but failed, only one choice left. Fight.

That's when the power (and irrationality) of the limbic system put itself on full display. I jumped up and began to chase the dog I had been running from. I pursued the dog like a madman back into the yard. The dog brain apparently also has a limbic system, although its frontal lobes are not quite as developed as our own, not that mine were in use at the moment. It did have the good sense to turn tail and run. On the other hand my good sense was gone, and I continued to chase the dog. When the dog owner came into the yard she was confronted by a mad man and a dog engaged in full flight behavior. Her presence did nothing for my composure. All I have is a vague memory of continuing to yell and scream and eventually getting on my bike and riding home. Of course not only does the limbic system shut down our ability to think and talk, but it interferes with our ability to lay down memory.

Once I got home things did not improve quickly. My ranting and raving continued. This time my wife's attempts to calm me were to no avail. She soon realized the best tact was just leaving me alone. She didn't attempt to talk me through the situation, she simply said she had a few errands to do and left for town. I remained at home, alone. Fairly soon I "realized" I had to do something. So I started to prepare dinner. Cooking is one of my favorite activities and I can generally get lost in searching the fridge for something to make for dinner. This seemed to help. However it still took me an hour and a half to return to a reasonable state of calm.

So how do we explain all of this seemingly "crazy" behavior on my part? And let me rest assure you that it felt very crazy to me. Without the



knowledge of how the brain functions none of this makes sense. With the knowledge that the brain contains two systems designed for very different purposes, survival in the moment, and success in the future, it all makes sense. When threatened my survival system took over, shut down my frontal lobes, and resorted to the only behaviors available to it. Freeze, flight, flight. In that order. My survival system did its' job. Not pretty. Not exacting. But quick.

The young lady and I took the opportunity to draw a parallel between my experience and a recent experience she had had with a staff person. The only difference between the two situations, other than the fact that I became much more dysregulated than either of them, is that the "trigger", or event, that caused the alarm system in the brain to go off and take control of our behavior, was different. In my case it was the dog rushing out of the underbrush, and for them it was a lost, and then found, pen.

A caregiver had become separated from his pen. The caregiver suspected that the missing pen may have been in the possession of the young lady. He didn't accuse her but he did ask her if she had it. This led to a mild explosion on her part in response to what she felt was an accusation. This led to some minor dysregulation on the part of the caregiver, as well. They did a fairly nice job escalating each other to the point where there could have been trouble. Fortunately the missing pen was located by another caregiver in the chair where it had been lost.

The pen was back but neither one of them had quite regained their composure. That's when they tried to make sense of what had happened. They both felt they had been wronged and both deserved an apology. Attempting to resolve what had happened almost led to another melt down, since their arousal level, or emotional systems, remained dysregulated, and weren't quite ready for reason.

My story provided both of them with a different perspective on their behavior, that they could both accept. It was their nervous systems that were driving their behavior. The young lady had perceived the question about the missing pen as a false accusation, and had become escalated.

When we talked about it she said she had been through this before and had begun to anticipate that there would be consequences for the missing pen and they would fall on her.

The caregiver recognized that his nervous system was driving his behavior as well. He thought that he had just asked about the pen and was surprised by the emotional response he got. He admitted that he also became escalated and that his responses to her were not as rational as they could have been. He also said that the pen was his favorite and had been a gift from a family member, and that had probably caused his question about the pen to seem more like an accusation.

Keeping each other's brain in mind led to the de-escalation of their nervous systems, a quick resolution of the problem, and well-earned apologies by both of them. The perspective of the effect of the brain and the central nervous system on behavior helps us to understand things that otherwise don't make sense. Disagreements over pens and the like only escalate because our central nervous systems overreact to the social, emotional, and historical meanings of these minor events.

# How the Brain Works



## The Brain's Quest for Survival and Advancement

Behavior is driven by the response systems of the brain. The brain can be organized either to survive in the moment, or maximize success in the future. Two separate systems organize the body and central nervous system in pursuit of these goals. They are the feeling and thinking systems of the brain, also called the limbic system and frontal lobes.

When we view behavior through the lens of brain science, there is a shift in focus from behavior to neural organization. The "state" of the nervous system determines what types of behavior are available and most likely to occur. High levels of arousal will likely call for freeze, flight, and fight behaviors, while lower levels of arousal will most likely lead to more reasonable and thoughtful behavior. These behaviors are driven either by the frontal lobes (thinking system), or the limbic (emotional system), of the brain.

This change in focus in the behavioral equation leads to a "neurobehavioral" approach. The person's state, and the brain system that is running the behavioral show, are the determining factors in how he

behaves. Helping people understand and manage their brain systems, and their states, leads to better behavior. Attempting to manage behavior without first understanding brain function and state often leads to worse behavior.

When people are talking about the brain, they are generally talking about the frontal lobes, the part of the brain dedicated to reason and thinking. Rene Descartes said, "Cogito ergo sum." *I think therefore I am.* This famous quotation captures how frontal lobe-centric our thoughts on the brain are. What follows is an account of the two working systems of the brain. The focus is not just on the frontal lobes, but also on the limbic system. Dysregulation, which is the principal symptom that gets people into trouble, (the states of freeze, flight, and fight) emanates from the limbic system, not the frontal lobes. Also, we know that the unconscious, that part of the mind that operates below the level of what we know, and the entire physiological body, influences behavior far more than Descartes ever allowed. Especially in the short run, and when threat is involved, the limbic system is quick to take charge of things.

The problem for people who are challenging and exhibit behavior that makes life difficult for them, and sometimes for us, is often captured in a mental health diagnosis. That, more often than anything else, leads to treatment with medication. Medication can certainly be useful, but it clearly offers people a constitutional, biological explanation for their behavior. It doesn't offer a developmental explanation that allows people opportunities for change. It doesn't offer a way to think about their difficulties that preserves the sense of self. A mental health diagnosis doesn't have to be a sentence to a future without hope. Using the kind of approach outlined here offers an opportunity for growth and change, even if the underlying problem remains.

I have spent a good deal of time with a young man who has a long history of violence. Once you get to know him, it is clear that he is a gentle soul and his aggression is really a function of his fear. His history has wired his brain to react very quickly to threats, and when I first met him, about

ten years ago, he was a violent young man. After all these years of hard work on his part, he is violence free, and hasn't had an episode of aggression in years. Despite his "behavioral" improvements, he is still the victim of a mental illness. He has a thought disorder that makes him see and hear things that aren't there. He can also be very paranoid and believe that people are after him.

What hasn't changed is his mental illness. What *has* changed is that he now has insight into his thought process and can talk about what he sees and hears, rather than just acting aggressively to defend himself. At some point, he came forward to talk with one of his caregivers about another one. He told the caregiver that, although he liked the other caregiver, he could no longer spend time with him. When asked why, he said that he could see a bomb in the caregiver's body ready to explode and kill them both. He added that he knew what he was seeing wasn't actually there, but it still terrified him. He thought it was best if they didn't spend time together as he was afraid of what he might do to protect himself. Before his treatment began, this would have certainly led to aggression.

In the case of mental illness, medication may be necessary and quite useful. However, that is just where treatment should begin. Medication can allow a person enough clarity to access, and benefit from, psychological treatment. He can learn the skills he needs to better manage and understand himself if he is provided "treatment with the brain in mind."

Too often, the diagnosis of mental illness leads to a medication dead end, and no further treatment. This is unfortunate, because even in the face of mental illness, progress and insight is possible with further psychological treatment.

Let's take a look at the functions and purposes of the two aforementioned brain systems, and the neural states they determine. To understand them is to better understand why people behave the way they do. We will be spending as much time on the limbic system (herein interchangeably referred to as the emotional system) as the frontal lobes

(herein interchangeably referred to as the thinking system). Unheard of! The reason we are spending so much time on the limbic system is because it's often the part of the brain that is least understood. It is also, in terms of behavior, most powerful. It is often the root cause of behavior problems. Once we understand the brain/body/central nervous system connections, and the neural platforms they create, we'll better understand how to help people manage their behavior.

***Advanced Disclaimer:*** Although I believe the limbic and frontal lobe distinctions I have made are critical for reasonable treatment, I must also emphasize that the distinctions between them exist only in my mind! They two systems are, in fact, part of a bigger system that cannot be pulled apart other than for the convenience of discussion.

## Frontal ☐ Lobes

There are distinct areas of the brain that represent thinking and emotions (especially fear). They are the frontal lobes and the limbic system. They don't work on their own, but have a yin and yang relationship in which they share control and work together to help us emit the very best behavior

we can, to best fit the situation we are in, based on their prioritization of immediate versus future survival.

Balance between the two systems determines reasonable behavior. If the systems are out of balance, it is for good reason. Somehow, in the past, the limbic dominance has helped the person survive. That must be respected. However, a brain divided against itself, cannot stand. (Abe Lincoln said that, I think...) Treatment is about reestablishing the balance. This often means initially prioritizing the limbic system and using de-escalation techniques (Stage 1 Treatment) over the frontal lobes and reasoning and skill building approaches (Stage 2/3 Treatment).

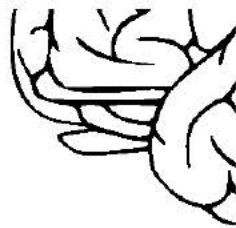
Anyone interested in further reading along these same lines should read Daniel Goleman's 1995 book, Emotional Intelligence. Chapter 2, "The Anatomy of an Emotional Highjacking," is particularly relevant. Goleman captures the power of the emotional system, and its ability to overpower the thinking part of the brain and generate "irrational" survival behavior. He may also make the best case for the distinctions between the thinking and feeling systems of the brain.

For perhaps the most elegant discussion of the topic, read Antonio Damasio's work, Descartes' Error. Damasio makes the argument that these two brain systems operate together and, in fact, cannot operate effectively without each other. He might say that rational thinking is always informed by feelings, and feelings by rational thinking. His description beautifully captures the symphony of the brain and the dance between these two systems.

If his description is a symphony, what follows is more like Hot Cross Buns on the recorder: not as elegant, but certainly easier to learn.

# Brain Basics

## The Multiple Brain Systems



There are two basic systems in the brain: one for thinking and one for feeling. The emotional, or alarm system of the brain, is designed for survival in the moment. It is not interested or aware of the future, so it can't be affected by the prospect of future outcomes (or consequences). In fact, the limbic system often responds to a consequence as a threat, and continues to escalate. That's generally the opposite of what we want. The limbic system is the system designed to detect danger and alert the brain and body that it is time for action.

The thinking system is designed to maximize future outcomes. It evolved to think about long-term survival and advancement. It is the thoughtful and rational part of the brain that can evaluate incoming information and make choices about how to get what it wants and avoid what it doesn't want. The frontal lobes can evaluate consequences, both in the present and future, and use them to guide its actions. The frontal lobes can only function when they are in a safe environment. If the limbic system detects danger, it will shut the frontal lobes down. This includes the language and memory systems of the brain.



The brain systems have to evaluate incoming information and prioritize survival in the moment versus future good. Ideally, these two systems work together to emit behavior that is the most productive for the person. The problem for explosive and dysregulated people is that, more often than most of us, their brain misreads incoming information, and is influenced by past experiences and internal processes. Their limbic systems dominate their responses, and they become explosive, even when they should become thoughtful. In practical terms, they react as if a tiger has come into the room, when it's just a teacher. They can have a complete meltdown when normal things happen, like a change in schedule or a change in staff. Their brains are trying to help them survive when they aren't in danger.

The need to understand which part of the brain is driving behavior, in order to intervene effectively, is best captured in the following prayer:

### The Social Workers' Prayer

Voluntary responses can be modified by reward and punishment because they are thoughtful and involve choice or decision-making.

*(Behavior driven by the frontal lobes.)*

Involuntary responses cannot be modified by reward and punishment, and are more commonly known as reflexes, instincts, or emotions.

*(Behavior driven by the limbic system.)*

God grant me the wisdom to know the difference.

Amen.

Sometimes a person lacks the information that she needs in order to help her behave not only the way *we* would like her to, but also the way *she* would like to. If we give her that information, or better yet, help her think

her way through what's happening, that can help improve behavior! (These are Stage II/III interventions.)

However, sometimes a person already has that information. He knows how he would like to behave, and how we would like him to behave. He just has a hard time doing it. This can be due to the fact that although he has the information, he can't get it and use it when it's needed. It's in his frontal lobes, but when he becomes escalated, there's no access to the frontal lobes. His limbic system has shut down the thinking system and its access to reason, memory, language, and information.

For these kinds of problems, giving additional information and consequences to people for their actions doesn't really help. The work to improve behavior is not on the frontal lobes, the work is in the limbic system. Interference from the limbic system doesn't allow them the opportunity to act reasonably. We can reason with the frontal lobes all we want, but it won't help. The problem isn't there.

I had a conversation with a caregiver recently that relates to all of this. He said he had spoken with a young person the night before and read him the "riot act." He read him the riot act because the person had been becoming dysregulated recently and doing things that, by his own report, made him feel foolish later. The caregiver felt that if he could "get through to him" he might stop doing those things. Well, maybe.

The caregiver wanted my opinion on whether or not it made sense to "talk tough" to him. Well, sort of. He *really* wanted to help me see that getting tough with the person would be helpful. Unfortunately, I didn't have an opinion on whether it would be useful or not. Well, sort of.

The person whom the caregiver was "talking tough" to had problems that were mediated by his emotional system, not his frontal lobes. He continued to have full-blown limbic responses, marked by flight and fight behaviors, which culminated in non-compliance, running away, and hurting himself and others. These are clearly behaviors mediated by the limbic system.

However, even though this is true, if the caregiver reading the “riot act” increased the person’s motivation, it might have helped. In the context of their attachment relationship, within which the young man was highly motivated to please his caregiver, it might be a potential help, despite targeting the area of the brain that wasn’t driving the problem. I wasn’t optimistic, but I really wasn’t sure.

There are useful ways to begin to think about these states and behaviors that can be helpful. Threatening people and giving them consequences usually aren’t. Perhaps the most important thing to do is to help people begin to differentiate these states and the brain systems that are driving them. That can help them feel more in control, less crazy, and understand that it is more than just lack of will or motivation that is driving their behavior. It is brain function. When people don’t have an explanation for why they are behaving the way they are, it can really make them feel crazy. What is most effective for handling emotionally driven behavior is building attachments and a sense of self, tapping, drumming, singing, exercise, and other interventions that calm the limbic system. Conversation and consequences are usually quite ineffective.

The flipside of the argument can also be made. It is important to inform the frontal lobes when they are available and don’t possess the information they need. It is also critical to reload it, if they can’t call it up when they need it. Here’s a very straightforward example: My friend Richard has four kids. The youngest two are 3 and 4. That’s a handful anywhere, but the grocery store is particularly challenging. He does a number of things that help the kids be successful, and lower the possibility that his limbic system, as well as theirs’, will become unglued. By the way, go into any large grocery store, and I guarantee a five-minute investment near the register will yield at least one parent in a limbic episode, “quietly” screaming at his children. The grocery store can be a seriously dysregulating environment.

First of all, before they go into the store, he loads up all the information the kids need to help anticipate what will happen and what is

expected of them. He makes sure that they have the information they need. Second, he realizes that young brains may become overwhelmed with the need for Fruit Loops and the new variety of Goldfish, and lose some of their focus. So, about every 10 minutes or so, when he can see the little ones need the information again, he reloads it. He'll stop the cart, get down on the kids' level, and refill their frontal lobes with the information they need to keep shopping.

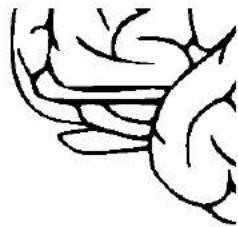
All in all, this leads to very successful little ones, and very successful shopping trips. It also minimizes the emotional responses on everyone's part. It is a very good strategy for anyone who suffers from dysregulation, and not only in the grocery store.

**BOTTOM LINE:** Knowing which system is running the show is the key to helping people manage and change their behavior. Frontal lobes respond to talking, reason, and consequences. The limbic system does not. It only responds to things that calm it. Target the right system and choose your responses wisely.

# Functions of the Brain Systems

**ACTION!**  
Limbic System

**Stop and Think...**  
Frontal Lobes



The emotional system is all about action. It is designed to respond quickly and decisively to dangerous situations. It acts twice as fast as the frontal lobes. It does not possess impulse control or the capacity to stop and think. It cannot make "choices." It quickly shuts down the thinking, language, and memory systems of the brain so it won't be interfered with in its pursuit of safety.

The frontal lobes are the home of impulse control and thinking. Impulse control is the ability to stop, for a brief period, so that a situation can be thought about. The job of the frontal lobes is to maximize future outcomes by identifying and thinking through problems and all the options available to resolve them. They are organized to relate information, in the form of stories, to capture and rule over perceptions, thoughts, feelings, and, ultimately, behavior. The frontal lobes are as heavily influenced by experience as the limbic system.

As noted earlier, it is the balance between the frontal lobes and the limbic system that leads to the best behavior. However, the brain is designed with an *imbalance of power*. The limbic system can quickly mobilize our entire physiology toward action, and shut down our capacity to think and reason. The reason for this design is that long-term benefits are dependent

upon immediate survival. If we don't get through this minute with the tiger trying to eat us, there's no need to worry about retirement. Unfortunately, sometimes the brain thinks the IRS man, or the fellow who just cut you off, is the proverbial tiger. Think about what you did and how quickly you did it, the last time someone cut you off. Did your thinking or feeling system get turned on? Driver or tiger? Frontal lobes or limbic system? Knowing smile, or one-finger salute?

Let me give you an example. Once, I was with a young man whose capacity to regulate himself was quite compromised. He was very explosive. He was explosive about things that didn't seem to be a big deal to me. We decided to work on this together and create an escape plan that he could use when his escalation cycle began. (More on tools like escape plans in the Treatment section.) We identified a situation in which he often got overwhelmed and decided to do a role play.

The role play is an attempt to load a reasonable response into his procedural memory. We identified a situation that would likely cause his limbic system to take charge and the escalation cycle to begin. We decided that, for him, being told "no" by someone in response to something he really wanted would cause him to escalate pretty quickly. Seemed simple enough. We scheduled a time to meet at his home to do the role play with his home provider.

When I arrived at his home he asked if we could go out for coffee first. I said we could go out for coffee, but first we'd do the role play. He agreed, and we reviewed the escape plan we had already discussed. (I made sure to try and load the information into his frontal lobes.) Once his home provider said "no," he would take an escape and walk out of the house to the mailbox. Again, simple enough. So he asked the home provider if he could go out with me for coffee.

Just to reiterate, we had all just talked about how we would go out for coffee after we had done the role play. We discussed this *seconds* before the role play. So, he asked again and the role play began. The home

provider said "no," just as planned. What we *hadn't* planned on was that despite all the preparation, the young man's limbic system took over. He began cursing and throwing chairs before storming out of the house! Despite planning and preparation, his frontal lobes were quickly and effectively shut down by his limbic system and he was left with freeze, flight, and fight. Despite preparation and planning, his limbic system completely shut down his frontal lobes. That's power. And it's power that's driven by experience.

I had made a major mistake. I underestimated the power of the emotional response he would have to the situation and how deeply it was rooted in his body. We went for our ride to get coffee. (That's right, he didn't lose his coffee break because of his behavior.) It was early spring in Vermont and although the sun was out, it was still quite cold. The young man was sweating profusely, his face was red, and he had his window wide open. Despite his attempt to cool himself and re-establish equilibrium, his body was still dysregulated when we returned home an hour later. That speaks not only to the limbic surge that his body had experienced, but also how long recovery can take.

We decided on a new plan. Believe it or not, it was another role play. Only this time, in order to help minimize the response of his nervous system, we decided to do it at my office. We thought the home environment was just too charged right now. We also decided that we would prepare his body, not just his mind, before the role play. So, we met the next week and went for a long walk before we approached the home provider and asked if we could get coffee. Interestingly enough, after the walk, he had some of the same physical manifestations that he'd had the previous week after the episode; his cheeks were red and he was sweating. We approached his home provider and he asked if he could have coffee. Once again he was told no. Only this time he had no reaction whatsoever, except to say "okay," and head for my car.

What we had learned from the situation is just how quickly and powerfully his limbic system could respond, even to things that his frontal

lobes were prepared for and knew weren't dangerous. We also learned that if we prepared his body, as well as his mind, and changed some of the contextual triggers, like where it happened, we could minimize his limbic response. That gave us the opportunity to load a different, more adaptive response into his body.

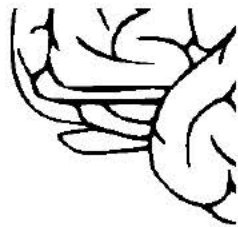
**BOTTOM LINE:** When the action system of the brain takes over, it assumes that the person is in danger, and acts accordingly to protect the person. The action it takes is very fast, and powerful, and can't be interrupted by words. The person doesn't "choose" to have the reaction, and can't "choose" not to have the reaction, because it has a powerful physiological basis. If you want to deal with the behavior you have to settle down the emotional system before you can get to the frontal lobes and help them make sense of things.



# Behaviors of the Brain Systems

Behaviors?  
Freeze, ~~F~~light, ~~F~~ight?

Behaviors?  
Stop, ~~T~~hink, ~~S~~olve ~~P~~roblems?



The emotional system is quick and dirty. It is very limited in its responses. The only actions it can perform is shut down (freeze), run away or escape (flight), or get aggressive toward self, other people, or things (fight). The behaviors are arranged in a hierarchy: first freeze, then flight, and finally fight. If freeze is interrupted, then the person will move on to flight. If the person is allowed to either freeze or escape, then the reaction will probably end there. If these responses are interrupted, then the person will move on to the only other behavior available to the alarm system: fight. (Mostly not good, unless the proverbial tiger is in the room.)

The thinking system is much more creative and capable of evaluating the situation, deciding what it wants, what it wants to avoid, and looking at potential solutions to the identified problem. (Although it isn't always easy to identify the real problem.) Once it has a solution, it is also capable of attempting the solution and evaluating its effectiveness. All this takes time and is dependent of the ability of the frontal lobes to put the brake on the limbic system or exercise impulse control. The ability to stop allows the frontal lobes the time to move from the present problem, to past experience, and future action.

People who don't understand the nature of the brain systems that drive human behavior often make very predictable mistakes when attempting to help other people generate better behavior. If caregivers have the freeze, flight, fight orientation to behavior, and recognize these behaviors as part of the stress response, then they know that interrupting them, or threatening people, causes an escalation from freeze, to flight, to fight. In that order. Here's a summary of that of how the hierarchy of survival responses work:

### **Survival Responses of the Nervous System\***

- Fight, flight and freeze are automatic survival actions. They are similar to reflexes, but are much more complex.
- If the perception of the limbic system is that there is not time to flee, then the body will fight.
- If the limbic perception is that there is not enough time to flee, but there is adequate strength to fight, then the body will fight.
- If the limbic system perceives there is neither time nor strength for fight or flight it will freeze.
- It is important to understand that these limbic or autonomic nervous system responses (freeze, flight, fight) are instantaneous, instinctive responses to a perceived THREAT.

\*Babette Rothschild (2000). The Body Remembers: The Psychopathology of Trauma and Trauma Treatment

People not used to taking this approach to behavior may find it confusing and may not actually recognize freeze, flight, and fight behaviors when they see them. Here's a recent example of misreading freeze and flight behaviors which caused further escalation in behavior.

I was speaking with a young man's father and I mentioned that although we were still seeing freeze and flight behaviors from his son, it was

wonderful that we were no longer seeing fight. Although freeze and flight can be challenging, they really are much preferable to fight, which can get a person into some real trouble, or get somebody hurt, or both. The young man's fight behaviors often took the form of pinching, pulling hair, and self abuse.

He told me that there was an incident at the hospital recently during which his son "got aggressive." I was surprised and expected there was more to it than he simply "got aggressive." I asked the dad to describe the situation. He said his son had been upset and ended up at the emergency room for treatment of an injury. He had been compliant and went into the room he was directed to. However, at that point, he sat on the floor and went into what I would describe as a "deep freeze." When I say this, I'm describing a freeze state in which a person is very much unresponsive, bordering on catatonic. (This represents a very strong parasympathetic response of the central nervous system, but more on that later.) In the young man's case, he sat cross-legged on the floor, staring straight down, and didn't respond to staff questions or requests.

Often people will ask, "How do we know this is a freeze and not just non-compliance?" Well, there are a number of clues. First of all, the stillness. He wasn't moving and he was disengaged from his environment. Second, he wasn't responding to the people around him. He didn't seem to hear them, and could not comply with their requests. He was sitting on the floor. He wasn't disturbing anyone. He was also not following the demand to move off the floor to a chair. No one was getting hurt, nor was there any danger of aggression.

The "guards" (blue suits, badges, guns... really) got called and they increased the demand to move from the floor to the chair. The environmental clues quickly informed the limbic system of the young man that a threat had surfaced. The limbic system responded to the "threat" by getting geared up to escape. However, with four people around him, his limbic system intuitively knew that escape wasn't possible. So, it was left with a single response: fight. Things escalated to violence, and pretty soon

there was a restraint. All of this was unnecessary if everyone would have just left him alone to "defrost" on the floor. When I say defrost, I'm talking about a person coming out of a deep freeze of his own volition. It might have taken some time, sure, but there wouldn't have been any violence, and that is what we want to avoid most of all.

I finished the conversation with the dad by pointing out that if he had been allowed to defrost there wouldn't have been any violence. I also pointed out that if his nervous system had been allowed to freeze, it would have come with a different expectation for next time. If he had been treated therapeutically, and allowed to freeze, he might come back believing he would be allowed the time it takes to get himself back together. That experience would make an escalation leading to violence less likely in the future. I felt that it was not the young man's fault. It had been a failure in understanding his brain and its options. Treatment needs to be provided with the "brain in mind."

Attempting to make sense out of someone else's behavior, particularly when that behavior is explosive, can be challenging. Here's another example. A few years ago we took someone out of the state hospital and placed him in the community. That's a big change with lots of new people and heightened arousal. This was a young man with a particularly violent history. So we talked in advance about fostering his sense of control and competence and reinforcing freeze and flight over fight. We talked about it, we practiced it, and we hoped for the best.

Inevitably, at some point, his arousal skyrocketed and he took off down the road. Flight over fight...Excellent so far. However, being that he was a vulnerable and volatile young man, we needed to follow him. At some point, he turned on the caregiver who was following him and threw some stones at him. The caregiver was completely confused by the exchange and felt that allowing him to take an escape may have been the wrong move. He certainly didn't understand why he became the target.

Using the freeze, flight, fight lens to understand the young man's actions helped us all. We all understood that an event that occurred at the house caused his escalation. We all understood that his escalation shot him into the defensive reaction of fleeing. What was confusing is that once his flight began, he turned on the caregiver and became aggressive, a fight response.

Successful flight is a subjective experience. It has to *feel*/like you are successfully fleeing the situation. When caregivers follow, or get too close, it can *feel*/like the escape is interrupted or unsuccessful. As we know, if escape is interrupted, that just leaves fight. (Well, in this case throwing stones.)

So we talked with the young man and his caregivers about how to make it *feel*/more successful. The first thing we decided was to allow more space between the caregiver and the young man. At least three car lengths seemed about right. We decided that we shouldn't talk to him, as talking seemed to fuel his escalation. (The frontal lobes, which contain the part of his brain that processes language, were shut down by his limbic system. Words just proved to be irritating.) We all thought about how to make the point that we were on his team and had no intention of interfering with his flight. We needed a very concrete way to do this.

We decided to get some orange hats. The kind hunters wear. We would put them on the next time he attempted an escape. We'd put them on when we were going out the door and follow him at the agreed upon distance. We hoped this would help him realize we were all on the same team and just following him, not interfering.

Although we only needed to resort to using the hats a few times, it made a big difference. Later on, when he had engineered a few successful escapes, when he knew we were on his side and that we were not going to interfere, we actually were able to let him go. That worked the best. When he felt better, he would return on his own.



To him, what we thought was following *felt* more like chasing. You can imagine that to the young man, the caregiver's response was more like a reenactment of The Fugitive, Tommy Lee Jones and all, than something done to ensure safety. A federal Marshal hot on your tail won't help you to calm down, even if he is saying, "I'm just here to help!"

**BOTTOM LINE:** When we see the freeze, flight, and fight reactions, we know the limbic system is driving the behavior. Here's the key to helping people manage these behaviors:

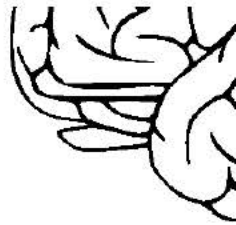
1. Recognize freeze, flight, and fight behaviors for what they are: freeze, flight, and fight behaviors. They are not non-compliance.
2. DO NOT interrupt freeze and flight behaviors, or you will get fight behaviors.
3. Promote and practice freeze and flight behaviors IN ADVANCE.
4. When the person's emotional system is running the show, and she is aroused, use de-escalation tools. Do not attempt to talk her through the problem.

Sometimes this is as simple as allowing the person the time she needs to defrost. Sometimes it escalates to escape and the person must have space, time, and opportunity for flight. When the frontal lobes are running things again, we can offer choices and help the person understand the consequences of her actions. (When she is able to cap the escalation cycle at freeze or flight we also need to let her know what a success that is. Especially if she has exercised reasonable self-control in a situation she might not have been able to before.)

## Triggering Events

**Limbic System?**  
Freeze, Flight, Fight?

**Frontal Lobes?**  
Turned Off by Limbic System?



Things happen out there in the world. Things happen inside our minds. They happen in our bodies. All of these things that happen drive our behavior, often without our conscious knowledge. They are sometimes called "triggers." They can turn on either our limbic system, and drive us toward defensive behaviors (freeze, flight, fight), or our frontal lobes, and help us identify what we need or want and how best to obtain it. The triggers can be external, internal, or more often, some mix of the two. Typically, what might happen is that an external event triggers some internal feeling. This feeling causes some internal thoughts, which then drives behavior either toward safety or problem solving. (Teaching mind reading, the ability to recognize how our perceptions, thoughts, and feelings, drive our behavior, is a State or Stage II Treatment.)

Here's an example: I had a young man show up at my office one morning demanding, vehemently, and in no uncertain terms, a staff change. He was clearly angry with the caregiver and actually quite threatening. First, I oriented him to his brain. I asked him what part of his brain was driving his behavior. He quickly pointed to the middle of his skull, which roughly contains the limbic system. That actually seemed to settle him a bit. (We had been working on this for quite some time.) I then asked him what had happened (an external event) that had made him want a change. He

responded with a clear limbic surge and spewed out some expletives about the caregiver, all of which I didn't respond to.

I thought I might slightly change tact and help him review what had happened earlier that morning. I hoped to find some clues about what made him feel so upset. We started with waking up, proceeded to breakfast, and then coming to the building. Although waking and breakfast were fine, it turns out when he entered the building his caregiver hadn't greeted him. (This is the *actual*/external event.) The young man took that as a sign that the caregiver was upset with him. (That's how his mind *interpreted* the external event.) Then he got angry and the feelings surged through his body. Giving him a consequence at that moment would not help clarify things for him. It wouldn't help him understand the perceptions, thoughts, and feelings that were driving the behavior. It might, however, increase his arousal and escalate his behavior.

I might point out here that the initial feeling was probably not anger, but more like disappointment or confusion. These latter feelings are intolerable to someone with his history, so his body quickly shifted to anger. Anger is much easier to deal with and helps to feel less vulnerable and more in control. (Yup, all unconscious.) Then he decided that he didn't want to work with the person based on his (mis)interpretation about what had happened, and the surge of feelings it caused. Once we both understood what had happened, the stage was set for some resolution. (At this point I had yet to make mention of his less-than-auspicious behavior with me.)

Now, there were any number of things I could have done *beside* help him understand what had happened. I could have addressed the behavior rather than the events, thoughts, and feelings driving the behavior. I could have said he shouldn't swear, shouldn't be loud, that he's not in charge of staff, etc. Instead, we investigated. Once we understood the problem, we decided to ask the caregiver about why he hadn't greeted the young man. First we decided to think about why the caregiver might have done what he did (or didn't do). The young man's initial explanation was, "He's mad at me for something!" After some discussion, he decided that perhaps the



caregiver hadn't seen him, or was preoccupied with something else. We decided to go ask him.

When we got to the main room where the caregiver was sitting, we noticed he was reading the newspaper. He didn't notice us at first, but when he did, he quickly folded the paper and greeted the young man warmly. With a big smile, he asked if the young man was ready to begin the morning routine. That brought on a dramatic change in his neurological and emotional state, and the young man responded that he was, also with a big smile.

I felt it was important to talk about what had just happened before going off for the day. Once the caregiver heard the story, and the young man heard it again, the caregiver told him, in no uncertain terms, that he was sorry and that he really enjoys their time together.

At that point I addressed some of the behaviors that had preceded the identification and resolution of the problem. Some consequences had already been delivered. The young man had just spent a good deal of time working through the situation. It had been a lot of work. He had also managed the feelings that had erupted in response to the perceived slight. It was time to review what had worked and what had not. (Reviewing consequences is a State or Stage II intervention.)

I asked whether the anger and subsequent behavior had helped resolve the situation. He knew it had not, and in fact realized that it had probably interfered with his ability to resolve things. I asked if this would help him in the future not jump to conclusions. He said it would. Great. It was then time to clean up any emotional damage. He recognized he hadn't treated his caregiver or me fairly, and apologized to both of us. Better still, and then on with his day.

All was well, and we all had a good lesson in how external events can drive internal thoughts, feelings, and of course behavior. We also all got a good lesson on how important it is to sometimes look beyond behavior in order to help a person manage his arousal.

**BOTTOM LINE:** Sometimes when we are trying to help people with their behaviors it makes much more sense to explore all the internal and external triggers rather than just giving a consequence. It helps them feel in control and is much more likely to alter behavior in the future.

# External Triggers

When Something in the Environment is Perceived as Dangerous:

Limbic System?  
Freeze, Flight, Fight?

Frontal Lobes?  
Turned off by Limbic System?



Let's explore how the external world drives or triggers each of these brain systems, and subsequently drives behavior. Some triggers occur in the environment, although they are not always easy to see or agree upon. However, if we focus on them, and not the behavior, we can usually figure out what they are. When we understand what triggers are we can often help the person understand them better, and be more resistant to the automatic survival responses they trigger in the future. Helping people think through problems instead of just giving them consequences should help them remain in control in the future because they will anticipate help, not punishment.

Years ago, I worked with a young fellow, with a significant developmental disability. He had been extremely challenging in a program in another part of Vermont prior to coming to us. He had been with us for about three years and had done rather well. I really wasn't sure why. So I asked him. Without missing a beat he said, "When I have a problem you help me with it, you don't blame me for it." It was more of an observation than anything on his part. However, I took it as some of the best advice on how to provide treatment I had ever received.

Here's a particularly salient example of external triggers affecting the nervous system, and driving behavior. On Sundays, my youngest son used to care for a young man who was about his age. They are both movie lovers, so the three of us often spent Sunday afternoon at the theater. One Sunday, we were returning from the movies and heading down the highway toward home. We had all enjoyed ourselves and Pat was in the back seat. We were cruising along when all of a sudden Pat became upset and began kicking the back of the seat. Pat could not respond to anything we had to say. It wasn't a safe situation, so I decided to pull over, even though we were on the highway.

I knew that Pat was in the latter end of the freeze, flight, fight reaction but I had no idea what had caused him to get there. However, I did know that I would need to get him out of the car and that in doing so I would interrupt the more preferable freeze and flight reactions and would be faced with fight. I also knew that it was his limbic system driving the behavior and it wasn't something Pat was doing intentionally. Anyway, when I opened the door, his fight reaction kicked in and he came out the door swinging. It actually took about forty-five minutes to get him calm again. Once he was calm we took the opportunity to attempt to find out what had caused the reaction. Once again it wasn't anything my son or I could identify.

It took about another forty-five minutes to figure it out. It came out in pieces because clearly Pat was not sure what had caused his reaction either. So we walked through what had happened from when we left the movies up to the melt down.

This can be a very useful strategy. When a person doesn't actually know what happened, or his memory is temporarily out of commission due to a limbic response, walking him through things can be helpful. It certainly works better than just asking him questions that don't make much sense given the situation. Pat had enjoyed the movies and seemed fine when we got in the car. He also said he felt fine when we started driving. That's when he mentioned the police.

"The police." He said. "The police."

Initially, it seemed like the police were an isolated thought that was unrelated to any of the events that had happened. We weren't sure what he meant, so we asked him what the police had to do with it. That's when he said that they were coming to get him. Rather than say they weren't coming after him, we asked him *why* he thought the police were coming.

"The sirens." He said.

"What sirens?" We asked.

"The ones on the highway!" He said. That's when my son pulled from his memory the sounds of a police siren off on another road that he also had faintly heard earlier and simply forgot about. Viola!

We now knew what had caused the meltdown. The external event of a police siren had made its way to Pat. His perception of this created a limbic surge in him and then he became convinced that the police were coming to get him. Perceptions led to feelings, which led to thoughts. Rather than give Pat an artificial, unrelated, arbitrary consequence for his behavior, we reassured him that he was safe and had done nothing wrong and that the police weren't coming to get him. Of course, there was the critical natural consequence which was to spend a significant amount of time and effort figuring out what happened and how to avoid it in the future. (More on appropriate consequences to come.)

The question remained: why had Pat had had such a limbic surge? The answer to that question, as to so many, lie in experience. Triggers are always associated with earlier experiences. In Pat's case, when he was younger, he had some real difficulty managing his behavior and a number of times the police were called and he was arrested. A few of those times he ended up in a psychiatric hospital for a while and was separated from his family, with whom he was very close. For Pat, police sirens were associated with fear, separation, and danger. We call these experiences "background noise" because they are often "playing in the background" in the mind with

each new experience. No wonder his limbic system had such a strong response to the sound! With a better understanding and a supportive response, his frontal lobes had a better chance of remaining online in the future, and helping him reason with a problem instead of reacting to it.

I have another example that illustrates two more points. The first point is that it can take quite some time to identify a trigger for a behavior. The second is that once we discover it, it can help us view certain behavior in a completely different light. I have a son with autism. He has been with us nearly ten years and I think I can say I know him as well as anybody gets to know someone. We have spent a great deal of time together doing lots of different things, including spending lots of time in the car. He loves to be in the car and could spend hours listening to music and rocking out.

I would not identify the following example as a "bad" behavior, however I certainly would identify it as annoying. He likes to sit in the drivers seat, and when he does he lowers the steering wheel to the lowest setting. When he gets out and I try to get behind the wheel my legs don't fit under the steering wheel. This makes it awkward and difficult to get in.

Now, believe it or not, I assumed setting the wheel down low was somehow related to his autism, in that he likes things to be a certain way. Things like positioning the toilet seat down, closing a cabinet door, or turning off the overhead light in the car are details that are important to him, and not really details that I care much about. However, the steering wheel thing does get under my skin. (You might ask why I don't just adjust the wheel before I get in. The answer to that is mind your own business! Just kidding.)

One day we were out sitting in the in the car waiting for the school bus. I had been caught in the steering wheel trap already once that morning. I got out of the car and took the dog for a walk and my son took the opportunity to get behind the wheel again. Fine. When I got back he got out, I tried to get in, and got a leg lock under the steering wheel for the second time that morning. I looked at him and probably for the first time in ten

years asked him why he needed to readjust the wheel every single time I got out of the car. He looked at me and pointed to the dashboard. "To block the light." He said.

So, for nearly ten years and literally thousands of hours, he had been adjusting the steering wheel to block a light. The whole time I thought he just wanted the steering wheel to be in a certain position. Yikes. Sometimes the things that are driving people's behavior are right in front of you. You just have to look.

**BOTTOM LINE:** Understanding what triggers behavior, and sometimes automatic survival responses, while often hard to identify, can help people manage their responses to these triggers in the future. The key is finding the triggers and helping them anticipate and understand the triggers, and know what to do about them when they occur. It gives the frontal lobes a fighting chance. Experience plays a major role here.

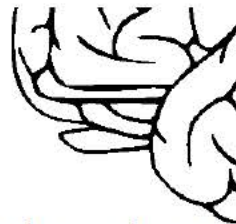


# Internal Triggers

Something Happens in the Body or Mind:

Limbic System  
**ACTION!**

Frontal Lobes  
**Stop and Think...**



Here comes the much more complicated part of understanding triggers: what happens in the mind and the body. There are many sources of information that inform the brain and the nervous system about what is coming and how best to behave in order to survive (limbic response) or maximize success in the future (frontal lobes).

Some of the sources of information we can see and occur in the world. Some of the sources of information we cannot see and they occur only in our minds and bodies. They are often unconscious. Even the person experiencing them may not be aware of them. The key to the successful management of internal triggers is to bring them to consciousness. This way, the person is aware of them and her frontal lobes have an opportunity to respond to them thoughtfully.

As stated above our experience plays a major role in determining what triggers turn on either the limbic system or frontal lobes. Often these experiences are interpersonal in nature. They are based on events that have occurred between the person and other people in the past. These events serve as the blueprint for the present and future in terms of predicting how other people will react. This is a typical example of how people use past



experiences with others to predict the future. This is also a good example of how the mind, by using conscious and unconscious memories, can drive behavior.

I was called when a young man got out of control over a hot dog. Well, actually, a bunch of hot dogs. The young man was at school and the menu included hot dogs for lunch. As you might expect, there was a limit on the number of hot dogs each student could consume. The young fellow was enamored of hot dogs and exceeded the prescribed limit. (Very dangerous for a number of reasons, all of which will not be discussed here.) What was interesting is that his staff didn't really confront him about the hot dogs. They didn't offer consequences for taking too many. They just pointed out to him that he had gone beyond the limit. They made it clear that there were other students who wanted hot dogs. They told the young man that he should be more thoughtful of others. That set his limbic system off and he was soon throwing things. The crisis call was made.

When I arrived he calmed down pretty quickly. That isn't because of something magical I did. It was simply a matter of him being able to disengage from the person he was having trouble with and engage with someone different. It also didn't hurt that we had many years of experience together. The change gave his frontal lobes a chance to come back online. When he saw me he began to cry. I asked him what he was upset about. "I miss my Mom." He said.

Of course, that didn't seem to be at all related to hot dogs and a need to toss chairs around, so I was confused. Rather than follow the hot dog, I decided to follow the trail back to Mom. I think the caregivers were a little confused about my willingness to talk about Mom when this was clearly a hot dog/behavioral issue.

Anyway, when I asked him about his Mom I got no response. So I asked when he had last seen her and when he was going to see her again. (Asking concrete questions made it a whole lot easier for him to respond. Certainly easier than expecting him to conjure up reasons for his thoughts

and behavior, a very abstract endeavor.) This led to another teary rendition of "I miss my Mom." I acknowledged I was sure he did, and then pursued the previous questions. He said he hadn't seen her in a while and wasn't allowed to see her.

I knew better than that, and I told him so. I said I knew that he had an upcoming visit with his Mom. He said he couldn't go. Again I asked why. "Because of the hot dogs!" He said. I told him I didn't think eating too many hot dogs was a good idea, but I didn't know how that was related to his visit with Mom. I reassured him that no matter how many hot dogs he ate, he would still be able to visit his Mom.

Well, long story short, he had previously been in a school where everything was contingent. This included home visits. If he screwed up at school, then he lost certain "privileges." These included visits with his Mom. (To this day I'm not sure when visiting family became a privilege and not a right.) It wasn't the hot dogs that were driving the behavior. It was the anticipation of losing his visit with his mother that caused the meltdown. This is because he assumed things, which happened in the past, would be repeated in the present. Internal processes of the conscious and unconscious mind are powerful drivers of behavior. Even if we can't see them.

One of the most powerful and overlooked triggers for behavior is what happens inside the body. The example I use for it happened many years ago, but still profoundly influences me when I think about what is driving someone's behavior. I went to visit a day program for adults with developmental disabilities somewhere in southern Vermont. It seemed like a nice enough place. The people were friendly, and all the people served seemed to be enjoying what they were doing.

Nonetheless, the reason I had been called was that one of the people served there had been hitting the caregivers and they wanted some help with the "aggressive behavior." I came first thing in the morning and all seemed fine. I participated in the morning meeting and then spent the rest

of the morning participating in the activities everyone was doing. It was not particularly productive, but it sure was fun! Everybody, including the young man I had come to help, seemed to be enjoying the time.

After lunch it was time for the real business: meetings. The director gathered the staff together and we sat down to talk. They were very interested in helping the young fellow improve his behavior; however, they really weren't sure what was driving his behavior. They also had no clue what to do about it. The meeting started with some suggestions about consequences, and how they might improve things. Rather than deal with consequences or interventions, I thought it made a whole lot more sense to see if we could discover the reason for the aggression. They confirmed what I had been seeing all morning: he was a nice young man who seemed to enjoy his time there but got progressively crankier as the day went on. I asked what seemed like an obvious question: why does he get crankier as the day goes on? They really weren't sure.

We sat around the table the rest of the afternoon discussing everything from his situation at home, to his personal history, medication, and school history. Just one fact was clear. By the end of the day, he was quite cranky. The crankiness was always a precursor to the aggression. I should mention that although the young man did have some communication skills, they were rather basic and he didn't speak. I should also mention that he was in a wheelchair. Toward the end of the day I noticed one additional thing: I didn't believe that he had used the bathroom all day.

When I inquired about this with staff, they said that he hadn't used the bathroom, and never does. Yikes! That seemed like a long time to go without using the bathroom and could indeed be very painful (and induce crankiness). So I asked if there were any issues at home about using the bathroom, and they said they didn't think so. I asked if he had ever used the bathroom here and a number of staff recalled that he had but couldn't remember when that changed and why.

Since the young man was in a wheelchair and relatively unstable, I assumed that he might have needed help getting in or out of the bathroom, and on or off the toilet, etc. They weren't sure and the director went off to find a staff person who hadn't attended the meeting but who had worked closely with the young man when he had first come to the program. It felt like we were getting close to something. The former staff person could identify a number of reasons why the young man might have stopped using the facilities at the program. He shared them with us.

First of all, the bathroom was right off the main room where everyone spent their day. When the young man used the bathroom, there was often a need to air the bathroom out afterward and the only way to do that was to open the bathroom door to the main room. That could be quite embarrassing for the young man because the other people in the program would make it clear how distasteful that was. In searching for other clues it also turned out that the young man needed two people to assist him in the bathroom. Since the program was often short on staff, he would sometimes have to make the transfer with the assistance of one person. On one of these occasions he had fallen in the bathroom, gotten bruised, and had a difficult time getting back up.

At that point most of us were clear about what was causing the problem. Bad experiences had led to the young man refusing to use the bathroom, which led to more and more acute discomfort as the day went on, and finally to aggression on some days. It sounded like a good hypothesis. So rather than add consequences, we decided to address the bathroom issues first. The director agreed to add a window fan and a bottle of air freshener to the bathroom. Staff agreed on a protocol for bathroom use, which included always having two staff, everyone being trained on the transfer procedure, and the bathroom door remaining closed. I agreed to come back in a month to see how things were going.

I did return in a month. They had followed through on all the things they said they would do. Fan installed, air freshener in place, protocol written and followed, always two staff, bathroom door closed. The young

man had been using the bathroom again regularly. Behavioral incidents of aggression had fallen to zero. The program gave out a monthly award to one of their clients who performed admirably for that month. The young man won it and was proud to share his achievement with me. It is amazing how often things that are happening in the body drive behavior and go unrecognized. Just for the record, I can't imagine that additional consequences, like some that were suggested at the meeting, would have done anything but make everybody frustrated, and this behavior worse.

**BOTTOM LINE:** More often than not, when caregivers cannot identify a trigger for a behavior, they are stymied and often say, "Nothing happened, and then he..." Nothing happened should just be a code word for something happened:

1. In the world, but we didn't know it,
2. In their mind, but we didn't see it,
3. In their body, but we couldn't feel it,
4. And now I am going to find out what it is!

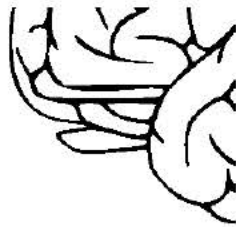
**CAVEAT:** Be very careful about the kinds of experiences you create for people. They will be the blueprints for the future. This is important, so again: Whatever has happened in the past will be used to anticipate the present and future! If you want to help people be reasonable, use reason, not consequences.

# Danger versus Problems

Something Happens in the world ~OR~ in the Body

**Limbic System**  
**DANGER!**

**Frontal Lobes**  
**A Problem to Solve...**



When signals come from the body and the world that something is happening the brain has to do a very rough sort. It has to decide whether the information or situation, which has just caught its attention, is dangerous, or if it's just a problem. If it labels the information as dangerous, it will trigger the limbic system to take charge and spring into action: Freeze, flight, or fight.

If it labels the information as a problem, then the frontal lobes will hit the stop button or activate impulse control so it can stop itself from emitting behavior. It will then *slowly* evaluate the situation and options it has to get what it wants and avoid what it doesn't want. It will activate problem solving, which is quite a complicated and time-consuming process. Problem solving involves evaluating incoming information, identifying the problem in the present, searching past experience for potential solutions, and projecting all that information into the future, while remaining securely anchored in the present. Whew.

Experience clearly plays a major role in the sorting process. Memory stores past experiences. It stores the pieces of the experiences in images, sensations, emotions, and behavior. It doesn't necessarily store them in words. When it encounters something in the present, it quickly and unconsciously sorts through experiences, which, again, are in the forms of images, sensations, emotions, and body memories. Based on this evaluation, the brain decides if the tiger is in the room. If it senses danger, it reacts to save itself by turning on the limbic system. If it senses safety, it will turn on the frontal lobes and get more consciously involved in understanding the situation.

I know a young man who has a heck of a time with transitions. A heck of a time. He also has autism, which may be relevant in the sense that he has a difficult time changing from one cognitive set to another. This basically means he has trouble reorganizing his thoughts from one activity to the next. This sometimes makes it difficult for him to switch activities.

One of his favorite activities is fishing. He loves to fish and often has the opportunity to fish for part of his school day. However, at the end of fishing he often has a difficult time. When caregivers let him know that they are nearing the end of that activity, which informs his frontal lobes about what is coming next, his arousal escalates. Sometimes he gets upset enough to break his own fishing equipment.

He ends up getting restrained because of his escalating arousal more than anyone would like. No one wants restraint and without "keeping the brain in mind" the behavior is quite confusing. What is especially confusing is his inclination to break his own things, a peculiar escalation into fight. Fight can take the form of any kind of aggression. It can be self-abuse, breaking things, attacking others, or in his case, destroying his fishing equipment. The caregivers are kind and gentle with him, try to give him the time he needs to move on, and are as non-confrontational as possible. Yet the behavior persists.

What's stored in his memory, and related to the end of fishing, are images of restraint and violence. So, his gentle reminder about what's coming next is actually a reminder of past danger. It escalates his arousal. He quickly goes through freeze. When he attempts flight he tries to flee upstream or into the woods. He generally can't get very far and ends up in fight, which is first demonstrated in his aggression toward his own possessions, and sometimes escalates to aggression toward caregivers.

The reason he has developed this expectation is because so many times when he is done fishing he has been restrained. Despite everyone's best efforts, his alarm goes off when fishing ends and he codes the situation as dangerous. The body remembers. And it takes action. And it takes action quickly before the brain has the time to think about it. So, at the end of fishing, the body of this young man anticipates there will be trouble in the form of a restraint and takes action by either attacking his caregivers or attempting to run away. All of the consequences in the world won't change what his body and brain believe might happen.

However, if we can change what his body and brain believe then we ought to be able to change his behavior. The only way to change what his body believes is to give his body a very different experience so that it can come to believe that something different can happen. His teacher and I were attempting to see what type of cue or clue we might be able to give him that that he was safe. We talked about number of things when his teacher, somewhat in frustration, said, "What should I do, roll out a red carpet for him?"

I think he may have been somewhat surprised when I said, "That's genius!" We all had a good laugh, but I was serious. Rolling out the red carpet would be as different an experience as we could create, and it should make it very clear to the young man that this was not business as usual. His teacher and staff nearly did roll out the red carpet. They got a long red ribbon and used it as a safe base in a game of tag that they played regularly. Essentially they conditioned the ribbon as a safe base and then used it as a bridge out of difficult situations. Then they used the red ribbon to signal



safety at the end of fishing and used it to get him out of the river and onto the next activity. Genius.

The inability to sort dangerous situations from everyday problems can be a great source of confusion and irritation for caregivers and people experiencing the external (and internal) events. Here's another recent example: A young lady came to see me with her support staff. She asked me if I could write down her schedule for her. She was clearly escalated. The staff person said that they had already reviewed her schedule a number of times and that she already knew it. They had talked about it over and over on the way to the office and he clearly did not want to talk about it anymore. Despite the feedback, I decided to do the schedule with her. After writing it down for her she became calmer.

That's when I turned the paper over and drew a rough facsimile of the brain picture above. I told her that the problem was really not the schedule, which she had dictated to me, but her brain's inability to sort the confusion of the day into the category of a problem to solve, or a dangerous situation to survive. Her alarm system had clearly gone off. She readily admitted that it had.

So I asked her to evaluate the situation and see if it was actually dangerous or if it was just a problem. There had been a staff change due to illness and the staff person would be back as soon as she felt better. We agreed that it was just a problem to be solved. We also agreed that she (we) had actually already solved the problem. We had made the schedule to help her anticipate who would be with her until her preferred staff person returned. I also pointed out that her frontal lobes must have been turned off because even though she dictated the schedule to me she didn't know that she knew it! She couldn't consciously access the information she needed when she needed it. Writing it down so she could see it circumvented her need to use working memory, to hold it in her mind. She could talk about it without using working memory to hold it because it was right in front of her. More on memory coming.

I asked her if it would have been helpful, rather than arguing about the schedule, to have helped her evaluate whether her alarm system had been turned on or her frontal lobes were online. She thought it might have. The staff person also thought that it would have been helpful. In fact, the staff person felt differently about what he should have done. Rather than argue about writing the schedule, if he would have helped her evaluate the situation in terms of how dangerous or how problematic it was, the whole thing might have been resolved sooner. He then apologized and said he would try to remember that in the future.

The consequences of the behavior were actually rather painful for her. Her inability to identify and resolve the problem led to increased anxiety and a near panic attack. Once we resolved the problem we talked about how difficult it had been for her and how identification and resolution of the problem made her feel better. We agreed that we all needed to pay closer attention to her state, and which brain system was driving her behavior.

We then took a minute to think about what it would have been like a year ago if she were in the same situation. The best case scenario probably would have been a screaming meltdown. She had come a long way from the intensely violent young lady we had taken out of a psychiatric hospital. We congratulated her on her growth and new skills and then shared it with other staff. Talk about building sense of self!

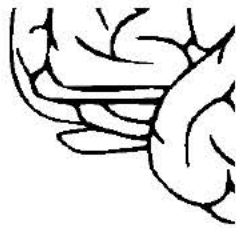
**BOTTOM LINE:** Rather than helping people resolve whatever problem they think they are having, it is sometimes more useful to get them to reflect on their "state" first. Help them identify what part of their brain is driving their behavior and then evaluate their behavior as to whether or not it is helping them get what they want.

Making people aware of what part of their brain is driving their behavior is critical when attempting to promote better behavior. It is also critical for staff. If people are not aware of what system is driving their behavior, then they will not know how to respond, and the situation can spiral into something far worse.

# The Social Brain

Disengagement?  
**AVOID!**

Engagement?  
Approach?



The brain is, above all, a social organ. It keeps track of millions of bits of social (and other) information that informs us on where we stand with others. Much of this information, of course, is unconscious. It is experienced as images, sensations, emotions, body memory, and behavior. Of the millions of bits of information the brain processes per minute only about forty reach the conscious mind. That means a lot is going on behind the scenes, in our unconscious, that has a tremendous impact on our brain, our state, and our behavior.

No other behaviors are as "state driven" as social behavior, and for good evolutionary reason: survival. There are times when engaging with others promotes safety, social alliances, and our future welfare. There are also times when it is downright dangerous. It pays great evolutionary dividends to know the difference, and quickly. So as much as we would like to think our frontal lobes are driving things they are just too slow to trust entirely with determining whether situations, social or otherwise, are safe or dangerous. When we encounter danger we need to act quickly, not think our way through things.

Enter "neuroception". Neuroception is the unconscious perception by the central nervous system of our own state and the state of others. It

gives us the ability to evaluate a social situation and organize our brain and central nervous system to produce behavior that will have the best outcome. It keeps track of things like eye contact, tone, volume, prosody of voice, striated muscle tension, and breathing and heart rate. Our neuroceptive system reads others, as well as our own internal state, and uses that unconsciously collected information, to create a "neural platform" from which our behavior flows. It decides what neural state will serve us best, all unconsciously.

That information quickly gets translated into "state changes" in the body, which then drives various behaviors like social engagement (eye contact, tone of voice, capacity to hear another's voice), or social disengagement strategies (freeze, flight, fight). High activation/ arousal sets the neural stage for freeze, flight, and fight. Moderate activation/arousal sets the neural stage for chatting over tea and crumpets. Again, most of this takes place without anyone being aware of what's going on.

Let's review an example we used earlier on. Let's use the one about the teacher who was held up by a late bus. He was the man who attempted to get his class back in order after being late. What we know about neuroception tells us that the teacher's dysregulated state was communicated very clearly to the students, even if the teacher didn't know it. For most of the students, teacher dysregulation signaled the need to settle down quickly. For one particular student, it triggered his fear response and promoted a limbic response: freeze, flight, and eventually fight.

Not surprisingly the brain areas we have been discussing play key roles in social engagement or "approach", and social disengagement or "withdrawal" behaviors. When the limbic alarm goes off it drives us to disengage or withdraw from social interaction. It is attempting to play it safe. It senses at that point that being involved with others may be dangerous. When the frontal lobes are lit up and running the behavioral



show, they organize our behavior to help us remain calm, and approach or engage with others.

	Social Engagement?	Social Disengagement?
Brain Area	Frontal Lobes	Limbic System
Evolutionary Goal	Advancement	Survival
Social Goal	"Approach"	"Withdraw, Avoid"
Purpose	Communication	Mobilization (F,F,F)
Eyes	Eye contact	Lowered eye lids, Averted gaze
Face	Empathic or socially contingent facial expression	Not mirroring Blank/frozen/single emotional expression
Voice	Expressive/reflective	Low/unmodulated high
Ears	Able to extract human voice from background (middle tones)	Less aware of human voice (concentrate on high/low tones)
Heart	Low BP/HR High RSA	High BP/HR Low RSA
Arousal level	Low	High

The social brain unconsciously regulates social behavior. It gathers information from others and from itself and creates a neural platform, which organizes the behavior of the individual to either foster communication and social engagement, or mobilization (freeze, flight, freeze) and social disengagement. The types of input it gets cover multiple sensory domains including sight, sound, voice, muscle tone, heart and breathing rate. These work to organize the autonomic nervous system for particular behaviors. In fact about 80% of the fibers that innervate the autonomic nervous system are afferent (incoming). That is, they gather information and feed it back to the nervous system, which then decides how to organize itself to be most productive. The remaining 20% of efferent (outgoing) fibers organize the verbal, motoric, and physiological systems that determine our behavior. So the autonomic nervous system spends about 80% of its time and energy gathering information and only about 20% acting on that information, all unconsciously. The table above summarizes those activities.

Recently, a caregiver approached me with a typical problem he was having with a young lady, which he couldn't understand. We spend a good deal of time doing what we call State or Stage I interventions. State or Stage I interventions deal with the limbic system and arousal. They are aimed at keeping the person's nervous system calm enough to allow the person to access his frontal lobes. We use things like music, drumming, tapping, exercise and meditation to help an individual keep his arousal under control. (We'll talk more about this in the treatment section.)

These are the types of interventions that need to be practiced regularly so that they can be loaded into behavioral, or procedural, memory. (I use these terms interchangeably.) Think about them just like you would a jump shot in basketball. Like a jump shot, regular practice means they can be loaded into procedural memory so performing them becomes second nature. In a game, a well-practiced player doesn't have to think about all the elements that go into making a jump shot. In the same sense, once loaded into behavioral memory, State or Stage I interventions can be useful not only to "lower the idle," or keep the person's arousal within manageable limits, but also to help the person, when he is escalated, get his arousal back under control. When that happens, he can think and reason. State and Stage I interventions can be useful, but only if they are pre-loaded into emotional and procedural memory, and if the person is willing to use them.

Often getting a person to use them, when she is escalated, can be a problem. I'm thinking of one young lady I knew in particular. Once her escalation cycle began, her social disengagement system was turned on, and her ability to listen, follow directions, and use these strategies to calm herself was diminished. The caregiver was having a problem getting her to use these strategies when she needed them most.

So we sat down with the young lady and talked about the situation. I used the "house fire" metaphor to help she and the caregiver think about how they could improve her use of the State/Stage I interventions, the

tapping in particular. I said that if I were walking down the street and saw a house fire, I would be thrown into a complete panic (limbic response). I'm sure I wouldn't know what to do, but maybe I would have the sense to call 911 to get some experienced fire fighters there to help. The fire fighters would know exactly what to do and wouldn't panic.

What's the difference between the fire fighters and me? Why would they be able to handle the situation without panicking? Why would I be so helpless? Well, it's actually pretty simple. They have lots of practice, training, and experience. I don't. It wouldn't have been their first encounter with a house fire and they would have practiced exactly what to do over and over to get ready. The problem with our gal was that in the face of escalating arousal, the social disengagement system kicks on, tells us not to listen or follow directions, and we haven't practiced enough to make it second nature to use the de-escalation tools available to us.

They both felt quite different about the situation after we talked. Prior to our discussion the caregiver confessed that he was having thoughts like maybe the young lady wanted to explode, and didn't care about behaving reasonably. He said he thought she just might not have been motivated to get better. Afterward, he realized that it was her brain functioning to protect her that made it difficult for her to engage and follow his directions. He also realized that the both of them would have to do a good deal of practicing in order to get the tapping loaded into her procedural memory and make it available when she needed it. The young lady also felt better. She had an explanation for behavior that, up to that point, made no sense even to her. Take a lesson from the fire department.

Now, for the inevitable, "We have to work it out!" example. We do have to work it out. We don't always have to work it out *in that moment*. Sometimes it makes a lot more sense to walk away and come back to make peace at another time. This is because the "neural platform" from which the person is operating in that moment may not contribute to social engagement, or making peace. In fact, it may be organized to protect itself, and fully withdraw from social engagement *with that particular caregiver*.

Withdrawal or avoidance is not a frontal lobe-mediated choice. It merely reflects the state of the person in that moment. A caregiver walking away can simply show a healthy respect for the other person's current neural organization. Walking away also provides the other person with an "escape" and should help his escalation level decrease. Later, when we try to work it out, we should proceed with the person's neural state in mind, as well as our own, and discuss the situation when the person's body and central nervous system is able to access the frontal lobes and keep the limbic system in check.

This neural insight also explains why a change of caregivers can sometimes trigger what looks like a magical response, particularly if the caregiver has a good attachment history with the person. I got a crisis call one evening and headed out to try and help. A few minutes later, I turned off the main road and down through the woods on a dirt road where I found a young lady being restrained by two staff. They couldn't let her go because she was threatening to run back towards the main road. She had a long history of running out into the road. Obviously, this can be very dangerous, especially in the dark.

We were far enough down the road that I thought she would be okay and asked the caregivers to let her go and leave her with me. They let her go and headed down the road toward the house. I was on the receiving end of a number of expletives and threats from the young lady. I pointed out calmly that we could still get out of this thing without any trouble and that we had done it together many times before. She started to listen. I also pointed out to her that in order to get out of this thing we would have to change what was happening physiologically in her body.

I burst out with my best rendition of "Rockin' in the Free World." (My apologies to Neil Young.) She quickly joined in. Her state changed, as well as her behavior, almost instantly. We sang it over and over and eventually headed down the road toward her home, and away from traffic. We were able to turn her nervous system and behavior around and the caregivers who



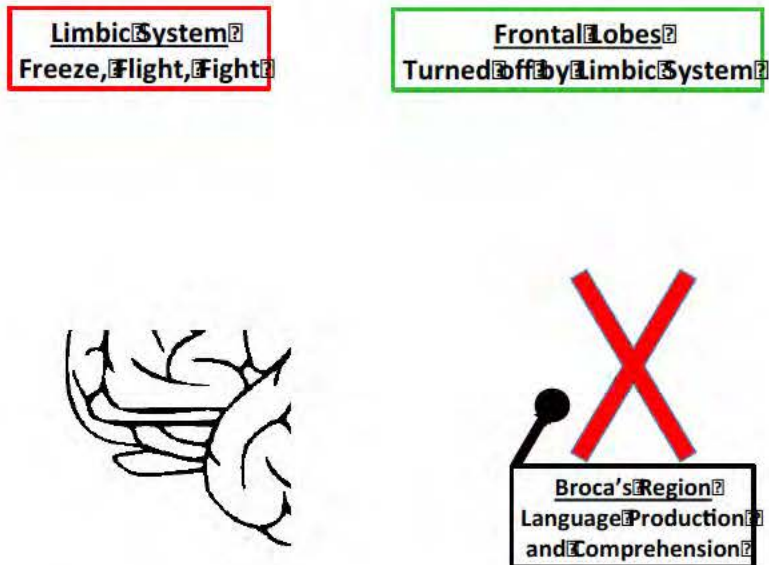
had been attempting to do the same for the past few hours, wanted to know what we did, so they could do it as well.

Well, the first thing I did was remind them I had put fifteen years into it. That's about how long we had known each other. We had a long-term attachment relationship, which she felt safe in. (Lots more to say about this in the attachment section.) Suffice it to say we feel safe with people we have safe experiences with. Second, it worked because when I arrived she was able to disengage from the people she felt she was fighting with. And third, as soon as she was more stable, we were able to drive the feelings out of her body, and reorganize her internal state, with some good old fashion rock and roll. Sometimes just changing caregivers when things are out of control can make all the difference, and allow us to use some other interventions to calm the nervous system.

**BOTTOM LINE:** Your nervous system reads itself and the nervous systems of others without being conscious of it. It then creates a neural platform, which directs us either to mobilize (freeze, flight, fight), or demobilize and communicate. The social brain is quite skilled at reading its own body, and the body of others, and then generating behavior that it assumes will have the best outcome.

Since 90% or so of the information it gathers is non-verbal, words won't help convince anyone that you aren't escalated when you are. You can't fool anyone about your emotional state. So, if you are a caregiver and get escalated, there is no shame in withdrawing, allowing another caregiver to take over, and settling things later on when everyone's neurological system is ready to re-engage.

# Language Effects



The currency of the frontal lobes is language. The frontal lobes use language both to talk to others and to itself. Words are the way the frontal lobes instruct, reason, and direct itself, as well as talk and engage with others. We *literally* talk ourselves and others through situations. There are two areas of the brain that account for the particulars of speech. They are Wernicke's and Broca's areas. Broca's area organizes the form of speech, speaking in full sentences for example. Wernicke's area is about the content of speech. It is about what we have to say.

When the limbic system turns on, it affects the speech areas of the brain, as well as the frontal lobes. When the limbic system takes over, it shuts down Broca's area but Wernicke's area continues to function. It shuts down the self-guidance and meaning making mechanisms of language. We can speak in full sentences, but the content of what we have to say may have no meaning at all, be completely unrelated, and maybe not even true. The goal of the limbic system is to create social distance, not exchange information. Remember that with the frontal lobes offline, a person can't evaluate what she is saying, and most likely won't remember it since memory isn't working



very well either. Without words, memory will be reduced to a flood of images, sensations, feelings, and procedural memories.

I spoke with a caregiver who was quite upset about something she had been told the evening before. She got into an argument with a young lady who lives with her and things got pretty loud. The caregiver was worried that the neighbors would get alarmed and they might lose their apartment. When she said that to the young lady, she got louder and told her she'd just have to deal with it.

"I hate this #\$%&ing apartment anyway!" She screamed. At that point, the caregiver was wise enough to disengage, walk away, and let everyone de-escalate.

The next morning they came to see me. The caregiver was quite upset about the response she received from the young lady the night before. She told me that she thought the young lady really liked where they lived. The young lady was there and quickly made it clear that she did like the situation very much, and apologized for what she had said. When she was asked why she said it she simply and truthfully said she was mad and didn't mean it. She wasn't even sure what she had said.

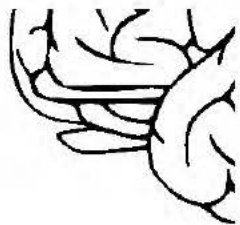
We agreed that sometimes when people are upset and dysregulated they say things that they don't mean. Her statement the night before represented a change in her *state*, not a change in her mind. However, without the benefit of her frontal lobes and the language center of her brain, what came out didn't make sense and wasn't even true. The caregiver understood this better and no longer felt so confused.

**BOTTOM LINE:** When a person is escalated it may be best to consider words an expression of her emotional state rather than a verbal account of a problem. Don't talk to a person whose language center is shut down, as she is not able to process language and may just find your soothing words irritating. *Don't* speak to the limbic system. It can't hear you. *Do* be kind enough to speak with the frontal lobes when they are available. They'll listen.

# Confabulation

Limbic System?  
Freeze, Flight, Fight?

Frontal Lobes?  
Turned off by Limbic System?



Confabulation is the unconscious filling of gaps in one's memory with fabrications that one accepts as facts. When a person doesn't have all the information he needs to connect the dots he confabulates a *reasonable* story. A person will unconsciously fill in the gaps in his narrative with elements that *seem* to fit. Most important in understanding the concept of confabulation is this: *the person believes the story he tells to be true!*

This is one of the critical functions of the human brain. Accuracy is not the main objective of the brain, coherence is. If necessary, our brains will invent things that never happened and people who don't exist simply to hold the story together. This is the brain's attempt to explain to the person and others what's going on. Michael Gazzaniga, a split brain researcher, said, "Listening to people's explanations of their actions is interesting, but often a waste of time. The left brain [language center] uses what it has and ad libs the rest." Even when we don't have all the facts, we still need an explanation that helps us understand why we are doing what we are doing. So we confabulate. We come up with, at best, a guess about why we are doing what we are doing. At worst, we produce an unrelated fabrication.

The confabulation is often based on explanations we have been given by others, especially about our own behavior. I once asked a nice young man why he was doing some of the things he was doing. He looked at me, seriously, and said, "I guess I didn't have enough behavior modification when I was a kid." It was no surprise that he had just been released from a school with a very behavioral approach to helping people.

Remember that when a person is escalated the language centers of the brain are shut down. That doesn't mean he can't talk. It does, however, mean that whatever he says may not make any sense. More often than not, when a person is escalated, others around the person also become escalated, and chase confabulations around. That isn't a particularly helpful response. I know a fellow who, when escalated, has a brain that takes a very predictable course of confabulation.

His arousal starts to rise, and he asks for more coffee. (Coffee management has been a traditional problem for him.) Then he usually picks out a caregiver and says he can't work with him anymore. The crescendo again rises and then he usually says he wants to move out of his home. We know these are all confabulations because he actually drinks as much coffee as he can handle, enjoys his staff, and likes where he lives. The most helpful response to these thoughts is to ask him what it means when he says these things. These days, because of consistency of response and much practice, he *usually* responds that it means he is upset.

The follow-up questions are: where do you feel it, and what can you do about it? He usually responds that the problem is in his body, and he should go for a walk or swim. We have worked very hard to turn these confabulations into signals to him, rather than action plans he has to follow through on. If you enter into a conversation about any one of these things he will continue to invent reasons why they are true. This just drives his escalation up and pretty soon he's headed toward escape, unfortunately. Chasing people's confabulations, or arguing about them, is usually not particularly helpful, and often causes further escalation.



Here's another example. I was in a fun but rather confusing and triggering situation with a couple of my grandchildren (2 & 5), my son, a friend, his son (4), his foster son, a bouncy house, and a mall equipped with an emergency ice cream dispensary. Yikes. We were in limbic system central, lots of kids yelling and running, ice cream before dinner, and lots of unknown. Overwhelming at the least.

When we left the mall my son Michael, who has Autism, was a bit out of sorts. He was quite dysregulated. I was, too. Although he didn't feel right, he couldn't make sense of what was bothering him. He couldn't make an appropriate *attribution*. He couldn't relate what just happened in the mall to how he was feeling. So, he searched his memory banks to explain his feelings. He did his best to connect the dots.

He started to ask questions and make demands about things that had been long settled. Many years ago, we had a Toyota truck that was a lot more than just a truck to him. He has a special kind of relationship with vehicles most of us just don't have. Anyway, as we began to head home, he brought up the truck and asked me why I got rid of it. He "knows" (that is, his frontal lobes contain the information) that the reason we no longer have the truck is because the frame was damaged and it wasn't safe to drive. We have had this discussion many times, and he was intimately involved in the process of disposing of the truck.

The fact that he asked about the truck told me that his frontal lobes, where the truck information resides, were not available. They weren't driving his questions. By the way, this kind of approach makes it a lot easier, emotionally, to deal with this kind of behavior.

I could have talked with him about the truck, but that wouldn't have helped. His question about the truck was an expression of his dysregulation and inability to relate how he was feeling to what had just happened. So I helped him by making the attribution for him. I told him I understood how he felt and pretty much felt the same way. I also told him that it really wasn't related to the truck, it had to do with what just happened.

That helped for a moment and then he asked when he was going to get his cat back. The cat is also an issue that was dealt with years ago and only comes up when he feels dysregulated. So I addressed the cat in much the same way. This was really not about the cat it was about our recent mall experience. I also asked him what it means when he starts asking about the cat and the truck. He was quick to respond that it means he isn't feeling happy.

Then he asked about his fridge. He wanted to know why I wouldn't let him have the fridge that his grandfather left him. I answered in much the same way. This isn't about the fridge it's about what just happened at the mall. Again, I asked him what it means when he begins to string together a bunch of old problems that have long been resolved? He said it means he's upset. And then he said the best thing of the evening.

"Can we still get pizza?" We had moved on.

Had I addressed any of the confabulations he had made we would likely still be talking them through now. The problems he presented were his way of interpreting his feelings. He *unconsciously* looked for a reason and found a couple that seemed acceptable and seemed to fit the facts. The problem with confabulations is that once a person thinks them, he can very quickly come to believe them. The rule of thumb here is *don't believe everything you think*.

You don't have to have a disability or a mental health disorder to confabulate. We are all meaning making machines. When we are confronted with something we don't understand, we connect the dots in a way that helps us understand or make meaning of the situation.

I was at a meeting a while ago and when I left, I was feeling uncomfortable. I just didn't feel right and assumed it had something to do with what happened at the meeting. I reviewed the meeting over and over in my head and felt no better about it, even though I couldn't really identify why I felt it had gone so badly.

Unfortunately, the feelings were locked in my body at that point and I realized that I needed to do something about them. I decided to go to the gym. It takes twenty minutes or so to get there and I ruminated the whole time about what people said, what they meant, and what the implications were. I tried to ascertain who was behind the ideas we discussed, and who was not. I reviewed my history with each of them to see if there were any clues.

I arrived at the gym with no further ideas about what had happened. I got changed and headed in. I jumped on my favorite cardio machine and started moving at a fairly good pace. About two minutes into it, I started to feel sick. I stopped the machine and nearly lost my lunch. That's when I realized that I was coming down with something. I also realized that my internal, physical discomfort was driving my thoughts about the meeting. What had actually happened was that my body sensed my internal discomfort and my mind looked for a reason for my discomfort in the external world. It settled on the meeting. Great confabulation!

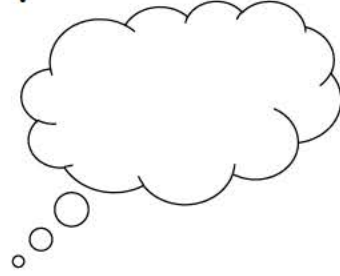
**BOTTOM LINE:** Your brain is designed to connect the dots. Sometimes it gets it right, sometimes it doesn't. Despite the accuracy, though, it almost always *believes* it got it right. One thing we often tell people, and ourselves is, "Don't believe everything you think." Here's a couple of useful ways to think about intervening when people are confabulating:

- Don't accept or respond to confabulations as facts or actual concerns.
- Decide what it is you are going to talk with them about.
- Don't chase their confabulations.

In the previous example when the fellow asked for more coffee, we could have talked with him about why more coffee would be bad for him. If we did that, then we accept that the desire for coffee was driving his behavior, which wasn't actually true. Helping him reflect on what coffee means is much more useful. Remember not to believe everything you think, and help others do the same!



# Memory and Experience



Memory is the filing cabinet of experience. It takes many, but not all, of our experiences and stores them away. Once stored, they are available for retrieval should we need them in the future. We might need them to help direct us, buffer our mood, or help us understand our own behavior and the behavior of others. It has an interesting filing system, a bit more complicated than the Dewey Decimal System. It doesn't save information in alphabetical order, but rather uses a complicated algorithm of categories and relationships to store information. This complicated system attempts to ensure that we can recall the information we need when we need it. Memory can be viewed as the way experience affects us, informs us, and drives our current behavior.

The way into the filing cabinet of memory is through a short term "inbox" called working memory. Working memory is what we are using when we say we are "thinking of something." The inbox can hold a limited amount of information until it can be filed. It is thought to hold about seven bits of information at any given time. If a new piece of information enters working memory, it will knock out one of the pieces waiting to be filed. That piece of information will be lost, and will not get into long-term memory.

The filing cabinet of memory has multiple drawers. Each drawer holds different forms of memory and collects different kinds of experiences. This is so they can be recalled in the particular situation where

they are needed. One of the main drawers is for explicit memory. This is conscious, rational memory. It is also known as declarative memory. The other major drawer is for implicit memory. This is unconscious, emotional memory.

Essentially the brain has two memory systems, one for rational facts, and one for emotionally charged events. This makes sense, from an evolutionary perspective, because it ensures that emotional memories of things that thrill or frighten us should be quickly available to help us make decisions that require an immediate, non-rational response. It also makes sense not to put the rational and emotional memories in the same drawer. One needs to be immediately available (emotional), and one can be recalled, or sorted through, in a slower more thoughtful way (rational).

Declarative memory is what we typically think of as memory, in that we know we are recalling events from the past. Emotional memory is recalled in the form of sensations, images, feelings, and body memories. It doesn't feel like memory, but it shapes our behavior and responses. It remains behind the conscious scene.

One of the problems with this system is that if we open the wrong drawer, say for an emotional memory when the situation doesn't call for it, we might be quickly misinformed and the information that comes out of the drawer might trigger our freeze, flight, fight response. Once again, this is not good, unless there is a tiger in the room. Since emotional memory doesn't "feel" like we are remembering, we may be entirely unaware of its influence over us. You might say that memory is a way of using the past to understand the present.

The filing system of the brain is certainly not foolproof. Memories are stored versions of our subjective experience. It doesn't store what actually happens. It stores what we *perceived* happened. Our subjective experience is informed, and our perceptions formed, based on more than just what happened. Our memory will be formed from our experience of actual events, beliefs associated with this particular type of event, things

we can infer, similar or related past experiences, and what we have learned since it happened. So even when memory systems are all turned on, the memory we create may be quite different than the memory other people create. This is because although we may experience the same things, our subjective experiences may be quite different. We won't always agree on what has happened. Ever happen to you?

Now that we know how memory functions, we can look at how it works when the limbic system kicks on and shuts down the thinking part of the brain. First of all, it is the thinking part of the brain that manages working memory. We know that one of the first things that the limbic system does when it is engaged is to shut down the frontal lobes, thereby shutting down working memory. Without a functioning inbox, the person has no chance of accurately laying down memory in the middle of an emotional explosion. So, later, people can only confabulate and attempt to connect the dots, but much of the memory is just not there. We can't recall what isn't there, so we are inclined to make it up, tell what seems like a reasonable story, and then believe it.

Memory recall is both state and environment dependent. This is true of both rational and emotional memory. Both memory systems are sensitive to internal and external factors that influence what is being recalled. When conditions in the world, in the form of sights, smells, and sounds, match situations from the past, then similar past situations will be recalled. When conditions within the person, in the form of emotions, states, and physiological activation match situations from the past, then similar past situations will be recalled.

Remember that if it is the implicit, emotional memory system that is having the recollection, then it will not be experienced as remembering. It will be experienced more as sensation, images, and behavioral activation. It will drive us to do something, and since it is implicit memory, it will not have words to describe or explain it, either to others or to ourselves. The challenge when presented with this is to help people sort out what is related to the present, and what is intrusion from the past.

Many years ago I did a number of workshops on trauma. We spent a good deal of time talking about memory. A participant brought up an example a young lady she skied with who helped us better understand state dependent memory. This caregiver skied regularly with a young lady with a developmental disability. They both loved skiing but the caregiver was thinking about no longer taking her skiing. The reason for this was that on some downhill runs the young lady would burst out and begin to curse and yell at some of her former caregivers, at least one of which was very abusive to her.

The caregiver assumed she was doing this for attention, as she didn't have any other way to think about it. She also wondered if the behavior was somehow related to her disability. She had talked with the young lady's frontal lobes about it, but that hadn't helped. The one consistent thing was that the more thrilling the run, the more likely she would floridly express her dissatisfaction with her past treatment. Once we talked about it she realized this was a case of state dependent recall. When the young lady reached that high level of arousal or activation, her implicit memory began to kick forward these past experiences. She then began to express her feelings quite verbally about them, as if they were happening in the present.

We talked about it a great deal and the caregiver realized if anything, her "threats" to end the skiing were probably driving up the young lady's arousal, even before the downhill thrills. The caregiver also felt embarrassed about the behavior both for herself and for the young lady. She realized that her own arousal was escalating when they were skiing, even before the behavior, in anticipation of what might happen. She thought that keeping her arousal low and responding calmly might help. She also thought that a discussion with the young lady about the new way she was thinking about it could be helpful. (These were the things that the caregiver could do to help immediately with the behavior. I also recommended that the young lady get in to see a therapist to deal with the actual issues driving the behavior.)

Unfortunately, I never met the young lady. However, Vermont being the small state it is, I ran into the caregiver in the community some time later. She approached me and wanted to make sure I knew what had happened. They were still skiing. She followed through on her plan to help both herself and the young lady keep their arousal in reasonable limits. She had talked with her about what she felt was the cause of the behavior, and helped her to get in to see a therapist. The behavior didn't disappear, but it was less problematic, less frequent, and less intense. Maybe most importantly the caregiver was no longer embarrassed about it. Now that she had a different way of thinking about it she felt nothing but empathy for the young lady.

In order for explicit or rational memory to be formed, it requires focused attention. Without focused attention about what is occurring, rational memory will not be encoded. Therefore memories won't be formed, and there will be no verbal account of what has happened. Emotional memory is encoded very differently and doesn't require focused attention to be formed. When aroused, our attention field narrows and misses many of the details of what it is experiencing, because it is concentrating on the most salient, and perhaps the most dangerous things, in the environment.

For example, eye witnesses of violent crimes have very good recall of things like weapons, guns, and knives, and notoriously poor recall of perpetrators' faces. This makes a lot of sense, as the brain concentrates on what it deems the most dangerous part of the scene, the weapon, not the criminal's face. This also explains why people don't remember lots of what happened after a highly emotional experience.

I had an experience a few years ago that provides some insight into how this can play out in a behavioral episode. I had a very disappointed young man on my hands. He was disappointed and the disappointment soon became panic. This panic triggered his freeze, flight, fight response. I was uninvolved in whatever the problem was, but soon found him standing in front of me demanding some resolution. That quickly turned into him seeing me as

the problem, and his fight response being triggered. He came at me swinging.

I actually thought that I handled it pretty well. I was able, I thought, to manage the aggression without either one of us getting hurt. And then another caregiver jumped in and restrained him. I didn't think it was necessary, but I was glad for the help. (The caregiver was my oldest son.) What was interesting afterward was the effects the arousal had on both the young man's and my own memory.

When I asked my son why he jumped in, he said that the young man had landed a punch to my head. I had no recollection of this. After the first punch to the head, my son said that he told himself that if the young man landed another, he would have to restrain him. When the young man did land another punch, my son felt he had to restrain him. I had no memory of the second punch either. Before this happened, I had been out cutting the grass and had on headphones to deaden the noise of the mower. They had taken at least one of the punches and were broken. That is the only thing that convinced me that he had actually landed the punches. I had no memory of it.

The effects on the young man's memory were equally as profound. Later, when he talked it through with my son, he believed that I had restrained him! While he wasn't able to talk with me, because of his fear of what I might do, he was able to talk with my son, the person who had actually restrained him. What had happened is, as the event progressed, his field of perception narrowed, and all his attention was on me, where he believed the danger was coming from. His narrow focus distorted the scene and he missed many of the actual details, as did I. Since there was limited information with which to build a memory, his memory was distorted, and he believed I had restrained him. (If I didn't have this understanding of the brain, his and mine, I might have thought he was "lying".)

The description of memory I have just given is a very simple description of a very complicated set of processes. However, even in its

simplest form it can be complicated. So let's take a look at a recent example of an emotional meltdown and its affects on memory. The meltdown itself was quite predictable. What I wouldn't have predicted was its effects on memory, without which we couldn't understand, or effectively intervene, on the behavior.

A young lady came in to see me and was somewhat dysregulated. We had agreed the day before to get together that morning to make a call and see if she could go for a visit with some old friends. When she gets dysregulated she gets a little bit manic. Her thoughts jump around on her and her prodigious use of less-than-socially-acceptable language increases. I commented on these things as I noticed them and asked her if she was nervous about the call. She said she wasn't but that she was upset with the way that the staff at a local coffee shop had treated her that morning. I noted that the anxiety of the phone call might have affected her interaction with the staff at the coffee shop, but she wasn't ready to hear that.

Whatever was driving her internal dysregulation, whether phone calls or staff at the coffee shop, she was clearly in no shape to make the call. I pointed that out to her and she asked if we could all sing together. So sing we did and things looked quite different afterwards. She was more engaged, less manic, and in a better mood. (See more on singing as a Stage 1 intervention in the treatment section.) Then we got ready to make the call. Anticipating the phone call would be hard for her. I wanted to help her anticipate what might happen and how it might make her feel. I also wanted to make sure that her frontal lobes were primed and didn't get any surprises.

So I asked her what she thought would happen with the phone call. I told her I didn't think that she would get a time to visit today. I thought that there would have to be some more planning and it would be a little while before she even knew when the visit was going to take place. I also thought that if this were the case she would be disappointed. She said she thought that she would be fine and we should just make the call. Well a few minutes into the call I could see her begin to shut down. She said fewer and fewer

words and then stopped responding as the plan to visit developed into making calls and getting back to people. Her body also shifted from being open and excited to slumped over and disappointed. We hung up the phone and things went predictably downhill. I pointed out that we had just gotten what we had expected, but I could see that my perspective wasn't shared.

She began to become more activated and moved from disappointed to angry. We asked her if she was ready to go to work, and we got the state-dependent memory recall problem. Her disappointment and anger in this moment opened the floodgates for past disappointments, anger, and hopelessness. She said she had no intention of working and that she couldn't get a decent job anyway, no one had ever hired her, nobody believed in her, she wouldn't ever get anywhere, etc. Rather than chase her thoughts (confabulations) downstream, I just kept reminding her that she was disappointed about the call, and had the right to be. However, without fully functioning frontal lobes this information wasn't getting through. I was hoping the calm delivery would help to soothe her more than the actual words.

Then she got a phone call from a friend. He had been after her for some things and she was already annoyed with him. She quickly and in no uncertain terms read him the riot act. He hung up and that put the icing on the cake. She threw her phone, slammed a few doors, and ran in and out of the building. Although she was quite aroused things did not escalate into violence. We calmly monitored the situation, without actually responding to it, and fairly soon the hurricane blew itself out. She came back up and asked if we could sing again. We said of course, and sang our way back to a reasonable state of calm.

She called her friend back and he wouldn't answer. She texted him and got a response she wasn't really prepared for. She asked what he could be so upset about, and that she just wanted to talk with him. We asked if she remembered what she said to him earlier on the phone. She didn't have any idea but did have some vague recollection of talking with him. A staff person repeated just about verbatim what she had said, expletives included.



She looked surprised. She had no memory of it. Fortunately she didn't become re-escalated from the information, but she did begin to cry. She was able to hear that his nervous system was responding to her phone call, the same way she had to her earlier phone call. Just like her he would get over it, but it was best to not attempt to talk him through it until his frontal lobes were available.

She decided to text him an apology for what she had said, and not try to call him right then and talk it through. She also decided she ought to get off to work and asked her caregiver if they could go.

Here's a quick review: the young lady had attempted, successfully, on two occasions to get herself back together with singing. She had become dysregulated but had not actually done any damage to anything. She had overcome her anger and disappointment and was headed out for work. She had kept the "brain in mind" when reflecting and acting on the phone call with her friend and how best to handle it. She was only missing one thing, which we soon gave her: a round of applause for her hard work.

Both our state and our level of arousal affect memory. The state we are in opens up the emotional memory drawer and out flows memories that match how we are feeling in that moment. Negative and high arousal states are likely to pull forward unconscious memories that don't seem remembered and impact our behavior negatively.

Our level of arousal affects our implicit or rational memory system differently than the emotional memory system. At low levels of arousal, neither system is laying down memory as they aren't really finding anything of interest. At moderate levels of arousal both memory systems are primed to lay down memories. When we get to very high levels of arousal, explicit or declarative memory is shut down and only emotional memory is active. So when highly escalated we get wordless memories that don't feel remembered and intrude on the present through sensations, feelings, images and behavioral enactments.

I can't let the area of memory go by without one other example. This occurred quite a few years ago and involved two young men and a number of school staff. There was a confrontation between two students on a Monday afternoon. It turned very violent very quickly and staff had to jump in before someone got hurt. There were at least four staff directly involved and it was quite an explosive situation. Both young men were restrained and it was traumatic for everyone involved.

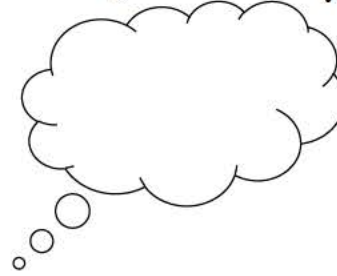
We all wanted to talk about it and see if we could have done things differently and avoided the whole situation. We decided to talk with the entire staff on Wednesday afternoon, when our normal staff meeting was scheduled. I think this was interesting because two full days went by between the event and the discussion. I wonder how much the recollections of the event were affected by the processes of thinking, talking and sleeping on what had happened. When we got together all four staff shared their recollections of what had happened. It was an open and honest discussion. People didn't get defensive about their role in the episode and shared their memories without feeling like they had to defend what they did.

The results were almost not believable. The four staff all had very different recollections of what had happened and not just in the minor details. There were four different versions, even down to details like who had been in the room and which staff had restrained which student. One of our most senior staff could not even recall if he was in the room or not. In highly arousing situations explicit memory is not laid down. Emotional memory is getting filed right into the emotional memory drawer. It is wordless, and does not lend itself to this kind of discussion.

If one of the students had shared their perception of this event, and said they weren't in the room, especially if they were adamant about it, we probably would have questioned whether they were being truthful or not. I wonder how often we think students aren't telling the truth and they are just sharing what has been stored in their memories?



# Procedural (Behavioral) Memory



The role of procedural memory in behavioral disorders is inexplicably unexplored. This is especially surprising since procedural memory is behavioral memory. It is the memory for particular forms of action. Procedural memory is the memory of how to do things. It is relegated to the unconscious brain and implicit memory, so that it allows available working memory to concentrate on things like Oprah, what's for dinner, and what time the Soprano's come on tonight. It remembers what behavior to use in what situation, so we can be free to do other things.

Procedural memory serves as a behavioral template and is mostly accessed unconsciously. When needed, procedural memories are automatically retrieved and utilized for the execution of the behaviors involving motor skills. Everything from riding bicycles, to driving cars, to flying airplanes can be loaded into procedural memory and operate without our conscious involvement.

Procedural memories are accessed and used without the need for conscious control or attention. In fact, they actually resist conscious verbal descriptions. Think about explaining to someone how to ride a bicycle. It is very difficult to do so without getting your body involved and demonstrating how to do it. It is such a *body memory* that the *procedure* of bike riding isn't stored in words.

Procedural memory is a type of long-term memory and, more specifically, a type of implicit memory. Procedural memory is created through "procedural learning," or repeating a behavior over and over again, until all of the relevant neural systems work together to automatically produce the behavior. Think Michael Jordan. In the middle of driving to the basket, weaving between defenders, he would be hard pressed to describe what he had done to get to the basket. His memory of how to do that was procedural. It was behavioral, not being driven by his rational memory system.

Procedural learning is essential to the development of any motor behavior. We know that highly practiced, "over-learned skills" are performed automatically. They require little attention and operate largely outside our conscious control. So here are the implications for treatment: practice, practice, practice!

Especially in State or Stage 1 treatment, we attempt to substitute more adaptive behaviors for less adaptive behaviors. For example, many people we serve have procedural memories that drive them to freeze, flight and fight very quickly. More often than not, this doesn't serve them very well. In fact, it may get them in a good deal of trouble. Our treatment involves helping them insert behaviors like drumming, tapping, singing, and bilateral stimulation, in place of these behaviors to enable them to contain their escalation.

Treatment sometimes just involves talking to them about the new behaviors. Maybe even just in therapy. This is just not sufficient to load them into procedural or behavioral memory. They need to be "over-learned" and practiced daily, in their normal life routines, in order to be available when they need them. Clinicians should introduce them and help them understand their effects on the brain. However it is with other caregivers that they will most likely need them so that's where they should be practiced.

These behaviors, even if they are overlearned, will be difficult to use when the person is under stress. During these times procedural memory will kick in and use the most practiced, best stored behaviors, even if they aren't the ones that we might want them to choose. The strategy for loading more productive behaviors into behavioral or procedural memory, is to practice, practice, practice, in every environment, and with every caregiver, so that they become the most practiced, best stored, and most available behaviors.

I have a very personal example to share about just how challenging it can be to change behavior that becomes hard wired in the body, especially when we are stressed. A few years ago, I had a hip replacement. I have already shared some of my bike riding foibles. Here' how my procedural, or behavioral memory, collided with my new hip, and some mild panic attacks.

I never had those fancy pedals on my bike that require special shoes that lock into the pedal. Post-hip surgery my surgeon said it was a good idea to use the lock-in pedals and shoes. So I got them, practiced a few times, and thought I was good to go. (So, so, not overlearned.) That's when I started falling. I would pull up somewhere, forget that I had to unclip, try to pull my foot off the pedal instead of clipping out, panic, and fall over. (Panic was almost always involved.)

The motion of unclipping, versus just pulling my shoe out of the pedal, must have been sufficiently different that I couldn't adjust. My last great fall pretty much settled it for me. I was on Martha's Vineyard, right where the ferry comes to dock. The ferry had just come in, it was midsummer, and there were people everywhere. I was in the street when the car in front of me braked. I quickly braked as well, went to put my foot down, promptly panicked when my foot wouldn't slide out, and fell for the crowd.

The crowd responded with some combination of concern and tomfoolery. Someone yelled something about it being a little early in the day to be hitting the sauce. I was lying on the ground. I tried to unclip on the ground, through my embarrassment, and decided that I just as soon not do



that again. I got back on the bike and headed home. I spent the next half hour or so riding back home unclipping about every 20 feet. Practice was the only way to get my body to take on this new behavior and let go of the old one. I have fallen very little since then but I do find that I need practice sessions once in a while to keep my body doing the right thing.

Although this was a very simple change in behavior, it was quite resistant to change, and took lots of work to get it right. Imagine attempting to change much more complicated behavior. Behavior that has been locked in the body for a long time, and perhaps even put there for protection against danger, will be much more challenging to change.

Here's another example of loading escape into procedural memory in a classroom that decided it wanted to provide "treatment with the brain in mind." A young lady whom I saw for individual therapy was a student in this school. We had worked with her and her caregivers to educate them all on the brain and to help the young lady choose flight or escape behaviors over fight. She became very successful at it with her primary caregivers.

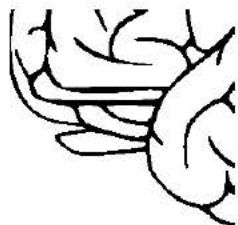
She still struggled somewhat at school and from time to time was restrained. We went to her class and worked with her and the other students to create and practice an escape. After some discussion of what felt safe to her, we created a map of where to go. We called it an escape plan, and drew it and posted it on the wall. Then we made red arrows and put them on the floor and out of the building to the agreed upon escape site. Then, as a group, we had a series of "escape drills" in which we all followed the arrows to the bench out in the yard.

This was quite a different approach than just talking about it. We

**BOTTOM LINE:** People's behavior gets remembered by their bodies and stored in their behavioral or procedural memories. If we want to help them change their behavior we have to teach their bodies new things. Simply using reward and punishment won't help. Practicing new behaviors that are more desirable, across environments and caregivers, is an excellent way to learn new things. Using these new behaviors when people aren't upset, so that they are in their repertoire when they need them, is the key. Practice, practice, practice, until they are the most practiced, best stored, and most available behaviors.

worked out a reasonable plan together and then took the time to load it into everyone's procedural memory, including the other students and staff. This made everyone knowledgeable and aware of how to best handle things should she become escalated. There haven't been any restraints in a long, long, time.

## Summary of "Treatment with the Brain in Mind"



Let's review what we have learned, in terms of brain science, that helps us better understand how to react to people when their behavior is challenging to us. The brain science also helps people being helped better understand their behavior and offers them opportunities for change. This is the lesson plan for understanding and intervening on human behavior.

1. There are two "behavioral systems" in the brain, one for THOUGHTS, and one for FEELINGS.
2. The THINKING system is designed to help us with long-term advancement. The EMOTIONAL system is designed for survival in the moment.
3. The THINKING system takes time and requires the person to stop, anticipate, think, plan, and then act, all while monitoring its own progress. The EMOTIONAL system acts very quickly in order to protect a person from danger, whether it's real or just perceived.



4. Emotionally driven behaviors are defined by FREEZE, FLIGHT, and FIGHT. When you see these behaviors you know the emotional system is in charge.
5. Consequences may be helpful for RATIONALLY driven behavior, but may cause increased escalation for EMOTIONALLY driven behavior.
6. Before intervening on anyone's behavior, be clear about what brain system is driving the person's behavior, RATIONAL or EMOTIONAL.
7. Be sure that the intervention or treatment is aimed at that brain system that is driving the behavior: DE-ESCALATION for the EMOTIONAL system, and TALKING for the THINKING system.
8. Remember that when the EMOTIONAL system is driving things, it quickly shuts off the THINKING, LANGUAGE and MEMORY systems. So don't talk to the THINKING part of the brain when it's unavailable. It's just annoying.
9. TRIGGERS are tricky, but they are the key to helping people manage their behavior. Help people understand what happened that caused them to behave the way they did. It will help head things off in the future.
10. TRIGGERS come in multiple flavors. Things in the present environment (PERCEPTIONS), "trigger" things in the mind (THOUGHTS), and in the body (FEELINGS), which often have nothing to do with the present. They are only reminders of the past. Don't get caught in the trap of assisting people to experience the past as if it were the present.
11. It often makes more sense to help a person understand whether the EMOTIONAL OR RATIONAL system is driving her behavior than responding to what she says as if she has identified a real problem in the present.
12. The SOCIAL brain is incredibly sensitive to where it stands with others, and heavily influences behavior based on its appraised status. The UNCONSCIOUS mind/brain has more expertise than the CONSCIOUS mind in determining where a person stands along with the nervous systems of those around the person. It reads its own

- internal state and the internal state of others and creates a neural platform for behavior. High arousal states will lead to FREEZE, FLIGHT, AND FIGHT.
13. Elevate those whose behavior you want to improve to your own SOCIAL STATUS, or above. Where they stand in the pack and with significant others, will determine how they behave.
  14. Since the EMOTIONAL brain is quite efficient at shutting down the thinking process and the frontal lobes, don't pay too much attention to what people SAY when they are upset. They probably don't mean it. Also, don't CHASE their THOUGHTS around. It isn't helpful for them, you, or their behavior.
  15. When people CAN'T CONNECT THE DOTS in their story, their emotional, implicit, unconscious brain, will jump in and connect the dots for them. This is a CONFABULATION. More often than not, the brain/mind will make up the missing pieces, and then BELIEVE them. Don't believe them too! Help them make real connections between perceptions, thoughts, feelings, and the past, in the present. (Make sure to wait until their frontal lobes are available.)
  16. Aside from LANGUAGE, the EMOTIONAL SYSTEM is also extremely proficient at shutting down the capacity to create MEMORY and use it efficiently. So when escalated, people's memory of the PAST will intrude, in the form of images, sensations, feelings, and behavioral or procedural memory. They will experience the past as the present, without actually knowing it. Don't chase their memories around in the present. Help them sort past EXPERIENCE from the PRESENT MOMENT.
  17. PROCEDURAL OR BEHAVIORAL MEMORY is our best friend. It is literally the memory of how to behave. Spend most of your efforts loading the behavior you want to see into it, so they are the most practiced, best stored, and most available behaviors the person has. PRACTICE, PRACTICE, PRACTICE.