

THE BRAIN BIBLE

A David Van Nuys interview
with John Arden



John Arden, Ph.D. has 35 years of experience providing psychological services and directing mental health programs. Since 1999 he has served as the Director of Training for the Kaiser Permanente Medical Centers, Northern California region. He has developed one of the largest mental health training programs in the United States. In this capacity he oversees more than 100 interns and postdoctoral psychology residents in 22 medical centers. Prior to this he served as the Chief Psychologist at Kaiser Permanente Medical Center in Vallejo, California.

Dr. Arden's study of neuropsychology has inspired him to integrate neuroscience and psychotherapy, synthesizing the biological and psychological into a new vision for psychotherapy: Brain-Based Therapy. His work incorporates what is currently known about the brain and its capacities, including neuroplasticity and neurogenesis, with psychotherapy research, mindfulness, nutritional neuroscience and social intelligence. He conducts seminars on Brain-Based Therapy throughout the United States and abroad.

Author of thirteen books, his most recent publication, *The Brain Bible*, describes how the general audience can utilize breakthroughs and benefits from neuroscience research for a vital, productive, and happy lifetime. He is the lead author (with Dr. Lloyd Linford) of two volumes for the practitioner entitled *Brain-Based Therapy: Adults* and *Brain-Based Therapy: Children & Adolescents*. His first book, *Consciousness, Dreams, and Self*, was awarded the 1997 Outstanding Academic Book Award by Choice, a publication of the American Library Association. An international panel of jurists nominated his second book: *Science, Theology, and Consciousness*, for the CTS award funded by the Templeton Foundation. Arden explored the degradation of the fabric of American society with *America's Meltdown: Creating the Lowest Common Denominator Society*. His seven self-help books are: *Surviving Job Stress*, *Improving Your Memory for Dummies*, *Conquering Post Traumatic Stress Disorder* (with Dr. Victoria Beckner), *Heal Your Anxiety Workbook*, and *Heal Your OCD Workbook* (with Dr. Daniel DalCorso), and *Rewire Your Brain*.

DD Doctor John B. Arden, welcome back to Shrink Rap Radio.

JA Well it's great to be back, Dave.

DD Yes, it's a pleasure to have you back on the show again. It's been almost a year exactly since you were on episode 332 *The Emerging Psychotherapeutic Consensus*, in which you spoke about how the findings of neuroscience are leading to a consensus on why psychotherapy works and what techniques are appropriate for which conditions. Today we're going to be picking up the neuroscience thread again, speaking about your latest book *The Brain Bible*, which is all about promoting brain health for a long and healthy life. So let me start out by asking you, what prompted you to write this latest book?

JA Well there's a lot of misinformation out there, especially in the popular media, about what's good for your brain, what's good for your mental health. You go to any one of these websites and there's always the latest gimmick or trick or com-

puter program or something that's going to zap your brain and you're just going to be wonderful for the rest of your life. So working in a very large HMO [health maintenance organization], Kaiser Permanente, I thought, well, the people I see really ought to get a summary of the most important factors that would improve their brain health, their mental health, for the rest of their lives. These are lifestyle practices rather than the pill that you take or some magic gizmo or something like that. I wrote the book primarily to do a broad review and simplify everything—bring it down to earth—and provide the reading audience with a good summary of what are the best things to do.

DD Yeah, and you really succeeded in that, I think. Now you talk about your audience; who is your intended audience?

JA Well, you and I and mental health practitioners and consumers—all of us.

DD All of us! OK. And I assume your audience includes psychotherapists, as you're the director for

training of therapists and counselors throughout the northern Kaiser Permanente hospital system? In fact, how many psychotherapists are you responsible for at this point?

JA Well, there are about 130 trainees in about 24 medical centers across northern California, and about half of them are post-docs and the other half are various types of interns—pre-doc psychology, masters of social work, MFTs, and also psychology practicum students. So there's a wide variety, a big family, of mental health practitioners.

who are interviewing folks all over the world on Shrink Rap Radio.

DD [Laughs.] Now one of the things that struck me, and gave me a little bit of hope, is that you say older brains actually have some advantages over younger brains. So maybe you can take us through a bit of a comparison in terms of the strengths and weaknesses of younger brains and then of older brains?

“...younger brains seem to be a little more impulsive and older brains seem to be a little more reflective before reacting to whatever might be going on”

DD What a big responsibility that is. I guess also a privilege. Now, because my audience includes both the general public and a substantial number of therapists and therapists-in-training, I'd like you to focus on both groups in your discussion. You illustrate a lot of the concepts in your book by citing people you have worked with in therapy. So I hope you will feel free to sprinkle in some case history examples in your discussion that other therapists might benefit from.

JA Sure.

DD Now, much of your attention seems to focus on people middle-aged and older, because that's when people start to notice some deficits, and many start worrying about Alzheimer's and other forms of dementia. Do I have that right?

JA Pretty much. The baby boomers are now getting into their latter years and there is a major divergence in the health of some of us. I'm one of the baby boomers; so are you, and around age 55 all the way through to the 80s and 90s, when they get to that age, there is such a divergence in terms of health based on what they did earlier in life. What a lot of research shows, is that roughly in their 50s, if people look somewhat the same, but their lifestyle practices are really different, they can later diverge dramatically in terms of their overall health. On one extreme you can have diabetes type II, dementia—or on the other side of things really bright people

JA Sure. You know, one of the things we might want to acknowledge is that younger brains seem to be a lot quicker. They have a much more responsive reaction time, whereas older brains seem to be a little slower. So that aside, younger brains seem to be a little more impulsive and older brains seem to be a little more reflective before reacting to whatever might be going on. Here's one of the things that happens: younger brains seem to not have as much bilateralization. We have these two hemispheres, and the two hemispheres work well together if we are exercising the skills of the two hemispheres simultaneously. Later in life there seems to be a little more bilateralization, meaning that the two hemispheres seem to work a little better together in general than younger brains. This seems to tilt one way or the other. What does that mean? That means that we are now trying to take it all in and exercise a behavior based on good reflective thought. In other words, we might not be as impulsive, we might be more reflective; we have seen many more situations in life and we go, "Oh yeah, I've seen this one before and I'm not going to react too quickly to that, I think I will wait a little bit and then go do this". Whereas the younger brain might go, "I'm just going to go do this, I'm tired of this".

DD The older brain...it sounds a little like what we characterize as wisdom.

JA Yes, that's right. An interesting thing about wisdom, it's a broad-based term and people throughout written history have debated about what wisdom is, but one thing you can say about

wisdom, that most people agree about, is that it sees the larger picture and how the smaller pieces work together in that larger picture. Something like chess. What does an older brain do that's "wiser"? Well, the older brain looks at the larger picture, and in neuroscience terms some people call this "pattern recognition"—meaning they have been around a lot longer, they've seen a lot of things happen, and they don't get flappable as easily, and that's why throughout history the elders or the grandparents are thought to be wise, and people go and consult with the elders because they have been around longer. So pattern recognition, seeing things over a lifetime, gives us a better ability to respond with much more efficiency, and less sloppily.

DD You know, you mentioned the hemispheric differences, and I don't remember if it was in your book or somewhere else that I recently read something about front-to-back communication favoring older brains. Was that in your book, or was that in *The New York Times*?

JA Actually a lot of people are writing about that right now, and there is a book out there right now called *Top Brain, Bottom Brain* [Stephen Kosslyn & Wayne Miller], that I'm listening to as an audio book, and they make a big case for the idea that the

DD Now in one place you talk about activating your brain's brain. What are you getting at there?

JA Well there again it's the prefrontal cortex. So if you think in terms of how our brain is different from other species, cats have roughly 3.5% of their brain is prefrontal cortex, we have 20%. We sit around and think about thinking. And you and I are talking about thinking. Now cats don't sit around and talk about thinking. When they look quite wise, sitting there purring, we have some delusion that they must be sitting there having some *satori* sort of experience, sitting there like the Buddha or something. But in fact they don't sit around thinking about thinking, they do a whole lot more feeling. So the brain's brain is the capacity to do just that, to think about thinking, to philosophize, to try and make sense of life, and the prefrontal cortex gave us that capability.

DD And it seems both for better and for worse, because on the one hand, thinking about our thinking is a major strategy, not only in Eastern thought and meditation but also in psychotherapy, right? A lot of psychotherapy is aimed at getting us to be aware of what we're doing with our mind, with our brain.

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prefrontal cortex is much different from the posterior parts of the cortex. So far they haven't mentioned Alexander Luria, who touched on this long ago. Luria, for all the listeners who are not familiar with him, I regard as probably the most amazing figure in psychology and neuroscience of the 20th century. He was a Soviet neuropsychologist. So Luria talked about the idea that the front brain, the most advanced part of the brain, the prefrontal cortex, makes all the decisions, but the posterior part of the brain takes in the details. What are the posterior parts of the brain? The occipital lobe, the temporal lobe, that are taking in information and then we have to do something with it. And the doing something with it and deciding what to do with it is the job of the prefrontal cortex, which is larger in our species than any other species on the planet.

JA Oh yes. Psychotherapy in large part is harnessing the power of the prefrontal cortex, and the prefrontal cortex not only does the thinking about the thinking but it also does the affect regulation, the control of your emotions. There is an area of our brain called the orbital frontal cortex, which is part of the prefrontal cortex, that controls affect and has a lot of connections with the amygdala; and the amygdala is of course like our smoke alarm or panic button (it does a lot more things than just that). When you get traumatized or you're overly anxious and have an overactive amygdala, the orbital frontal cortex calms down the amygdala. If you don't have a high-functioning orbital frontal cortex then you are going to be more prone to become more anxious when you don't need to be anxious, and not being able to modulate your affect when

you are talking to somebody.

DD You also suggest that we can adjust our brain's set points, and I'm somewhat aware of the idea of set points from the positive psychology investigations I've done, but what set points are you referring to and how can we adjust them?

JA One person whom you interviewed long ago, well before the positive psychology people got going, was a guy named Richard Davidson at the University of Wisconsin. He and a number of other people looked at the relative activation of the two hemispheres. If you are a little skewed to the right, a little more activity going on in your right prefrontal

were people who were kind of anxious, feeling like they couldn't go back to their workplace. They were then put through 12 weeks of mindfulness training. I forget the details, but let's say two or three times a week, a couple of hours a day, of mindfulness training—which is really like “be here now”, being really centered, non-judgmentally focused. After that period of mindfulness training they responded by saying, “Gee, you know what? I think I can go back to that job; it's not a bad job after all.” It turned out that the reading of their set point then seemed to be a little tilted toward the left. So in other words, the adjustment of the set point was possible over that short period of time based on some focused “being here now”-ism, if you will.

““ What the mind does, the brain adjusts to ””

cortex, then chances are you might be a little more anxious or a little bit more depressed. And if you are a little more active, and this is a ratio of activity, on the left verses the right, you might be a little more positive. There's also a behavioral component to this, and that is if you avoid or withdraw, you activate your right prefrontal cortex. If you approach, in neuroscience it's called approach behavior like doing stuff you don't feel like doing, then you activate your left prefrontal cortex. So the set point is how the two hemispheres are working together and the ratio of activity between the two of them (it's not like one is working and the other isn't, but it's the ratio of activity between the two).

DD And you're saying that we can actually adjust that set point, presumably within some limits, and that might affect our level of mental health adjustment?

JA Oh yeah. I'm not coming out of the blue suggesting this—in fact, let me just bring up Davidson again and John Kabat-Zinn, who I'm sure all your listeners know, who's been a pioneer in the mindfulness area. So the two of them teamed up and brought in a whole lot of tech workers who were stressed out and saying, “Geez, I just can't go back to that job; it's a real pain in the neck.” And they took a look at the ratio of activity between the two hemispheres using the then state-of-the-art EEG, to get a sense of if they were skewed a little to the left or the right. And they were skewed to the right. These

DD Would you say that brain health equals mental health?

JA Oh sure. There's no separation of mind and brain in many ways. You know, the old concept of dualism I think is largely gone. And so what the brain does is the mind. But here's the amazing part, Dave, that I think is so incredible, is that what the mind does, the brain adjusts to. So there is a bidirectional flow of information rather than reductionism. In other words, just as I was describing that simple paradigm of the mindfulness training, here are these people that are practicing a method, and their brain changed as a result of what they were doing. So you could rewire your brain by what you are doing. So it's not like everything is brain reductionism, but rather mind/brain interactionism.

DD Now your book focuses on five major factors related to brain health, and therefore mental health and longevity. And the five factors are Education, Diet, Exercise, The Social Factor, and The Sleep Factor. I don't think any of our listeners will be surprised to hear that these are important factors for brain health, but you go into some detail that I'm sure will be new and intriguing to many. Let me step you though each of these and have you drill down on them a bit.

JA OK, sure, and if we can reorder the sequence for the listeners, I think it might be useful. I love to use mnemonics so that we can remember a num-

ber of factors. So here we have five factors, and if we organize them with the mnemonic SEEDS, then you can think in terms of planting seeds for the rest of your life so you can yield a better experience throughout your life. So the first S is Social Factor. The social factor is so critical because, let's face it, we are incredibly social creatures. If we become lonely we end up getting depressed and anxious—and in fact can get dementia much quicker than other people who aren't lonely. It even gets down to the chromosomal level. So the caps on the end of the chromosomes, called the telomeres, actually shrink with loneliness—that's accelerated ageing. So there are all these different benefits of social interaction that is part of this larger picture, that I love, called psychoneuroimmunology, meaning that our immune system, our mind and our brain are all connected, and the social factor plays a major part in our overall health including our immune system.

DD Now when you say that the social factor... let's say someone high on the Social Factor is less likely to suffer dementia; that's based on research studies right?

JA Oh yeah, a huge number of research studies. Let's take the concept that many people have talked about over the last, say, 20 years or so. We

have all these social brain networks—the orbital frontal cortex, the amygdala, the insula, the cingulate cortex, mirror neurons, spindle cells. These subunits or modules, or whatever you want to call them, are all parts of the brain that thrive on social interaction. When they are deprived we have all these major health problems. When they don't get exercised, they start to atrophy. For example, there is a part of the brain that is called the temporal parietal junction, and it's essentially what it says: the junction between the temporal and parietal lobes. It turns out that people who are lonely late in life seem to have some atrophy in this temporal parietal junction area. If you don't use it, you lose it, so to speak. We know that throughout life, not necessarily just during the attachment period, these social interactions are critical. If we are socially deprived we can run into major health problems.

DD As a therapist you must see people who are lonely, particularly as people get older, as maybe some of their friends have died, and there is a tendency to become isolated. How do you work with people like that? How do you use this knowledge about the brain to make some sort of intervention?

JA Well you know, increasingly what I am doing right now in therapy is talking about the brain in the most basic way possible. So when I talk about



the amygdala I might say, “Just remember it as Amy.” Amy is easier to remember than some large name. So I try to get down to the “dummies” version. I try to educate people about the brain, and so then in therapy they understand that their brain can be exercised, and when it isn’t exercised you have some health problems. Just like your muscles. If you exercise these social brain networks they have major benefits to your entire being. So it’s not just the comfort of knowing that somebody out there cares about you in just a psychological sort of way; the psychological aspect has a brain-based aspect as well. So I’m spending a lot of my time educating people about the brain by bringing it into the conversation relevant to whatever we are talking about.

Let me use the second letter of SEEDS, which is the E, to help drive this point along. E is for Exercise. It turns out that exercise is the most powerful antidepressant and antianxiety agent that we have, in comparison to medication and psychotherapy combined. Aerobic exercise is as good as medication and psychotherapy combined for mild to moderate depression. This is brain-based. So if I have someone come in to see me, at 65 or 42 or whatever, complaining about anxiety and depression, I explain to them that their brain isn’t going to work very well unless you are going to move a lot. The fact of the matter is that we have spent most

of our evolutionary history as hunter gatherers. We moved ten miles a day. Who moves ten miles a day now? I mean unless you’re training for a triathlon or something. It turns out that by not moving in a rigorous sort of way, getting your heart pumping, and a little bit of sweat, you are depriving your brain of a process of regeneration—and in fact down to the level of building new neurons in your brain, called neurogenesis. There is a substance that has been bantered around and discussed in the popular press called brain-derived neurotrophic factor, or BDNF, or you can call it miracle grow. This is released during aerobic exercise, and that can result in new neurons in the hippocampus, this area of the brain responsible for laying down explicit memory.

DD One of the things I was intrigued by—you work in a hospital setting, and I haven’t been to this particular hospital but it sounds like there’s some wildlife around there— is that you actually take people out hiking. Is that right?

JA Oh yes, and let me just say that I don’t work in an actual hospital, but in an outpatient office building with a lot of primary care physicians and specialists. The hospital is pretty far from us, but you’re right, behind the building my office is in is this wonderful area with a lot of hiking trails and something of a bird sanctuary out there. I go



out there at least once, maybe twice a day, doing my run/walk, and I see most of the people who are working in our complex doing the same thing. My assistant—I have a full-time assistant for my training director's position—I make that a requirement of her job to do that; she really appreciates that. You're on company time when you're out there because it will clear your head. So when we're sitting there talking about the budget and trying to figure out what happened to this number of thousands of dollars and this medical center, etc.—you know how you can get mentally exhausted?—going out to clear your head with a brisk walk provides the clar-

ity of mind to come back in and hit the ground running. In fact even on the way back from the walk, "Ah!"—the solution arrives. Walking is an important and easy thing to do. Well, what happens if you're a paraplegic? Well you're in your wheelchair, and you "pump". You've got to get your heart moving. Or you're in a pool. It doesn't have to be the same kind of exercise, and you don't have to go to a fancy gym and jump around with other people in a cross training exercise—that's all cool, but walking will do it.

DD You and I get together for lunch every now and then, and you are a very fit and healthy-looking guy. I know you're travelling all the time, giving presentations on this stuff we're talking about, all over the world, and it seems that you're gone more than you are here. What do you do to exercise? I mean you're on the plane a lot and in hotels—what are you doing?

JA I actually walk a heck of a lot. I'm flying to Philadelphia tomorrow, and I know it's cold, so I'm busy getting some cold weather gear to wear, and what I'm going to do is, as soon as I land, drop my stuff off at the hotel, I'm going to walk, because I will have been sitting on an airplane all that time. In fact even when I'm on the airplane I'll be walking up and down the aisle. That's a lot of time just sitting there, and we didn't evolve as a species to just sit down for long periods of time like that. What I often do is walk/run, because if I can't get my heart rate up I'll jog a bit to get it going.

DD Now you are a trainer of therapists. Are you prescribing anything for your therapist trainees to insert into their practice of psychotherapy, in relation to exercise?

JA Yes. Within the Kaiser system itself, we've been promoting exercise big time. Certainly walking. I was part of a group of people that were speaking in a conference in Washington organized by the then CEO of Kaiser, George Halvorson, and he had people all over North America talking about chronic conditions and the effect of exercise on

“ Within the Kaiser system itself, we've been promoting exercise big time ”

those chronic conditions. I was there to talk about the effects of exercise on depression, and there were people there talking about diabetes and heart conditions, and so on. Within that [Kaiser] system we developed these prescription pads that looked just like a regular medication prescription pad, that had as part of it...the provider writes down, as a prescription for the patient, "I want you to walk four times a week, 30 minutes a day", and there are these little blanks in there that you fill in. So these are prescription pads literally for exercise.

DD Oh, that's fascinating! So your trainees, then, do you direct them to ask people how much exercise they're doing, what kind, when?

JA Yes, so I'm promoting this SEEDS concept, not just for healthy aging, but also for mental health. It turns out, from my reading of the literature, that if you have all these five factors you can be less depressed and less anxious. So when you think in terms of people coming to see therapists, that are feeling anxious or depressed...can build a much healthier foundation from which psychotherapy can work. So if you don't have these five factors in place, you could do all the analysis and whatever kind of psychotherapy you are doing, but you are building a house on sand. You need a healthy brain; you need healthy lifestyle practices to ensure that whatever you do from an insight and behavioural perspective can be built on firm ground. I'm strongly proposing this—this larger picture—not just for healthy aging but for overall mental health, as a foundational prerequisite for moving on in therapy.

DD I want to go back to the first one we were talking about, the Social Factor, and loneliness, because I want to push you a little bit more on that. Someone who has isolated themselves and feels that they are kind of a victim—that they are just born shy, or the kind of resistances people have around that—how do you get them moving out and in contact with other people?

JA Interestingly what we have done generally in the mental health community is promote a good therapy, and in many ways that is a way of promoting this social factor. However, in addition to what we have always done, what I do in regards to teaching people about their brain is talk about how these social brain networks are thriving on exercise. I'm not talking about physical exercise, I'm talking about social interaction. If you don't give them nutrients, meaning good social relationships, then they are not going to thrive. Now, as you have just said, many of them are feeling not too self-confident, they may have social phobia, and they say, "That all sounds good conceptually, but I just don't feel comfortable doing that." So we have to do a lot of the priming of the pump, we are always talking about structuring in things, it's one thing to say, yeah, you've got to do this, but if a person is so overwhelmed they don't know where to start, then

Initially you are not going to feel like doing it, and if you do only what you feel like doing now, you are going to continue doing what you have done, feeling down and anxious. So anxiety and depression are bad habits. What we need to do is help people break those bad habits.

DD OK, thanks for going into some more detail on that. Let's move onto the next E, which is Education.

JA Education may not necessarily have to do with getting a lot of fancy degrees. That's really quite a positive way of structuring in education. But it's challenging your mind to try and understand what you had no idea about previously. It builds in what we call a cognitive reserve. So if you think in terms of how the brain rewires—neural plasticity—you are building new synaptic relationships. The way you do that is start doing things, including thinking, feeling, and behavior, in areas you are not familiar with and that you are not comfortable with. There were these two psychologists 100 years ago, Yerkes and Dodson, who talked about the inverted U, meaning in a sense that you have to be a little uncomfortable to make some headway into acquiring new memories—which again is rewiring the brain. So getting yourself out of your comfort level and learning something that you aren't quite com-

“ ...it's challenging your mind to try and understand what you had no idea about previously. It builds in what we call a cognitive reserve. ”

we need to have some means of structuring in that activity. For example, an older person, and I'm talking about someone, say, late 70s who is socially isolated, can access programs at a seniors center that provide structure. If we say, "Look, there are these classes here, and pick the one you like the best..." "Oh, I don't like any of them!" "Well, pick the one you like the best out of the ones you don't like." It's really not about how much you like that art class or film discussion group or whatever. Then I started utilizing all these little sayings, some of which are borrowed from my clients who were in AA, like "Fake it till you make it", or I've made up ones like "You are going to have to do what you don't feel like doing so you will later feel like doing it." Building on this idea of neural plasticity, the more you do something, the more likely you will do it again.

fortable with but you want to try to grasp, builds in new connections. Let me use a description of what my father did. Here's this guy who was a retired judge who would go to Paris every year for the last six years of his life for about a month. And so he would spend about a week in the Louvre and then he would go over to the Orsay because he loved the impressionism, and then he would go to the Picasso Museum. I went there with him a couple of times, and he liked the Blue Period, and it looked like Picasso was almost an impressionist. But then by the time Picasso started hanging out with Braque and they started doing cubism in the 'teens, around 1912–15, everything started to get broken up. And I would see him standing in front of those paintings scratching his head and asking, "What happened to this guy?" And so I would ask him, "Dad,

you keep going to the Picasso Museum. Why do you go? I thought you don't like Picasso." And he said, "I don't." "Well, why do you go?" And he said, "It's interesting." So you get the idea, he went because it was interesting, it was beyond his comfort level and he would go there and stand in front of those cubist paintings (he loved impressionism but he couldn't get the cubism and later Picasso works with distorted female figures with noses sticking out sideways and so on), and he would scratch his head and go, "What the heck is that about?" So getting out of your comfort zone and learning things you are not familiar with. If I can just add in one more thing about him, after he got his law degree in the late 40s in Boston, he kept going to college until 2006 when he died. He studied oceanography, historical geography, computer science...when he died he was a graduate student in painting. He was constantly building new structures, new infrastructure, and basically what you are doing is you are building new synaptic connections. That's what education is about. Cognitive reserve essentially means this: the more you can lose later in life without looking like you lost much. In other words, you have more there to lose and you can have a dementia process going on but no one is going to know it because you have so much infrastructure in there. You have a bigger bench from which to draw.

DD You know, one of the points that struck me the most, personally, was this idea that you have to keep engaging in new learning. So it's not enough for you and me to rest on our laurels and say, "Well, I have a college degree, or a graduate degree"—we have to keep pushing into new areas of some discomfort. And that idea is making me a little uncomfortable, but I think I'm going to try and follow that a bit more.

JA Well Dave, as I've said over and over, you are doing it constantly, by interviewing all these people—and you've prepared for it; you've read their books and all that, and some of the material you are not familiar with beforehand, so you are doing it. To enlarge the analogy for everybody, think in terms of bodybuilding. Say you were a triathlon person back in your 30s, and now you are a 55-year-old and you don't exercise at all. Now you are flabby. You have to keep exercising; it's not like you build it like the pyramids and it's going to be there for the rest of your life.



The D is for Diet. Diet is absolutely fundamental. You are what you eat. The food that we eat, hopefully, creates the cornucopia of neurochemistry that makes a brain operate properly. So if we eat a good, balanced diet, minimizing bad foods and keeping such foods as simple carbohydrates literally out of our lives, and fried foods literally out of our lives, eating with nice spaces in between, we can create this cornucopia. ...Just a word or two, if you don't mind me gabbling on about simple carbohydrates?

DD Yeah, please do, because I'm not sure if you have said what is a simple carbohydrate—I'm not sure I know the answer.

JA Well, it's white flour, and white rice, and sugar, and all that. If you have a high level of glucose floating around then of course you are a major candidate for diabetes two, right? Diabetes two is an incredibly quickened pathway to dementia. So a lot of neurologists out there are calling Alzheimer's "diabetes three". One of the things we have to watch for is that whole pathway. Before you even get diagnosed with diabetes two you have got metabolic syndrome, and we psychologists and mental health practitioners are getting a lot of people coming to see us with "brain fog", and they are anxious and depressed, and they don't quite understand why



they are that way, but if we look at their diet it's pathetic. You know, they are having these big sodas, and they'll say, "Oh yeah, I had breakfast." "Well, what sort of breakfast do you have?" "Well I have a chocolate croissant at the drive-through McBuck's restaurant." Well where is the breakfast? They are not eating anything nutritious at all. What does happen with a high level of sugar intake is the development of what is called *advanced glucation end products*, which results in all sorts of very destructive things to your brain—accelerates the aging process, and makes the cell structures much more stiff. So if you don't want to accelerate aging of your skin, and so on, and your brain...you don't want to have cell structures that are stiff and rigid, because neural plasticity requires soft and pliable cells so they can make new adjustments.

Diet is making the neurochemical orchestra work for us, if you have a good, balanced diet.

DD Well, there seems to be so much information that comes at us about diet, and then it turns out that something that was asserted as fact is overturned. And so I think a lot of us out there were somewhat confused—should we be taking multivitamins or not? Should we be taking any supplements or not? They are not really regulated by the government like other kinds of things...there are all these questions.

JA Absolutely, and that's part of why I wrote this book. I wanted to take a broad look at the literature and sift through all this gimmicky stuff about

"this food is better than that food", "I saw it on Dr. Oz, so it must really be..."—now he's doing a good show, I'm not criticizing this, but every time you see something on the Net about the best açai berry or whatever...what's going on here? Let's get down to the science. In this particular chapter what I've tried to do is take a broad look at the dietary aspect. You know, there is another thing about simple carbohydrates and even complex carbohydrates that's being bantered around now...and certainly one of the most popular books out there at the moment is called *Wheat Belly*. I'm even listening to it on audio.com now, and the author of that book makes a big case for how we have truly changed the structure of wheat over a long period of time, and the wheat we are now consuming, even when we think we have a wholegrain, isn't even the same sort of grain that our forefathers were eating. There is a greater glycaemic load there, more sugar floating around quicker than there was for wheat eaters two hundred years ago.

DD Now is this related to the whole "gluten" thing? Because suddenly we are seeing "gluten free" everywhere.

JA Yeah, well not everyone has Celiac's disease. Celiac's disease is a major problem with gluten. It certainly has been something that's been bantered around, and everybody is getting worked up about it, but I think there is a broader scope that we should have rather than just focusing on the latest bad substance out there. Maybe you and I may

not be as gluten-intolerant as Jim and Betty over there, but there is a lot to be said for the way we process foods that we ought to be concerned with, and how we have stripped out many of the nutrients in our efforts to have higher yields and to make sure our crops are resistant to, let's say, Roundup, for example. Well, that means now we are consuming Roundup. We are learning as a population, but what I always suggest to our trainees, the general public and my peers, is that...well, take a look at the broad science and don't get caught up in the latest fads. Wait and see what the meta-analysis of all the research suggests before we "knee jerk" out there and get all down on whatever the latest thing is, whether it's gluten or whatever.

DD As a psychotherapist, do you inquire into what people are eating?

JA Absolutely, obsessively! I quite honestly do that and do an exhaustive inventory of how a person is. I don't ask, "How are you eating? Three balanced meals a day?" But I want to ask *what* they are eating. So if they say, "Oh yeah, I have cereal in the morning", you may as well be eating the cardboard of the cereal box, because some of these cereals are worthless. So I do an exhaustive inventory of what a person eats, and I even give them handouts of the dietary factors that they ought to be looking at, so they can have a simple, easy-to-read, one page fact sheet on what are the major food groups that I want to be eating and what are the ones I should not be consuming—like trans-fatty acids for example—that seem to be permeating everything they

that's a lot of time. Eight hours of our 24-hour period—we ought to be taking a look at the quality of sleep or sleep deprivation and what results from it. We, in Western society, are a pill-oriented society, and we think when we have insomnia, for example, all we have to do is take medication, and as long as we can get through the night without waking up, everything is fine. But actually a lot of the substances that people take, even when they are going to some doctor somewhere for help, screw up sleep architecture. What do I mean by "sleep architecture"? Well, there are stages that are critical for the processing of memory, the boosting of the immune system, and the regulation of cortisol.

So let's take the perspective incorporating what the general stages of sleep are like. So we roughly have three stages of sleep, and people confuse REM sleep with deep sleep. In fact REM sleep, rapid eye movement sleep, is not exactly restful. Many of us have rigorous dreams—you know, chasing dreams and anxiety dreams, during REM sleep, and if you take a look at the heart rate and activity in the brain the brainwaves look very much like the brainwaves we are utilizing right now. So REM sleep is not necessarily restful sleep, but it is a very important sleep that helps consolidate what are called procedural memories. This is a very critical stage of sleep that can be impaired if we take substances that depress REM sleep—including alcohol in the evening—that is really destructive to not only REM sleep but also deep sleep, which is stage 4 sleep; and that's the delta-wave sleep, the slow-wave sleep. The slow-wave sleep is critical for boosting the immune system, the consolidation of explicit memories, growth hormones, and a number of other factors. And so

“ REM sleep is not necessarily restful sleep, but it is a very important sleep that helps consolidate what are called procedural memories. ”

are consuming right now. Even when you see a box of "natural organic" crackers, it might have a large amount of trans-fatty acids because of the way it was processed.

Can I mention the sleep factor?

DD Yeah, let's do it.

JA Sleep represents the last S of SEEDS. Sleep comprises about a third of our 24-hour period—

if we take substances like Adavan or whatever, we depress those important levels of sleep. You and I are fortunate to live in a real beautiful part of the world, the Sonoma County wine country area, and there are a lot of wonderful wineries around here and great wines. But drinking wine at night results in not-so-good sleep. A great example of that is, a client may come to me and say, "You know, I can get to sleep OK, but for some reason, I don't know why, around 2am to around 3:30, maybe even 4:00, I can't get back to sleep again. I wake up and I just

can't get back to sleep again." You know what my next question is, almost like a knee-jerk? "Were you drinking any wine at night?" And he says, "Oh, what's the big deal about that? I have a glass or two of wine at dinner or one at dinner and one after. What's the big deal about that?" Then I describe what occurs with the consumption of alcohol when you get what I call a counterfeit GABA effect. The principle is that the alcohol acts like GABA—GABA is the principle inhibiting neurotransmitter of the brain, and what it also does is dampen down the glutamate activity. Three or four hours later you have too much glutamate, which is the principle activating neurotransmitter in the brain, and not enough GABA, meaning you get this surge of anxiety without any way of shutting it off—and that's in the middle of your sleep cycle. So I describe it like that (in a slower, more rudimentary way), but sometimes in our area they will say, "But John, it's good wine, it's not this jug wine." Well who cares? You can have a \$500 cabernet or jug wine, it doesn't matter.

DD It does seem that a lot of people have the notion that a glass of wine before bedtime is a good way to go to sleep.

JA Bad notion. You can get to sleep because you are simulating GABA, but the problem is you are not going to stay asleep. If you go to any one of the sleep labs: ours, Stanford, Harvard, whatever, after they have gone through whether you have consumed caffeine late in the day or whatever, they are going to ask you about alcohol. Why? Because it screws up sleep maintenance. So the problem with alcohol consumption in the evening is mid sleep cycle awakening. So you can get to sleep but you can't stay asleep, that's the issue.

The other thing about wine that's bantered around is all the excitement about how red wine is so great. It's the chemical in the skin of the red grape, it's not the wine itself. You can eat red grapes...

DD Or drink red grapejuice?



This interview is an adaptation from the Shrink Rap Radio show #389, "The Brain Bible with John B. Arden, PhD.", as interviewed by David Van Nuys, Ph.D., aka "Dr. Dave", in February 2014.

Further interviews and transcriptions can be found at www.ShrinkRapRadio.com

JA Yeah, grape juice will give you the same benefits

DD It's very sugary though, on the other hand.

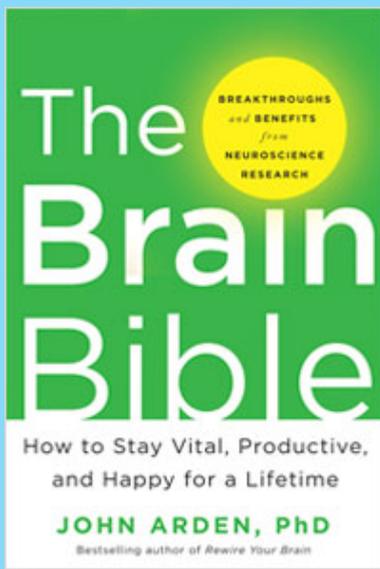
JA Yeah, it's so much better to just eat the whole fruit, because there is more bioavailability there and all that. But anyway, back to sleep—if you don't get good quality sleep then what you are going to end up doing, or your clients will end up doing, is waking up the next day feeling exhausted, having these "brain brownouts"—an inability to focus very clearly—and also have high levels of cortisol, one of the major stress hormones. That's not so good for the morning. And let's say your diet is all messed up and you drink coffee on an empty stomach, which is bad news—a lot of people do that; now you have even more cortisol, and by 11am you are a nervous wreck and you can't think clearly.

DD Well, I think this is a place to wrap it up, but I want people to understand that there is so much more in your book, and they will have to go out and get it if they want all of the good stuff. So as we wind down now, are there any final points you would like to make?

JA I would encourage people, all of our listeners, practitioners and our clients, to cultivate SEEDS throughout their lives. These behavioral benefits are to be on a long-term basis as opposed to "Well I got one of those SEEDS and maybe I don't need the other ones." No, you need all of them together. It's really not asking that much. I mean, we are not talking about climbing Everest or something.

DD Dr. John B. Arden, it's been great as always to speak with you, and I want to thank you for being my guest today on Shrink Rap Radio.

JA Oh, I enjoyed it as always.



THE BRAIN BIBLE

How to Stay Vital, Productive, and Happy for a Lifetime
by John Arden, Ph.D

The Brain Bible is based on recent developments in neuroscience and health psychology. It is a self-help book consistent with Dr. Arden's *Rewire Your Brain* which was published in April of 2010, and offers the general public down to earth advice based on new developments in neuroscience. The Brain Bible, like *Rewire Your Brain*, is meant to be a practical "hands-on" self-help book for readers wishing to thrive through middle age and into their senior years achieving optimum brain health.

Readers will learn about how to maximize their potential and avoid the brain degrading habits during this pivotal period. They will learn to "rewire" their boomer brain based on well researched methods of dealing with problems and live a vibrant life free of self-imposed limitations. Simply put, we cannot change how we think and feel without changing our brains.

Instead of a gimmicky quick fix, this book offers a formula of the five main factors shown to contribute to brain health. You can remember those five by using the mnemonic "SEEDS." The SEEDS formula represents the important healthy brain factors that you need to "plant" now and cultivate through the rest of your life. The research behind each factor of the formula is rich with new developments from neuroscience that overthrown many of our preconceived beliefs about longevity and indeed about the brain.

Endorsements for 'The Brain Bible'

"Dr. John Arden provides an uplifting read for those of us who look forward to aging actively and enjoyably. This book is as scientifically rigorous as it is readable, accessible and peppered with fascinating stories about real people and the things they do or do not do which are contributing to their health and longevity. Building on the latest biomedical and psychosocial research, he beautifully describes the lifestyle factors that we can control and which have enormous effects on the length and quality of our lives. This is a must read."

- **Ian Robertson**, PhD Trinity College, Dublin, Ireland, Author of *The Winner Effect*

"John Arden's new book is an important contribution to the health literature particularly for the focus on applying neuroplasticity principles in conjunction with preventative positive health behavior. His command of the scientific literature across a broad range of areas is impressive, as is his ability to communicate findings in a clear and accessible way for both professionals and individuals interested in this topic. In essence John Arden has provided a systematic approach to enhancing neurological functioning as we age as well as optimizing our health. If everyone followed this book as a guide there would be dramatic reductions in cognitive decline, mental health problems and health problems saving the health care system billions of dollars a year. I commend this book to health care providers and people interested in caring for our most important organ, the brain, which embodies the sum total of who we are in life."

- **Dr Matthew Bambling**, University of Queensland, Department of Psychiatry; School of Medicine, Australia



"Successful aging just doesn't happen, it takes knowledge, wisdom, and action. Read this book and let John Arden take you on a fascinating and very human journey through the science and steps to healthy aging."

- **Louis Cozolino** Ph.D, Pepperdine University
Author of *The Healthy Aging Brain*