

Freedom from Nicotine – The Journey Home

Chapter 1: Nicotine Addiction 101

That First Subtle "Aaah"

Remember how your body reacted to that first-ever inhaled puff, dip or chew of tobacco? Although some took to smoking like ants to sugar, what most recall is how utterly horrible it tasted.

You may have felt dizzy, nauseous or if like me, your face cycled through six shades of green. My mouth was filled with a terrible taste, my throat on fire, and my lungs in full rebellion as scores of powerful toxins assaulted, inflamed, and numbed all tissues touched.

Prior to that moment, you may have heard that tobacco can be addictive. Vaping e-cigs aside, after such an unpleasant introduction, you were convinced that it couldn't possibly happen to you. How could it? If like most, you didn't like what just happened. How could you possibly get hooked?

As strange as this may sound, even for e-cig users, like or dislike have little to do with chemical dependency.

Whether your body rebelled or not, nicotine had activated our brain dopamine pathways, the mind's survival instincts teacher and motivator. The primary purpose of that brain circuitry is to make activating events extremely difficult to forget or ignore.

How do brain dopamine pathways teach and motivate action? Knowing will aid in understanding both how we became hooked and why breaking free appears vastly more daunting than it is.

Remember how you felt as a child when first praised by your parents or teachers for keeping your coloring between the lines or for spelling your name correctly? Remember the "aaah" satisfaction sensation? Remember that same feeling after making and bonding with a new friend? "Aaah!"

We had just sampled the mind's motivational reward for accomplishment and peer bonding. An earned burst of dopamine was followed by an "aaah" wanting satisfaction sensation. It caught our attention, alerted us to what was important, and created a memory of the event that would help establish future priorities.

Bursts of dopamine were also felt when we anticipated accomplishment, peer bonding, or other species survival activities. We were now being motivated and working to satisfy dopamine pathway wanting, the "aaah" relief sensation felt when anticipating or experiencing desire's

satisfaction.

Our sense of wanting being satisfied is generated by the release of dopamine within multiple brain regions, primarily in our mid brain, inside cell structures known as the ventral tegmental area (VTA) and the nucleus accumbens.[1]

Two different yet overlapping dopamine pathways are responsible for wanting and its satisfaction. Our "tonic," background or baseline dopamine level determines our level of wanting, if any. Our "phasic" level or bursts of dopamine generate the "aaah" sensations sensed as wanting is satisfied.

Generally, as our tonic or background dopamine level begins to decline we begin to experience wanting. As phasic burst releases occur, our tonic level is gradually replenished by burst overflow into our tonic pathway, and wanting subsides.[2] The word "tonic" means to restore normal tone.

Brain dopamine pathways were not engineered to act as wanting satisfaction brain candy. Satisfaction is earned. Both a carrot (phasic) and a stick (tonic), they are a preprogrammed and hard-wired survival tool that teaches and reinforces our basic survival instincts.

Dopamine pathways are present and strikingly similar in the brains of all animals. They originate in the deep inner primitive, compulsive region of the brain known as the limbic mind, and extend forward into the conscious, rational, thinking portion of the brain.

Pretend for a moment that you're extremely thirsty. Really thirsty! Can you sense "wanting" beginning to build? Now, imagine drinking a nice, cool glass of refreshing water. Did you notice the "wanting" subside, at least a little?

Compliance with wanting generates a noticeable "aaah" relief sensation. The greater our wanting, the more intense our "aaah."

Our dopamine pathways are the source of survival instinct anticipation, motivation, and reinforcement. Hard-wired instincts include eating food, drinking liquids, accomplishment, companionship, group acceptance, reproduction, and child-rearing.[3]

Our brain dopamine pathways cause our compliance with wanting to be recorded in high definition memory, in our forehead just above our eyes (our prefrontal cortex). It's what researchers call "salient" or "pay attention" memories.[4]

Although still poorly understood, the intensity of dopamine pathway wanting appears to stem from a combination of at least three factors. Those factors include a diminishing tonic dopamine level, the collective tease and influence of old wanting satisfaction memories, and self-induced anxiety if satisfaction is delayed.

The tease of thousands of old wanting satisfaction memories can be triggered by a physical bodily need, by subconscious conditioning, or by conscious fixation.

Once their collective influence is triggered, as though bombarded by a thousand points of light, we have no choice but to recall exactly what needs to be done in order to satisfy wanting.

If you felt any wanting or relief with our pretend water-drinking example, it was due to old thirst and replenishment memories, not a biological need.

Yes, our "pay attention" pathways are a built-in, circular, self-reinforcing survival training school.

Wanting is triggered by our tonic dopamine level declining in response to a need, conditioning or desire. Old wanting satisfaction memories fuel wanting by constantly reminding us of exactly what needs to be done to make it end. Anticipating satisfaction may generate additional anxieties which further inflame wanting.

Obedience releases a sudden phasic burst of dopamine. Wanting ends once our need, conditioning or desire is satisfied and our tonic dopamine level returns to normal. The release also creates a vivid new high definition memory of how wanting was satisfied.

So, how does all of this relate to nicotine addiction?

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Chemical Slavery's Onset

What would happen if, by chance, an external chemical so closely resembled the properties of the neurochemical responsible for activating brain dopamine pathways (acetylcholine), that once inside the brain it was capable of generating a stolen and unearned dopamine "aaah" wanting relief sensation?

Unfortunately, entirely by chance, nicotine is such a chemical.

Nicotine's polarities and chemical structure are so similar to acetylcholine, the brain's natural

chemical messenger responsible for initiating normal dopamine pathway stimulation, that it bonds to acetylcholine receptors.

In those of us whose genetics or development made us susceptible to nicotine addiction, our dopamine pathways began to document and record nicotine use as though a preprogrammed species survival event.

Clearly, no inner "wanting" or desire existed when we first used nicotine. But if susceptible to dependency, it probably didn't take using too many times before repeated activation caused physical changes within our dopamine pathways.

Those changes would combine with constantly falling blood-serum nicotine levels to cause our tonic dopamine level to decline. This would trigger subtle background wanting, wanting that would motivate us to use again and again and again.

Each new supply of nicotine would be followed by a phasic dopamine release. The lower our tonic dopamine level, the more noticeable our "aaah" wanting relief sensation, the more vivid our newest use reinforcement memory.

Soon, an increasing number of high-definition nicotine use memories would themselves begin suggesting that we use early and often, so as to avoid sensing the onset of wanting.

As though bars to a prison cell, our thinking, planning, and day became surrounded by hundreds and then thousands of durable use memories, each forcing us to vividly recall how wanting gets satisfied.

We had developed a physical need that we couldn't then possibly understand. We found ourselves inventing reasons to explain and justify our continued use. Those reasons (false use rationalizations) would act as additional bars in our prison cell.

Collectively, our wanting satisfaction memories quickly became more durable and vivid than any negative memory of any toxic unpleasantness felt during our first few uses of tobacco.

In fact, it wasn't long before a growing number of high definition use memories buried all remaining memory of what life was like without nicotine.

Try recalling the calm, quiet, and relaxed mind you enjoyed before getting hooked. Try hard to remember going entire days and weeks without once wanting to use nicotine. You can't do it, can you! Don't feel alone. None of us can. It's a drug addiction hallmark.

Prisoners of hijacked pay-attention circuitry, wanting's satisfaction became our #1 priority.[1] We quickly forgot that it was ever possible to function without nicotine.

Our priorities teacher had been taken hostage. If we resisted and delayed using, we were disciplined with anxieties for failure to apply the lessons taught.

The brain's control room for coordinating and routing dopamine pathway functions appears to be the right insula. It's an oval, prune-sized brain structure above our ear.

The insula receives input from our senses, emotions, dopamine pathways, and from the prefrontal cortex, home to previously recorded "pay-attention" memories.

A 2007 study found that smokers who sustained brain damage to the right insula actually lost the urge to smoke,[2] suggesting that it also routes or coordinates use urges, craves, and anxieties.

Thank goodness it doesn't take traumatic brain injury or a stroke to make us stop craving nicotine. Thank goodness that recovery isn't nearly as difficult as our brain wanting disorder suggests.

Whether heroin, cocaine, methamphetamines, alcoholism, or nicotine, drug addiction is about brain dopamine pathways being taken hostage by an external chemical.

We nicotine smokers didn't suck tissue destroying tars that included ammonia, formaldehyde, arsenic, butane, hydrogen cyanide, lead, mercury, vinyl chloride, methane or vast quantities of carbon monoxide into our bodies because we wanted to watch each puff destroy a bit more of our capacity to receive and circulate life-giving oxygen. We did so to replenish constantly falling nicotine reserves.

Nicotine is a small molecule. This allows it to cross through our protective blood-brain filter. Once through, it docks with acetylcholine receptors and stimulates dopamine flow.

Smoked nicotine contains at least one other as yet unidentified chemical that somehow diminishes two dopamine cleanup enzymes, MAO A and MAO B. Diminished MAO results in a delay in normal dopamine cleanup following a phasic release. It means that smoked nicotine's wanting relief sensation lingers longer than normal.

Think about how short-lived the "aaah" sensation is following a single potato chip or a sip of water when thirsty. Longer wanting relief makes smoked nicotine possibly the most perfectly designed form of addiction.

It may also help explain why e-cigarette and oral tobacco users often have higher daily blood nicotine concentrations than smokers.

E-cigs and smokeless tobacco do not inhibit MAO or normal dopamine clean-up. It may be that users of non-smoked forms of nicotine require higher levels of nicotine in order to keep their wanting at bay.

Whether smoked, vaped, or oral, an endless cycle of wanting and its brief absence following use left us totally yet falsely convinced that nicotine was essential to survival.

Our nicotine feeding cycle left many of us believing that use defined who we were, that nicotine gave us our edge, helped us cope, and that life without it would be horrible or even meaningless.

Punished with wanting that was satisfied by use, we quickly grew to believe that we could not function comfortably without it.

Why can't we starve ourselves to death? Not only is wanting for food satisfied with dopamine "aaah" relief sensations when we anticipate eating or actually do so, we are punished with anxieties and cravings when we wait too long between meals.

As for nicotine levels, like food, what goes up must come down. As our body slowly metabolized and rid itself of nicotine, we gradually experienced increasing mood deterioration and escalating distress, punctuated by anxiety, anger, and depression.

In fact, it's work living life as a nicotine addict. We endured greater extremes in daily mood swings than non-users, greater problematic anger,[3] and the greater our dependency the more unstable our moods.[4]

Our hijacked priorities teacher was fooled and started teaching a false lesson, that bringing a new supply of nicotine into the bloodstream was every bit as important as eating.

Extensive dopamine circuitry overlap,[5] nicotine cravings became as real as food cravings. Nicotine "aaah" wanting relief sensations became as important as food "aaah"s. Nearly indistinguishable, we experienced the same anxiety beatings, and similar dopamine wanting relief sensations upon surrender.

But there is one massive difference between dependency upon food and dependency upon nicotine. Without food we starve, without nicotine we thrive!

Unfortunately, our hostage dopamine circuitry is incapable of distinguishing fact from fiction. By design, it has buried and suppressed the beauty of never wanting or needing that existed prior to nicotine's arrival.

Would coming home to your calm and quiet yet forgotten mind be a good thing or bad? If good, what sense does it make to fear it?

The problem is that attempts to end nicotine use are often met with a rising tide of anxieties. Soon, our thousands of old nicotine use "aaah" relief memories begin looking like life jackets.

While we only needed to remain nicotine-free and stay afloat for a maximum of three days in order to navigate the roughest seas and move beyond peak withdrawal, hungry for calm, most of us took the hook and bit on our "aaah" memory bait.

We obeyed the false lessons generated by our chemically hijacked teacher. In doing so, we abandoned the only path home in exchange for a few minutes of relief.

When trying to stop using, it isn't unusual to find our mind's addiction chatter insanely trying to convince us that things will be fine if we just have a little more nicotine now, that we can stop

using while using more.

I hate to think about how many times I told myself during a prior attempt that using just once more was my reward for having briefly succeeded in going without.

Obviously, this quick fix isn't a solution at all. It shows a total lack of understanding as to the purpose and function of brain dopamine pathways, to make circuitry activating activities nearly impossible, in the short term, to forget or ignore.

But bondage is more than a rising tide of anxieties being fostered by a diminishing tonic dopamine level, in response to constantly declining blood-serum nicotine reserves. And it's more than thousands of old use memories screaming the wrong way out.

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Tolerance

As if nicotine taking our dopamine pathways captive wasn't enough, imagine the brain physically needing and requiring more nicotine over time.

Definitions of tolerance include:

1. Decreased responsiveness to a stimulus, especially over a period of continued exposure
2. Diminution in the response to a drug after prolonged use, or
3. Physiological resistance to a poison.[1]

The brain attempts to fight back against its toxic intruder. As if somehow knowing that too much unearned dopamine is flowing, it attempts to diminish nicotine's influence by more widely disbursing it. It does so by growing or activating millions of extra nicotinic type acetylcholine receptors in as many as eleven different brain regions.[2]

Although you'll generally see the average nicotine intake per cigarette stated as being about 1mg

(milligram), in truth it varies significantly. For example, the average intake is 30% greater in African Americans at 1.41 milligrams of nicotine per cigarette, as compared to 1.09 milligrams in Caucasians.

Although often stated that the average user's body depletes and eliminates (metabolizes) nicotine at the rate of roughly one-half every two hours, there's variation there too. For example, nicotine's elimination half-life is 129 minutes in Caucasians and 134 minutes in African Americans.[3]

Tolerance ever so gradually pulls us deeper and deeper into dependency's forest. While nicotine's elimination half-life remains fixed, over time we gradually find ourselves sucking a wee bit harder, holding the smoke a bit longer, or using more nicotine in order to avoid wanting or achieve relief from it.

Two a day, three, four, four smoked hard, our brain gradually grew additional nicotinic-type acetylcholine receptors. Over the years, we gradually required a bit more nicotine to maintain our sense of nicotine-normal.

My "aaah" relief sensations were no more powerful smoking five cigarettes a day at age fifteen than when smoking sixty per day at age forty. I needed that much more to keep pace with wanting.

I know, you're probably thinking, you've been at the same nicotine intake level for some time now and it's likely vastly less than the three packs-a-day I was smoking. While we don't yet fully understand wide variations in levels of nicotine use, we know that genetics probably explains most differences.[4]

There is also the fact that some of our mothers, like mine, smoked during pregnancy. I was born with a brain already wired for nicotine. I came into this world as nicotine's slave and likely spent my first few days in withdrawal.[5]

For me, those first few cigarettes at age 15 were not about initial addiction. They were about relapse to a condition that my brain had known since formation and creation of my very first acetylcholine receptor. That first receptor almost immediately became occupied by nicotine that was smoked by mom.

It was an event that occurred three to four weeks following conception.[6] The problem is that receptors are being activated before formation of the brain cell to which the receptor will eventually be attached.

As Duke University Professor Slotkin puts it, "nicotine alters the developmental trajectory of acetylcholine systems in the immature brain, with vulnerability extending from fetal stages through adolescence." [7]

In addition to genetics and prenatal nicotine exposure, the younger we were when we started using, the more profound the altered development trajectory experienced by our still-developing

brain.

Research suggests that nicotine inflicted damage to dopamine and serotonin pathways is significantly greater in males than females, but that this female advantage disappears if the female brain is exposed to both prenatal and adolescent nicotine.[8]

The dependent mind is capable of using a low level of nicotine tolerance as justification for continued chemical servitude.

It's easy for those who use less often to rationalize that they are somehow superior or better able to control their addiction than heavy users. In reality, they're hooked solid too. Their slavery is just as permanent and just as real.

The smoker smoking five times a day may also face health risks as great or greater than heavier smokers. This too may be due to genetic factors, to differing toxin and cancer-causing chemical levels found in different brands of tobacco, or to how intensely each cigarette was smoked.

It may also be due in part to environmental factors that subject us to other chemical agents such as radon, or to employment or hobby chemical exposures, or due to the quality of the water we drink and the air we breathe.

Over the years I've met many smokers, myself included, who experienced a significant increase in the number of cigarettes smoked and higher nicotine tolerance following relapse after a failed attempt.

Why? We don't know. Smoking more cigarettes harder, it was almost like binge-eating after dieting, as if my brain was trying to make up for missed nicotine feedings. But seeing increases in the level of smoking following relapse is becoming less common.

Like a hurricane requiring warm water to strengthen, the fuel for a nicotine tolerance increase is additional time and opportunities to use.

The smoke-free indoor-air movement is gradually sweeping the globe. Smoking is also increasingly being prohibited in and around parks, playgrounds, beaches, hospitals, schools and college campuses, and in the presence of children.

Smokers face fewer replenishment opportunities as non-smokers become increasingly less tolerant of smoking in their presence, homes or vehicles. I suspect that the smoker's nicotine tolerance level will increasingly be associated with trying to obtain more nicotine by smoking fewer cigarettes harder.

But the opposite is often seen in smokers transferring their dependency to e-cigs, oral tobacco, or NRT products, where around-the-clock use becomes possible.

"I started out with about 6 pieces a day and now chew about 15 pieces of 2mg per day. Probably more nicotine than when I smoked," asserts a 48 year-old, three-year female gum user.

"There is one in my mouth 24 hours a day, 7 days a week ... yes for real," claims a 32-year-old, three-year male gum user who chews 40-50 pieces a day and thinks he may "chew more than anyone in the world." [9]

Regardless of method of delivery or level of nicotine tolerance, the millions of extra acetylcholine receptors grown by the addicted brain desensitized it to its own natural sense of neurochemical normal.

We became wired to function with a precise amount of nicotine in our bloodstream. Not too much, not too little, we worked to maintain and remain within our zone of nicotine-normal. Any attempt to stop using brought potential for a brief emotional train wreck, as we found ourselves not only desensitized to nicotine but briefly to life as well.

"Dependent human smokers have decreased dopamine activity during withdrawal" and withdrawal is accompanied by "a decrease in tonic dopamine activity." [10]

But the brain makes substantial progress in reversing tolerance-induced de-sensitivities within 72 hours of ending all nicotine use. It's primarily a matter of patience, as withdrawal anxieties peak within three days, putting the worst behind us.

Within three weeks the brain will restore the number of receptors to levels seen in non-smokers. Although feeling physically normal again, nicotine's tolerance wiring paths have been permanently burned and etched into our brains.

Although we can arrest our chemical dependency we cannot cure, eliminate, or destroy it. We each remain wired for relapse for life.

While this may sound like a curse, it can become our greatest peace of mind. Once confident of victory, this time we know exactly what it takes to both stay free and fail.

But arrival here on Easy Street involves more than simply arresting a chemical need and level of tolerance.

Use Conditioning

The term "addiction" is generally viewed as being broader than "dependency." Among other factors, it includes the consequences of years of nicotine feedings that involved replenishment patterns and habits that did not go unnoticed by our subconscious mind.

Use habits were fathered by endless compliance with our brain's chemical dependence upon nicotine. Although covered in detail in Chapter 11 (Subconscious Recovery), a basic understanding of nicotine addiction must include mention of use conditioning.

Our subconscious mind became conditioned to associate various activities, locations, times, people, events, and emotions with using nicotine. It learned to expect arrival of a new supply when specific situations or circumstances occurred.

Insula routed urges, craves and anxieties alerted us when conditioned use cues were encountered. Normally the bell ringing use cue and urge was so subtle that it went unnoticed. Almost as if on autopilot, we'd reach for nicotine to satisfy it nonetheless.

You've likely heard of Pavlov, who actually used the ringing of a bell to induce classical conditioning in dogs. He conditioned them to expect food upon hearing a bell. The dogs would actually begin salivating when he rang the bell, even as he started to delay food's arrival longer and longer.

Your unique use patterns conditioned your subconscious too. Encountering a nicotine feeding cue can trigger a response ranging from a barely noticed urge to a full-blown anxiety episode, depending upon your tonic dopamine level.

Teased by thousands of old wanting satisfaction memories, if allowed, the anxiety episode can become emotionally inflamed.

Self-induced anxieties and fears can build, eventually triggering the body's fight or flight panic response. It happens when stress associated with a need, conditioning or desire escalates to the point of registering as a threatening event within the deep inner primitive.

During panic, normal cessation time distortion is made worse, as time seemingly stands still. It can make a three minute crave episode feel like three hours, and entirely unmanageable.

Contrary to what is then felt, those three minutes are extremely short-lived in comparison to active dependency's never-ending cycle of want, urge, use, and satisfy.

Nicotine addiction is about living false priorities, needless conditioning, dishonest use justifications, and denial of all of the above. It's about use of a tiny molecule called nicotine becoming the most frequent lesson taught by a hijacked survival instincts teacher.

Think about it. While we might forget to take our vitamin or medicine, procrastinate regarding work, skip meals, interrupt quality time with family or friends, how often would we fail to respond to the bell for that next mandatory nicotine feeding?

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What is Nicotine?

Back in 2000, I was surprised to learn that all nicotine comes from the tobacco plant, including nicotine in nicotine replacement products such as the patch, gum, and lozenge.

Although the creation of synthetic nicotine is possible (neonicotinoids), imagine the regulatory hoops that the industry would need to jump through in order to be allowed to market synthetic nicotine for human consumption.

Instead, the pharmaceutical industry competes with the tobacco industry in purchasing tobacco from tobacco farmers and extracting nicotine from it.

Nicotine is a colorless, odorless, liquid organic-based alkaloid in the same family as cocaine, morphine, quinine, and strychnine. It slowly yellows when exposed to air, is bitter-tasting, and gives off a slightly fishy odor when warmed.[1]

When holding dry tobacco in your hand, the weight of nicotine within it will vary depending upon the type of tobacco. While nicotine's weight averages about 3% in cigarettes[2] and moist snuff, it comprises 1.6% of a tobacco plug's weight and about 1% of the weight of chewing tobacco.[3]

One of the most toxic of all poisons,[4] nicotine is a fetal teratogen that damages the developing brain.[5] A natural insecticide formed in the roots of the tobacco plant, it helps protect the plant's roots, stalk, and leaves from being eaten by insects and animals.

Nicotine was originally sold as an alkaloid insecticide in America under the brand name Black Leaf 40, a mixture that was 40% nicotine sulfate.[6] The use of similar nicotine products continues to be touted in organic gardening as a means for killing insects.

Neonicotinoids are synthetic forms of the natural insecticide nicotine, and possibly the most widely used insecticides worldwide.

Sold under brand names such as Imidacloprid and Thiamethoxam (TMX), neonicotinoids attach to the insect's acetylcholine receptors. The insect then exhibits leg tremors, rapid wing motion, and disoriented movement followed by paralysis and death.

There is growing concern that widespread use of neonicotinoids may be responsible for killing bees and colony collapse disorder.[7]

How deadly is nicotine? It's nearly twice as deadly as black widow spider venom (.5 mg/kg versus .9mg/kg) and at least three times deadlier than diamondback rattlesnake venom (.5 mg/kg versus 1.9mg/kg).

LD50 is an abbreviation for the lethal dose of a toxic chemical. It represents the amount of the chemical needed to kill 50% of humans weighing 160 pounds. Although based upon animal studies and increasingly disputed, nicotine's generally recognized minimum adult LD50 is 30mg (milligrams), and if ingested in liquid form death may occur within 5 minutes.[8]

Drop for drop, that makes nicotine as deadly as strychnine, which also has a minimum adult LD50 of 30mg,[9] and more deadly than arsenic (50mg)[10] or cyanide (50mg).[11]

Nicotine kills by eventually paralyzing breathing muscles. Prior to death, symptoms include salivation, nausea, vomiting, abdominal pain, diarrhea, dizziness, weakness, and confusion progressing to convulsions, hypertension and coma.[12]

Although the average American cigarette contains 8 to 9 milligrams of nicotine,[13] some is burned, some escapes through cigarette ventilation, and the filter traps some. The lungs absorb nearly 90% of inhaled nicotine.[14]

It results in the average smoker introducing 1.17 to 1.37 milligrams of nicotine into their bloodstream with each cigarette smoked.[15] Average intake can vary significantly from smoker to smoker, ranging from 0.3 to 3.2 mg of nicotine per cigarette.[16]

Picture the largest rat you have ever seen. It would weigh about a pound. The 1mg of nicotine that entered your bloodstream from your last nicotine fix would be sufficient to kill that rat.

A smoker smoking 30 cigarettes per day is, over an entire day, bringing enough nicotine into their body to have killed a 160-pound human, if the entire 30 milligrams had arrived all at once. Two to three drops of nicotine in the palm of the hand of someone weighing 160 pounds or less and he or she is dead.

E-cigarette nicotine juice is seemingly everywhere. It makes you wonder why we haven't seen substantially more poisoning news. While animal studies may not be as applicable to humans as once thought, keep in mind that the debate is over how much nicotine it takes to kill someone.

With liquid nicotine, the body's overdose response (nausea and vomiting) may also be playing a factor in helping rid the body of enough to avoid disaster.

Those pushing a growing array of nicotine products often assert that they are as safe as caffeine. Far from it.

At least in animal studies, nicotine is at least 166 times more toxic than caffeine. Caffeine's lethal dose is 10 grams or 10,000 milligrams, compared to 30 milligrams for nicotine.

Picture a substance more toxic than rattlesnake or black widow venom being fed to your brain day after day after day. Is it any wonder that a 2004 study using brain MRI imaging found that "smokers had smaller gray matter volumes and lower gray matter densities than nonsmokers?"[17]

Contrary to findings from studies examining the short-term (acute) effects of nicotine,[18] studies of the long-term (chronic) effects of smoking nicotine report decline and impairment of attention, concentration, and the accuracy of working and verbal memory.[19]

Visualize nicotine's neurotoxic effects upon the human brain slowly destroying it,[20] while damaging what remains.[21] Possibly the most frightening of all the risks posed by our addiction is its ability to destroy all memory of why we need to stop.

As for those selling a growing array of nicotine products, their marketing ploys and the research backing their sales pitch will always micro-focus upon the effects of just a few of the more than 200 neurochemicals that nicotine controls (usually the stimulants), while ignoring the big picture.

Their goal is to make money by selling us nicotine, not to free us from requiring it. Their marketing will never value the loss of personal freedom to a never-ending need to feed, nor discuss in a fair and honest manner the harms inflicted by nicotine upon those addicted to it.

Do you know of any alcoholic rehabilitation program that recommends switching from whiskey to pure alcohol, and then trying to slowly wean yourself off over a period of 90 days?

Who benefits from such a treatment method when it takes just 3 days to rid the body of all nicotine and move beyond peak withdrawal?

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As Addictive as Heroin?

On May 17, 1988, the U.S. Surgeon General warned that nicotine is as addictive as heroin and cocaine.[1]

In 2000, Canada's cigarette pack addiction warning label read: "WARNING - CIGARETTES ARE HIGHLY ADDICTIVE - Studies have shown that tobacco can be harder to quit than heroin or cocaine."

But how on earth can nicotine possibly be as addictive as heroin? It's a legal product, sold in the presence of children, near candies, sodas, pastries, and chips at the neighborhood convenience store, drug store, supermarket, and gas station.

Heroin addicts describe their dopamine pathway wanting satisfaction sensation as being followed by a warm and relaxing numbness.

Racing energy, excitement, and hyper-focus engulf the methamphetamine or speed addict's wanting satisfaction. Satisfaction of the alcoholic's wanting is followed by the gradual depression

of their central nervous system. And euphoria (intense pleasure) is the primary sensation felt when the cocaine addict satisfies wanting.

The common link between drugs of addiction is their ability to stimulate and captivate brain dopamine pathways.

Should the fact that nicotine's dopamine pathway stimulation is accompanied by alert central nervous system stimulation blind us as to what's happened, and who we've become?

Nicotine is legal, openly marketed, taxed and everywhere. Its acceptance and availability openly invites denial of a super critical recovery truth, that we had become "real" drug addicts in every sense.

Definitions of nicotine dependency vary greatly. One of the most widely accepted is the American Psychiatric Association's as published in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM IV).[2] Under DSM IV, a person is dependent upon nicotine if at least 3 of the following 7 criteria are met:

- Difficulty controlling nicotine use or unable to stop using it.
- Using nicotine more often than intended.
- Spending significant time using nicotine (note: a pack-a-day smoker spending 5 minutes per cigarette devotes 1.5 hours per day, 10.5 hours per week or 13.6 forty-hour work weeks per year to smoking nicotine).
- Avoiding activities because they might interfere with nicotine use or cutting activities short so as to enable replenishment.
- Nicotine use despite knowledge of the harms tobacco is inflicting upon your body.
- Withdrawal when attempting to end nicotine use.
- Tolerance: over the years gradually needing more nicotine in order to achieve the same desired effect.

A 2008 study found that 98% of chronic smokers have difficulty controlling use.[3] Although often criticized, the problem with DSM nicotine dependency standards is not its seven factors. It's getting those hooked upon nicotine to be honest and accurate in describing its impact upon their life.

It isn't unusual for the enslaved and rationalizing mind to see leaving those we love in order to go smoke nicotine as punctuating life, not interrupting it. And the captive mind can invent a host of excuses for avoidance of activities lasting longer than a couple of hours. It can explain how the ashtray sitting before them became filled and their cigarette pack empty without realizing it was happening.

In February 2008, I finished presenting 63 nicotine cessation seminars in 28 South Carolina prisons that had recently banned all tobacco. Imagine paying \$8 for a hand-rolled cigarette. Imagine it being filled with tobacco from roadside cigarette butts, tobacco now wrapped in paper torn from a prison Bible.

Eight dollars per cigarette was pretty much the norm in medium and maximum-security prisons. The price dropped to about \$2 in less secure pre-release facilities. Imagine not having \$8. I heard horrific stories about the lengths to which inmates would go for a fix.

Two inmates housed in a smoke-free prison near Johnson City, Tennessee ended a six-hour standoff in February 2007 when they traded their hostage, a correctional officer, for cigarettes. According to a prison official, "They got them some cigarettes, they smoked them and went back to their cell and locked themselves back in."

I stood before thousands of inmates whose chemical addictions to illegal drugs landed them behind bars. During each program I couldn't help but comment on the irony that those caught using illegal drugs ended up in prison, while we nicotine addicts openly and legally purchase our drug at neighborhood stores.

According to the CDC, during 2011 tobacco killed 11 times more Americans than all illegal drugs combined (443,690 versus 40,239).

As discussed in the intro, Joel Spitzer may well be the world's most insightful nicotine cessation educator. My mentor since January 2000, he tells the story of how during a 2001 two-week stop smoking clinic, a participant related that he was briefly tempted to smoke after finding a single cigarette and lighter setting atop a urinal in a men's public bathroom.

What made it so tempting was that the cigarette was his brand. He thought to himself how easy it would have been to smoke it. Joel then asked the man, "When was the last time you ever saw anything else atop a urinal in a men's room that you felt tempted to put in your mouth?" At that, the man smiled and said, "Point well taken."

Over the years, ex-users have shared stories of leaving hospital rooms where their loved one lay dying of lung cancer so they could smoke, of smoking while pregnant, of accidentally lighting their car, clothing, hair or dog on fire, of smoking while battling pneumonia, and of sneaking from their hospital room into the staircase to light-up while dragging along the stand holding their intravenous medication bag.

Another story shared by Joel relates how one clinic participant had long kept secret how his still-smoldering cigarette butt on the floor had lit the bride's wedding dress on fire.

We each have our own dependency secrets. As a submarine sailor, I went to sea on a 72-day underwater deployment in 1976 thinking that stopping would be a breeze if I didn't bring any cigarettes or money along. I was horribly, horribly wrong. I spent two solid months begging, bumming and digging through ashtray after ashtray in search of long butts.

Even worse was losing both of my dogs to cancer. One of them, Billy, died at age five of lymphoma. It wasn't until after breaking free that I read studies suggesting that smoke from my cigarettes may have contributed to their deaths.[4] If so, all this recovered addict can do now is to keep them alive in his heart while begging forgiveness.

Again, the primary difference between the illegal drug addict and us is that our chemical is legal and our dopamine wanting relief sensation accompanied by alertness.

Yes, there are social smokers called "chippers." And yes, their genetics may allow them to use yet always retain the ability to simply turn and walk away.[5] But, I'm clearly not one of them. And odds are, neither are you, as you wouldn't be reading a book about how to arrest your dependency.

I often think about the alcoholic's plight, in having to watch 90% of drinkers do something the 10% who are alcoholics cannot themselves do, control their alcohol intake. We've got it much easier.

The dependency figures for nicotine are almost the exact opposite of alcohol's. Roughly 90% of daily adult smokers are chemically dependent under DSM-III[6] standards, while 87% of students smoking at least 1 cigarette daily are already dependent under DSM-IV standards.[7]

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Addiction Not News to Tobacco Industry

Nearly 50 million pages of once-secret tobacco industry documents are today freely available and fully searchable online.[1] Collectively, they paint a disturbing picture of an industry fully aware that its business is drug addiction.

The industry cannot ignore that, historically, roughly 27% of new smokers have been age 13 or younger, 60% age 15 or under, 80% age 17 or younger, and 92% under the age of 19.[2]

Contrary to "corporate responsibility" image campaigns, with nearly five million annual tobacco-related deaths worldwide,[3] the industry knows that it must either face financial ruin or somehow entice each new generation of youth to experiment and get hooked.

As a Lorillard executive wrote in 1978, "The base of our business is the high-school student." [4]

Philip Morris USA (PM) is America's largest tobacco company, holding a 49.7% share of the U.S. retail cigarette market in 2019.[5] Based in Richmond, Virginia, and founded in 1854, PM brands include Alpine, Basic, Benson & Hedges, Bristol, Cambridge, Chesterfield, Commander, Dave's, English Ovals, L&M, Lark, Merit, Parliament, Players, Saratoga and Virginia Slims.

Today, in 2020, Philip Morris' website openly proclaims, "PM USA agrees with the overwhelming medical and scientific consensus that cigarette smoking is addictive." "There is no safe cigarette. Cigarettes are addictive and cause serious diseases in smokers. For those concerned about the health risks of smoking, the best thing to do is quit."

It gets worse. "Philip Morris USA agrees with the overwhelming medical and scientific consensus that cigarette smoking causes lung cancer, heart disease, emphysema and other serious diseases in smokers. Smokers are far more likely to develop such serious diseases than non-smokers." [6]

Remember that fateful "what the heck" moment when you surrendered and gave tobacco that first serious try? What you probably don't recall are the thousands of invitations to surrender and experiment that tobacco industry marketing had by then burned into your subconscious.

As shown by the following quotes from once-secret Philip Morris corporate documents, it was fully aware that it was in the drug addiction business while hammering your brain with those invitations:

- 1972 - "The cigarette should not be construed as a product but a package. The product is nicotine. Think of a puff of smoke as the vehicle for nicotine. The cigarette is but one of many package layers. There is the carton, which contains the pack, which contains the cigarette, which contains the smoke. The smoke is the final package. The smokers must strip off all these package layers to get to that which he seeks." [7]
- May 1975 - "... decline in Marlboro's growth rate is due to ... slower growth in the number of 15-19 year-olds ... changing brand preferences among younger smokers. "Most of these studies have been restricted to people age 18 and over, but my own data, which includes younger teenagers, shows even higher Marlboro market penetration among 15-17 year-olds." "The teenage years are also important because those are the years during which most smokers begin to smoke, the years in which initial brand selections are made, and the period in the life-cycle in which conformity to peer-

group norms is greatest.[8]

- November 1977 - "I was amazed at the trend that the [Council for Tobacco Research] work is taking. For openers, Dr. Donald H. Ford, a new staff member, makes the following quotes: 'Opiates and nicotine may be similar in action' ... 'There is a relationship between nicotine and the opiates.' ... It is my strong feeling that with the progress that has been claimed, we are in the process of digging our own grave." [9]

Based in Winston-Salem, North Carolina, R.J. Reynolds' Tobacco Company (RJR) has been around since 1874. Before RJR's 2004 merger with Brown and Williamson, its cigarette brands included Camel, Doral, Eclipse, Monarch, More, Now, Salem, Vantage and Winston.

While RJR cigarette store marketing has claimed that smokers smoke its brands for a host of reasons (flavor, pleasure, adventure, price, to be true, to make new friends, have fun, great menthol, or to look more adult), its once-secret documents tell a different story.

A nine-page 1972 confidential memo by a senior RJR executive is entitled "The Nature of the Tobacco Business and the Crucial Role of Nicotine Therein." [10] The next 11 paragraphs share direct quotes from this now famous and extremely informative memo:

"In a sense, the tobacco industry may be thought of as being a specialized, highly ritualized and stylized segment of the pharmaceutical industry. Tobacco products, uniquely, contain and deliver nicotine, a potent drug with a variety of physiological effects."

"Thus a tobacco product is, in essence, a vehicle for delivery of nicotine, designed to deliver the nicotine in a generally acceptable and attractive form. Our Industry is then based upon design, manufacture and sale of attractive dosage forms of nicotine ..."

"If nicotine is the sine qua non of tobacco products and tobacco products are recognized as being attractive dosage forms of nicotine, then it is logical to design our products -- and where possible, our advertising -- around nicotine delivery ..."

"He does not start smoking to obtain undefined physiological gratifications or reliefs, and certainly he does not start to smoke to satisfy a non-existent craving for nicotine. Rather, he appears to start to smoke for purely psychological reasons -- to emulate a valued image, to conform, to experiment, to defy, to be daring, to have something to do with his hands, and the like."

"Only after experiencing smoking for some period of time do the physiological "satisfactions" and habituation become apparent and needed. Indeed, the first smoking experiences are often unpleasant until a tolerance for nicotine has been developed."

"This leaves us, then, in the position of attempting to design and promote the same product to two different types of markets with two different sets of motivations, needs and expectations."

"If, as proposed above, nicotine is the sine qua non of smoking, and if we meekly accept the allegations of our critics and move toward reduction or elimination of nicotine from our products, then we shall eventually liquidate our business."

"If we intend to remain in business and our business is the manufacture and sale of dosage forms of nicotine, then at some point we must make a stand." "If our business is fundamentally that of supplying

nicotine in useful dosage form, why is it really necessary that allegedly harmful 'tar' accompany that nicotine?"

"There should be some simpler, "cleaner", more efficient and direct way to provide the desired nicotine dosage than the present system involving combustion of tobacco or even chewing of tobacco ..."

"It should be possible to obtain pure nicotine by synthesis or from high-nicotine tobacco. It should then be possible, using modifications of techniques developed by the pharmaceutical and other industries, to deliver that nicotine to the user in efficient, effective, attractive dosage form, accompanied by no 'tar', gas phase, or other allegedly harmful substances."

"The dosage form could incorporate various flavorants, enhancers, and like desirable additives, and would be designed to deliver the minimum effective amount of nicotine at the desired release-rate to supply the 'satisfaction' desired by the user."[10]

As shown, nearly 50 years ago RJR's 1972 memo accurately predicted both the arrival of both nicotine replacement products (NRT) and the combustion-free electronic or e-cigarette.

Today, the lines between tobacco industry nicotine and pharmaceutical industry nicotine are horribly blurred. A 2003 nicotine gum study found that 37% of gum users were hooked on the cure, each being chronic long-term gum users of at least 6 months.[11] It's a trend that will continue.

Brown&Williamson (B&W) was a cigarette company that merged with RJR in 2004. B&W brands - now owned by RJR - include Barclay, Belair, Capri, Carlton, GPC, Kool, Laredo, Lucky Strike, Misty, North State, Pall Mall, Private Stock, Raleigh, Tareyton and Viceroy.

Here are a few quotes from once-secret B&W corporate documents:

- July 18, 1977: "How to market an addictive product in an ethical manner?"[12]
- June 24, 1978: "Very few consumers are aware of the effects of nicotine, i.e., its addictive nature and that nicotine is a poison."[13]
- March 25, 1983: "Nicotine is the addicting agent in cigarettes. It, therefore, seems reasonable that when people switch brands, if they have a certain smoking pattern (i.e. number of sticks/day), they will switch to a brand at the same nicotine level."[14]

Founded in 1760, Lorillard Tobacco Company is the oldest U.S. tobacco company. Its brands include Kent, Maverick, Max, Newport, Old Gold, Satin, Triumph and True. The following telling quotes are from once-secret Lorillard documents:

- April 13, 1977: "Tobacco scientists know that physiological satisfaction is almost totally related to nicotine intake."[15]
- November 3, 1977: "I don't know of any smoker who at some point hasn't wished he didn't smoke. If we could offer an acceptable alternative for providing nicotine, I am 100 percent sure we would have a gigantic brand."[16]
- February 13, 1980: "Goal - Determine the minimum level of nicotine that will allow continued smoking. We hypothesize satisfaction cannot be compensated for by psychological satisfaction. At this point smokers will quit, or return to higher tar and nicotine brands."[17]

Last but not least is British American Tobacco (BAT), which dates to 1902 and sells more than 300 brands worldwide. BAT's international brands include Dunhill, Kent, Lucky Strike, Pall Mall, Vogue, Rothmans,

Peter Stuyvesant, Benson & Hedges, Winfield, John Player, State Express 555, Kool and Viceroy. It does not own all these brands but is licensed by other companies to distribute them. Here are a few BAT admissions.

- November 1961: Smoking "differs in important features from addiction to other alkaloid drugs, but yet there are sufficient similarities to justify stating that smokers are nicotine addicts." [18]
- 1967: "There has been significant progress in understanding why people smoke and the opinion is hardening in medical circles that the pharmacological effects of nicotine play an important part... It may be useful, therefore, to look at the tobacco industry as if a large part its business is the administration of nicotine (in the clinical sense)." [19]
- August 1979: "We are searching explicitly for a socially acceptable addictive product. The essential constituent is most likely to be nicotine or a direct substitute for it." [20]
- April 1980: "In a world of increased government intervention, B.A.T should learn to look at itself as a drug company rather than as a tobacco company." [21]

In light of the above tiny sampling of tobacco industry admissions, should there be any doubt in our minds as to who was slave and who was master, who profited and who lost?

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Freedom Starts with Admitting Addiction

It wasn't easy looking in the mirror and at last seeing a true drug addict looking back. I felt as if I was surrendering, that after all those failed attempts, I'd lost. I felt like a total and complete failure.

But as horrible as that moment was, it was the most liberating event in my life.

It was then and there that I no longer needed the long list of lies I'd invented to try to explain my captivity, my need for that next fix.

Yes, there were countless times during my thirty years of bondage where I'd told myself that I was hooked. But not until then, after one last failed attempt in early 1999, did it hit me.

Like alcoholism, my addiction was not only real but permanent. A bottom of the barrel appalling admission, I felt like crying. I'd just been slapped hard by truth. Why had it taken so long? Truth was, I was no different than the meth, crack or heroin addict.

Dr. M.A.H. Russell, a psychiatrist and addiction researcher at London's Institute of Psychiatry had me pegged in 1974:

"There is little doubt that if it were not for nicotine in tobacco smoke, people would be little more inclined to smoke than they are to blow bubbles or to light sparklers."

"Cigarette-smoking is probably the most addictive and dependence-producing form of object-specific self-administered gratification known to man." [1]

Over the years, millions of nicotine addicts have tried proving Dr. Russell wrong. In January 2003, a Miami based company, the Vector Group Ltd., began marketing a nicotine-free cigarette called Quest in seven northeastern U.S. states.

A novelty item, thousands of smokers rushed out to purchase their first pack of nicotine-free smokes. But locating any smoker who returned to purchase a second pack proved nearly impossible.

We would no more smoke nicotine-free cigarettes than we'd smoke dried leaves from the backyard. Hello! My name is John and I'm a comfortably recovered nicotine addict.

It is not normal for humans to light things they place between their lips on fire and then intentionally suck the fire's smoke deep into their lungs. Nor is it normal to chew or suck a highly toxic non-edible plant, hour after hour, day after day, year after year.

We rationalized irrational behavior because of the neurochemical relief from wanting it generated. What we didn't realize was that each use reinforced future wanting by creation of yet another high-definition use memory.

Cuddling up to the warm, cozy rationalization that, at worst, all we have is some "nasty little habit," serves the tobacco industry well. While habits can be manipulated, modified, toyed with and controlled, nicotine addiction is all or nothing.

And if mind games have you buying into the e-cigarette industry marketing fiction that nicotine-free vaping equals freedom, think again. Prior to e-cigs, smokers could quit by gradual weaning schemes too. Still, like trying to find a successful nicotine gum quitter who didn't end up hooked on the cure, success was rare.

In recent years I've come across a few e-cig users who were able to successfully wean themselves down to vaping nicotine-free juice, only to discover that they couldn't stop vaping. The only explanations, so far, have come from animal studies.

A 2015 mouse study taught us that higher fructose levels can reinforce the effects of sugar and "possibly lead to neurobiological and physiological alterations associated with addictive and metabolic disorders." [2]

Then came a 2020 study of mice that vaped nicotine-free apple flavored e-juice. It found that the mice developed reward-related behaviors without nicotine. [3]

Imagine transferring to e-cigs believing that you'd eventually be able to wean yourself off of nicotine, and upon succeeding, you found yourself still vaping and hooked solid.

The moral of the story? If seeking to avoid a second addiction, flavors belong in the stomach, not vaporized and inhaled into the brain.

Back to the importance of admitting who we are, real drug addicts.

The neo-nicotine industry knows that so long as its "adult free-choice" marketing continues to brainwash nicotine addicts into believing that they're in full control, that ignorance is likely to continue handing over its hard-earned money until the day it dies.

Can you say it yet, and mean it?

Regardless of the delivery device or method used to introduce nicotine into the bloodstream, fully accepting that our addiction is as real and permanent as alcoholism greatly simplifies recovery's rules. In fact, unless also addicted to inhaling an e-juice flavoring, there's only one.

It's called the "Law of Addiction."

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Freedom from Nicotine – The Journey Home

Originally released on January 1, 2009, the 4th revision was completed October 15, 2020. Individual book topics are shared below and a full 10.8MB 415 page PDF is available at WhyQuit.com/FFN.pdf.

All images have been removed from the following PDF chapters so as to make the files smaller and faster opening on mobile devices. All chapter topics (136) are available with images as [topic web pages](#) in HTML format.

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Only one rule. No nicotine today!

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