

# Addictions - Does Conversion Heal the Brain?

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*If there are pathways in our nervous system laid down with addiction, are they destroyed at conversion. or as we walk on a daily basis with CHRIST, or are they always there? In other word once an addict always an addict?*

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Very interesting question and fascinating new brain research gives ever increasing insight into how our faith relationship with God does change us, including our brains, even to the DNA level.

The human brain is in a constant state of flux. Not only will life experience change the circuitry of the brain, but new research reveals that life experience alters the brain's genetic expression. And such change in gene expression can be passed along to our children, grandchildren, and great grandchildren.

If you consider your DNA as a great library of information, the epigenetic coding (epi means above and genetic means DNA so epigenetic means above the DNA) instructs the library which "books" (gene sequences) to open and which to keep closed. If you consider that each "book" contains a recipe it is the epigenetic instructions that determines which "recipes" are "baked," that is, what each cell becomes

and how it functions.

When neural circuits are active the activity in the circuit causes epigenetic changes that produce proteins which cause the circuit to grow stronger, branch out new connections, recruit new neurons to the circuit, and even make new neurons for the circuit. But when a neural circuit is idle different epigenetic instructions are given and the growth inducing protein is no longer available and instead a protein that kills neural circuits is produced so that over time an idle circuit is slowly pruned back.

Understanding this we get insight into how habits are formed and broken. Constant engagement in certain patterns of behavior activate the same circuits which cause DNA changes that produce proteins, which strengthen the particular circuit which corresponds with the behavior. Conversely, by stopping the behavior and leaving the circuit idle the DNA expression actually changes and over time the circuit will be pruned back.

Now let's consider addictions and finally what conversion can do.

What constitutes an addiction? The definition I have found to be most accurate in describing an addiction is:

The compulsive engagement in behaviors that bring short term reward but long term destruction.

Consider this definition and various addictions - alcohol, tobacco, drugs, gambling, overeating, porn or sex addiction, shopping etc. All have as a root process short term reward, but over time slow destruction.

On a neurological level our reward circuit is part of our "primitive" brain (limbic system) and is called the Nucleus Accumbens (NA). It is here we experience pleasure, whether from healthy or unhealthy activities.

God designed the brain for pleasure, but always through the higher cortex and pathways that heal, ennoble and promote greater development. Healthy activation of our NA occurs after a 5 mile run (runner's high), when we finally grasp the solution to an intellectual problem, when we apply ourselves to a task or challenge and after hard work and discipline succeed, when we experience a healthy love relationship or the birth of our child. Whenever we are in harmony with God's law of love we are designed to experience pleasure or joy, which simultaneously results in ever more mature and Christlike character.

Addictions (and sin) activate reward pathways directly, without first activating the higher cortex and therefore result in damage to the higher cortex with subsequent increased impulsivity, loss of self-control, greater self-centeredness and destruction of character.

Further, when a person is involved in addictive behaviors, not only are the primitive neural circuits strengthened and the higher cortex weakened, epigenetic gene expression is changed. Such gene expression can occur as quickly as the first use of a chemical substance.

Brain science has demonstrated that even the first "hit" of cocaine or methamphetamine changes a particular gene in the neurons of the brain, which was previously dormant. It becomes active and begins producing a protein called cocaine-amphetamine-reactive-transcript (CART). This protein, once produced, causes increased cravings for more cocaine and amphetamines.[\[1\]](#) If one stops using the

illegal substance the gene will eventually turn back off and CART will stop being produced. But, if one uses the substance again the gene turns back on and produces significant amounts of CART, causing future abstinence to be more difficult to achieve.

We have known for years that addictions run in families. Or, said another way, the more ancestors one has with addictions the greater the risk of having addiction problems. Why? Because genetic expression changes are passed along to subsequent generations. This is how God designed us to function. We were created with the ability to adapt and change based on our choices and experiences. When we choose unhealthy actions we experience changes to our epigenetic instructions and pass these changes on to our children. God warned that those who hate Him will experience the negative consequences passed down through three and four generations of their family, but those who love Him will experience mercy and love.

“You shall not make for yourself an idol in the form of anything in heaven above or on the earth beneath or in the waters below. You shall not bow down to them or worship them; for I, the Lord your God, am a jealous God, punishing the children for the sin of the fathers to the third and fourth generation of those who hate me, but showing love to a thousand generations of those who love me and keep my commandment. Ex 20:4-6 (NIV)

When we hate God and engage in sinful behaviors, including addictions, we pass those changes along to our children, grandchildren and great-grandchildren. Why? Because those who hate God will not allow Him into their lives to heal what their sin has done. But for those who love Him and open their hearts and minds to His Spirit the Bible promises healing of not only character but brain circuits (body) as well. This would include changes in gene expression.

And if the Spirit of him who raised Jesus from the dead is living in you, he who raised Christ from the dead will also give life to your mortal bodies through his Spirit, who lives in you. Romans 8:11 (NIV)

The Spirit was to be given as a regenerating agent, and without this the sacrifice of Christ would have been of no avail. The power of evil had been strengthening for centuries, and the submission of men to this satanic captivity was amazing. Sin could be resisted and overcome only through the mighty agency of the Third Person of the Godhead, who would come with no modified energy, but in the fullness of divine power. It is the Spirit that makes effectual what has been wrought out by the world's Redeemer. It is by the Spirit that the heart is made pure. Through the Spirit the believer becomes a partaker of the divine nature. Christ has given His Spirit as a divine power to overcome all hereditary and cultivated tendencies to evil, and to impress His own character upon His church. — Desire of Ages, pg. 671

The promise of God is contingent on having no other gods – meaning we must come back to the truth about God. Brain science has shown that when we worship a God of love that our higher cortex grows stronger and the limbic system calms. But all false god concepts activate the limbic system and fail to heal the higher cortex.

Additionally, as we come to know and trust God to be as Jesus revealed – a God of genuine love, we experience the presence of His Spirit, which brings a supernatural power to bear in our healing. The converted man begins exercising self-governance and restraint and avoidance of previous destructive behaviors. This results in greater activation of the higher cortex and less activation of the primitive brain. Through this daily experience gene expression will change and over time brain structure will

change. If we continue in such a healthy path we can pass along benefits to our children and through a trust relationship with God break the cascade of heritable consequences passed along by our ancestors.

As a rule every intemperate man who rears children transmits his inclinations and evil tendencies to his offspring ; he gives them disease from his own inflamed and corrupted blood. Licentiousness, disease, and imbecility are transmitted as an inheritance of woe from father to son, and from generation to generation, and this brings anguish and suffering into the world. — Healthful Living, pg. 57

Such is the description of those who hate God and don't allow His healing presence or follow His methods in their lives. But for those who come to trust God another outcome is told:

A genuine conversion changes hereditary and cultivated tendencies to wrong. The religion of God is a firm fabric, composed of innumerable threads, and woven together with tact and skill. Only the wisdom which comes from God can make this fabric complete. — Maranatha, pg. 237

For those who, despite a family history of addictions, come to know God they can experience victory over their own heredity, and perhaps pass along a better possibility to their offspring:

The nobler the aims, the higher the mental and spiritual endowments, and the better developed the physical powers of the parents, the better will be the life equipment they give their children. In cultivating that which is best in themselves, parents are exerting an influence to mold society and to uplift future generations. — Ministry of Healing, pg. 371

What an amazing God we serve!

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[1]Kelz, Max B., et al. "Expression of the transcription factor FosB in the brain controls sensitivity to cocaine." *Nature* 401, 272 - 276 (16 Sep. 1999) DOI: 10.1038/45790.