



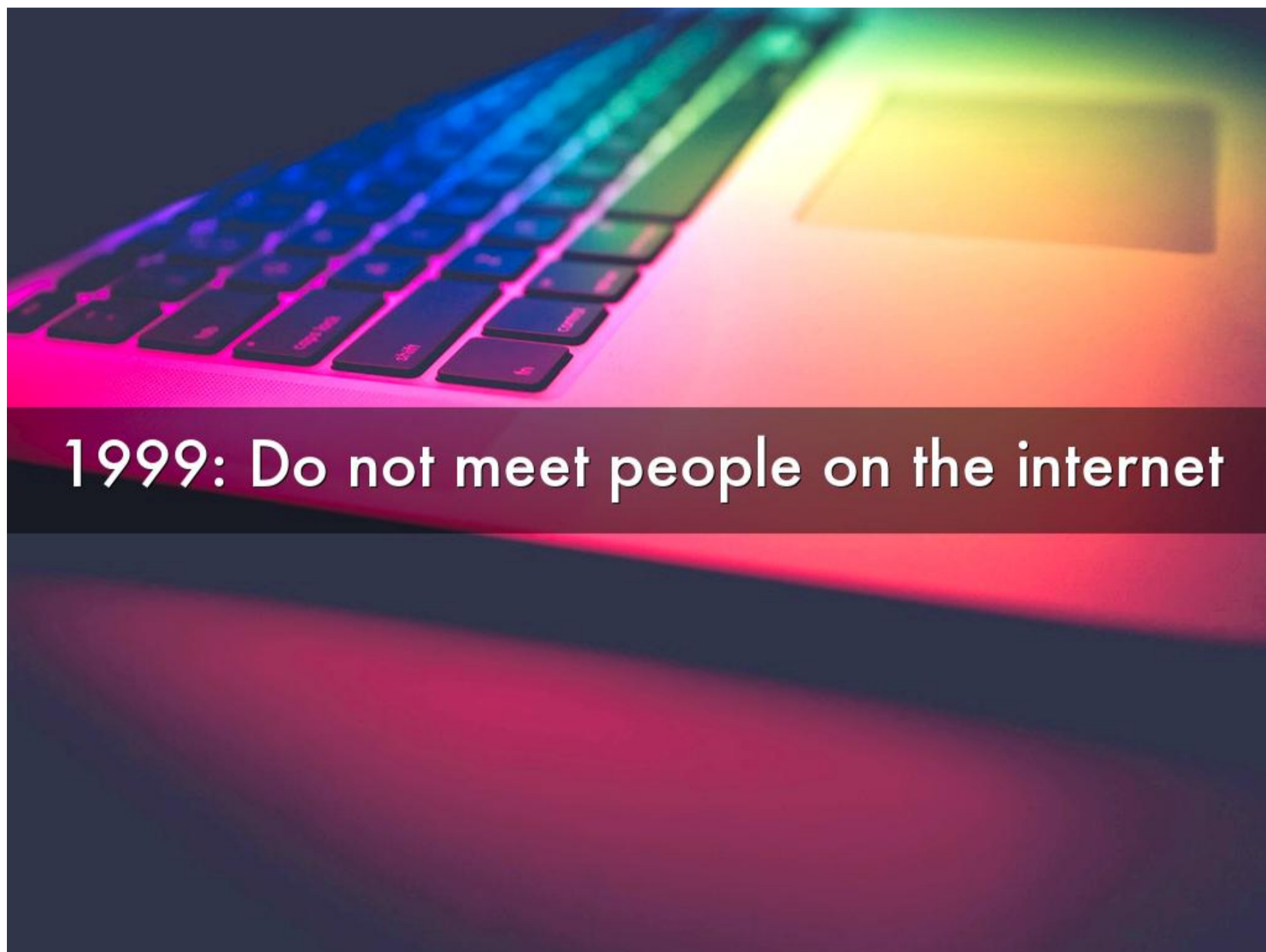
# Science, Faith and Addiction

@DrManejwala



# Science, Faith and Addiction

[manejwala.com/addictionandfaith](http://manejwala.com/addictionandfaith)



1999: Do not meet people on the internet





2009: Literally use the internet to summon a stranger to get into their car



# How do we reconcile spiritual solution to a biological illness?

There is a neurobiology  
of addiction. Is there a  
neurobiology of  
recovery?



**“His craving for alcohol was the equivalent on a low level of the spiritual thirst of our being for wholeness, expressed in medieval language: the union with God.”**





**“You see, alcohol in Latin is spiritus and you use the same word for the highest religious experience as well as for the most depraving poison. The helpful formula therefore is: spiritus contra spiritum.”**



**“Addictions are often accompanied by an inner sense of disintegration, enslavement and meaninglessness that can be viewed in terms of a spiritual craving for wholeness, freedom, and transformation.” – Kenneth Blum**

“Spiritual experiences involve pronounced shifts in perception and buffer the effects of stress on mental health.” – Lisa Miller et al.

Neural Correlates of Personalized Spiritual Experiences in Cerebral Cortex Cerebral Cortex, 2018; 1–8

doi: 10.1093/cercor/bhy102



# This is a talk about unanswered questions

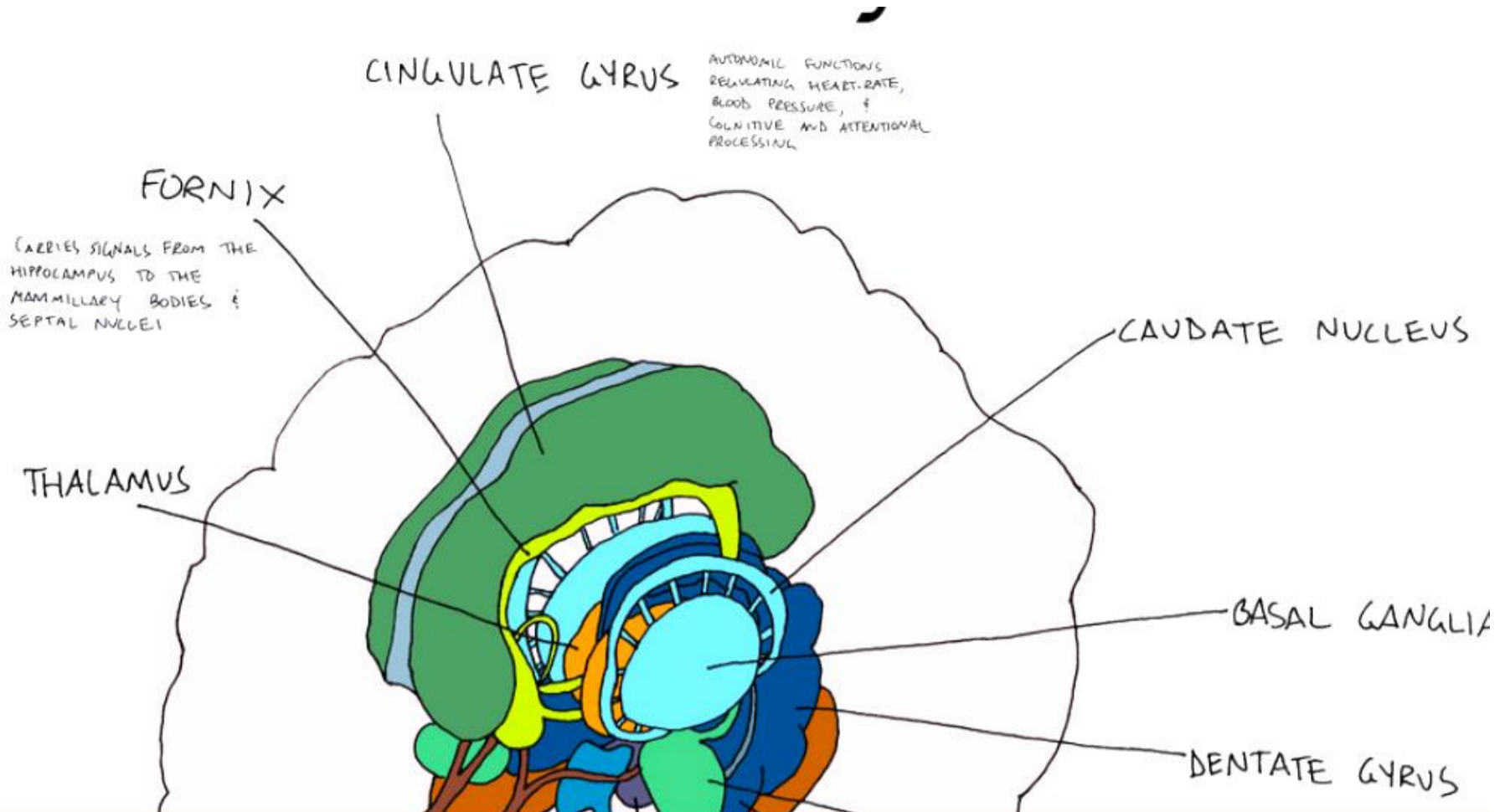


The real challenge is exploring the neurobiology and genetics of spirituality without being reductionistic.



Here we assume that the brain mediates all conscious and unconscious experiences- including spiritually experiences

Not asserting that all spiritual experiences are brain experiences, but rather that all experiences in general are experienced in the brain.



Temporal lobe epilepsy is associated with awe, a sense of destiny, feelings of unity, the experience of enlightenment, and the sudden recognition of hidden meanings.

Thus this is a limbic phenomenon per Dr. Vaillant



"Love lives in the Limbic System" Remove a hamster's neocortex and she cannot navigate a maze but can raise her pups. Damage the limbic system and she can manage the maze but becomes an incompetent mother.

Panskepp, J. "Affective Neuroscience: The Foundations of Human and Animal Emotions Oxford University Press." New York (1998).



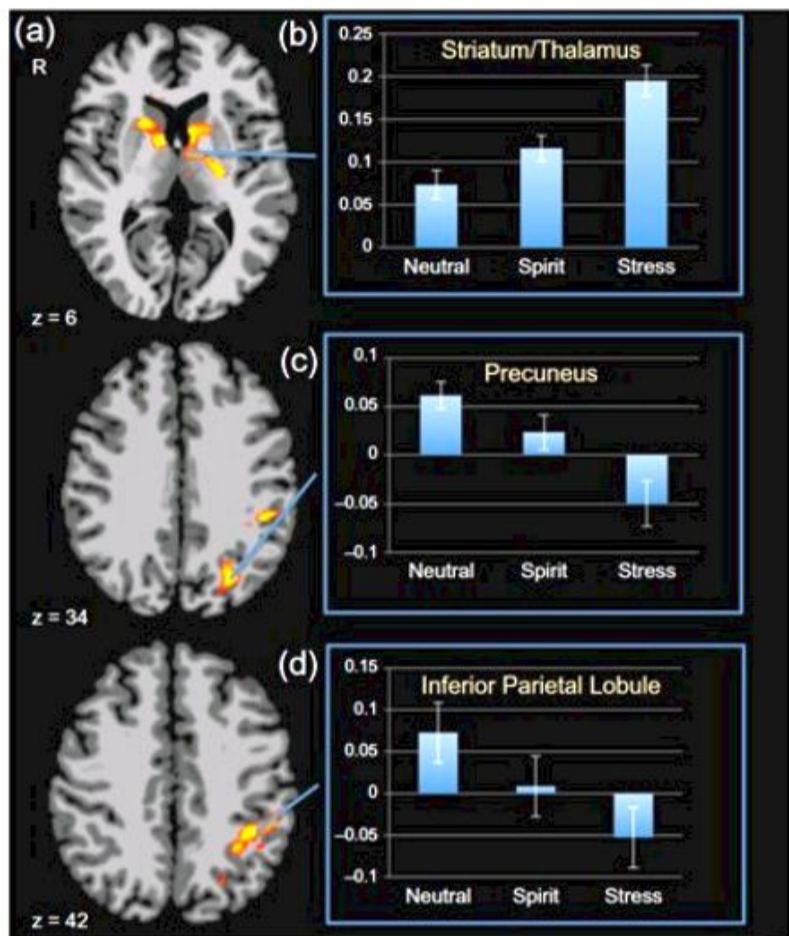


Figure 2. Main effect of condition and condition contrasts. Main effect of the guided-imagery scripts in the group (N = 27) during scanning (red box on left). (a) Maps depict axial views of z-levels 6 (striatum/thalamus), 34 (precuneus/superior occipital gyrus) and 42 (inferior parietal lobule) from top to bottom and left to right. (b) Bar chart shows mean change in the (b) spiritual condition relative to the neutral-relaxing condition ("Spirit > Neutral"), (c) the stress condition relative to the neutral-relaxing condition ("Stress > Neutral") and (d) the spiritual condition relative to the stress condition ("Spirit > Stress"). All contrasts were significant at the corrected level of  $P < 0.001$  two-tailed and family-wise error corrected for multiple comparisons. Red color indicates where participants show relatively greater activation, and blue color demonstrates areas where participants show relatively reduced activation. The right side of the brain is on the left.

Does a spiritual experience produce different activation than simple relaxation?

Reduced Inferior Parietal Lobe activity in spiritual task "reflect on a spiritual experience and try to evoke the same feelings" versus a neutral relaxation task or a stress situation. fMRI.

The study itself can be found here :

Cerebral Cortex, 2018; 1–8  
doi: 10.1093/cercor/bhy102

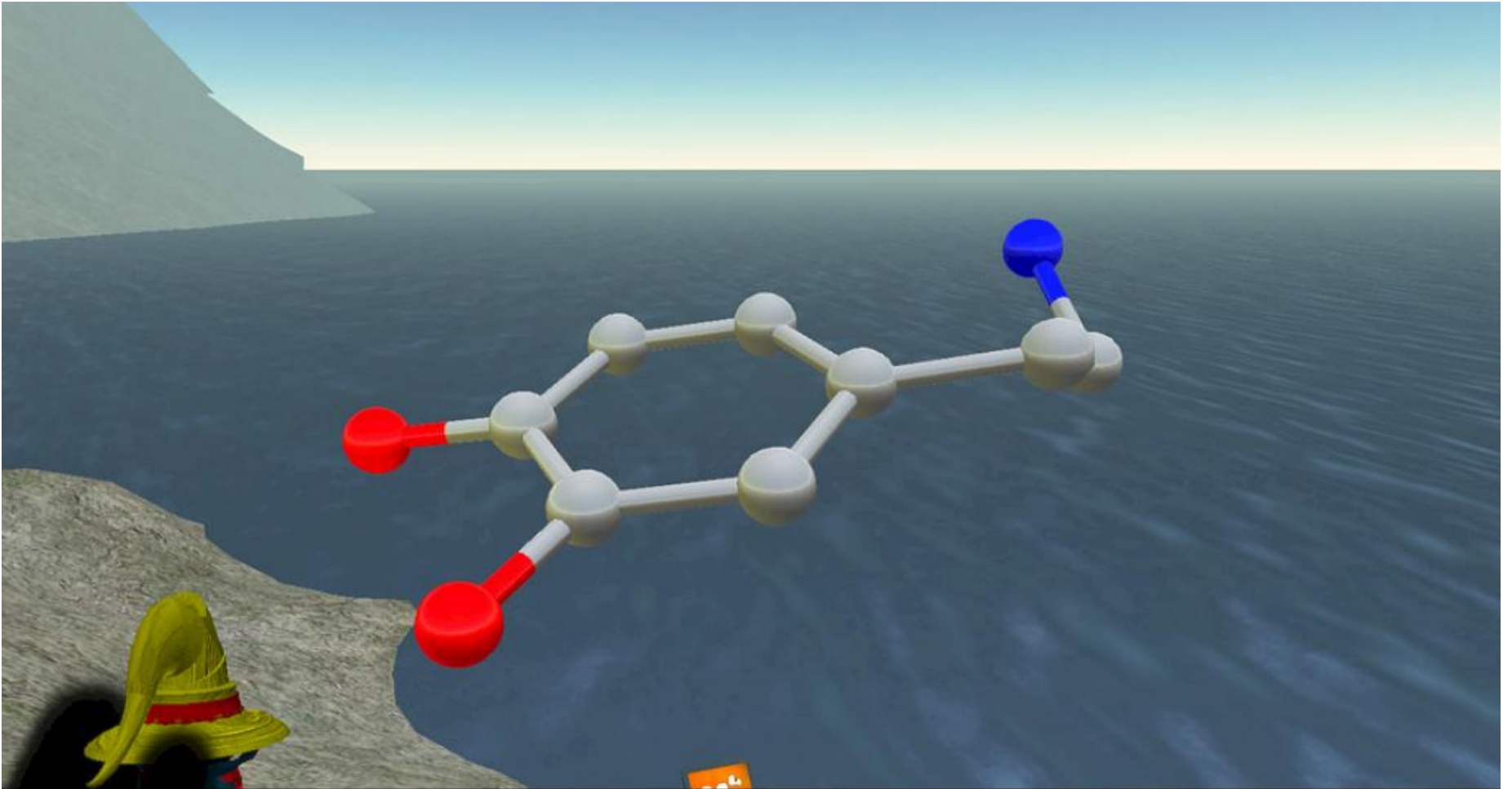
Adult children of  
depressed probands who  
report religion or  
spirituality is important to  
them have a 90% reduced  
risk of depression

You can read the study itself here: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3547523/>

Note that attendance at religious services did not impact risk, nor did religious affiliation.



Healing, like addictions, can be related to the processes by which the human brain is organized for controlling pleasure and pain.



**“Low dopamine function” leads to a range of  
addictive, compulsive and impulsive behaviors  
“Reward Deficiency Syndrome” coined by Ken Blum.**

And this means we need to talk about Dopamine...

**The Reward Deficiency Syndrome Behaviors (RDS)\***

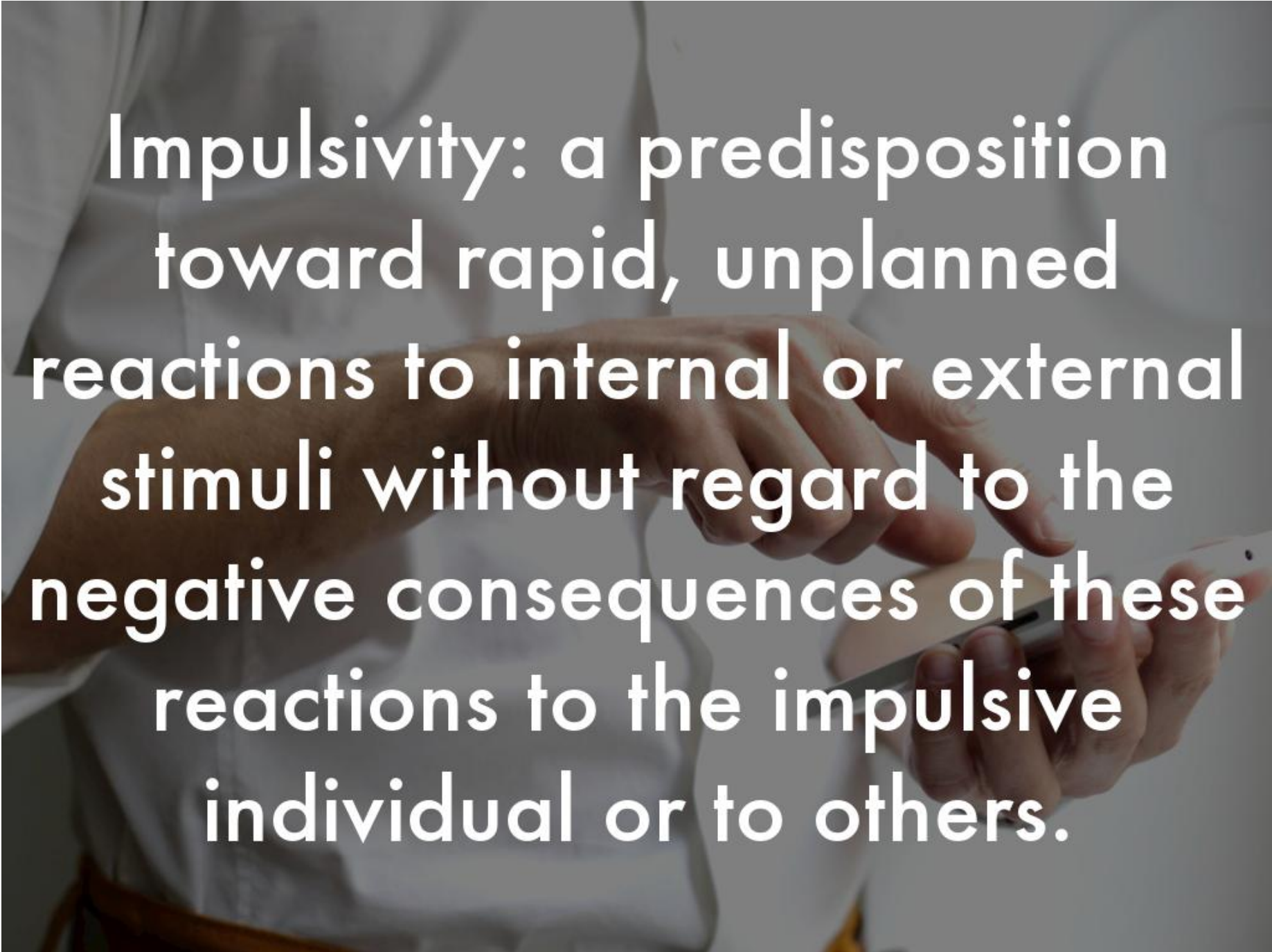
<b>Addictive Behaviors</b>	<b>Impulsive Behaviors</b>	<b>Compulsive Behaviors</b>	<b>Personality Disorders</b>
Severe Alcoholism	Attention-Deficit Disorder & Hyperactivity	Aberrant Sexual Behavior	Conduct Disorder
Polysubstance Abuse Smoking Obesity	Tourette Syndrome Autism	Internet Gaming Pathological Gambling	Antisocial Personality Aggressive Behavior Generalized Anxiety

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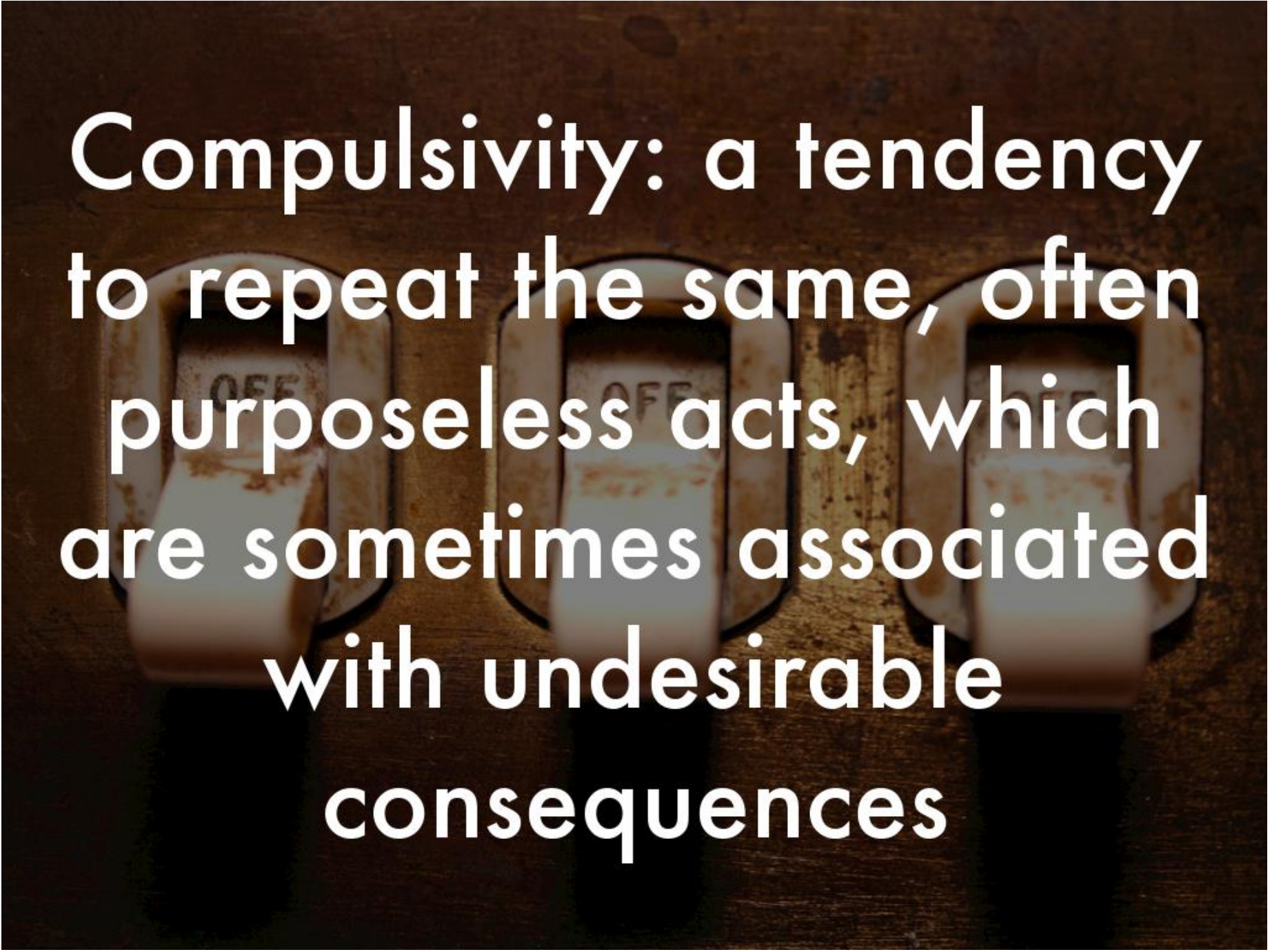
So the reduce activity of dopamine is implicated in several conditions...a broad range.

This is from the work of Ken Blum of Journal of Psychoactive Drugs, 44 (2), 134–143, 2012

A photograph of a person in a white lab coat, likely a healthcare professional, holding a smartphone. The person's hands are visible, and they appear to be interacting with the device. The background is slightly blurred, focusing attention on the person and the phone. Overlaid on this image is a large, white, sans-serif text block that reads: "Impulsivity: a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individual or to others."

**Impulsivity: a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individual or to others.**

For more on this, read here: Moeller G, Barratt ES, Dougherty DM, et al. Psychiatric aspects of impulsivity. Am J Psychiatry. 2001;158:1783-1793.



Compulsivity: a tendency to repeat the same, often purposeless acts, which are sometimes associated with undesirable consequences

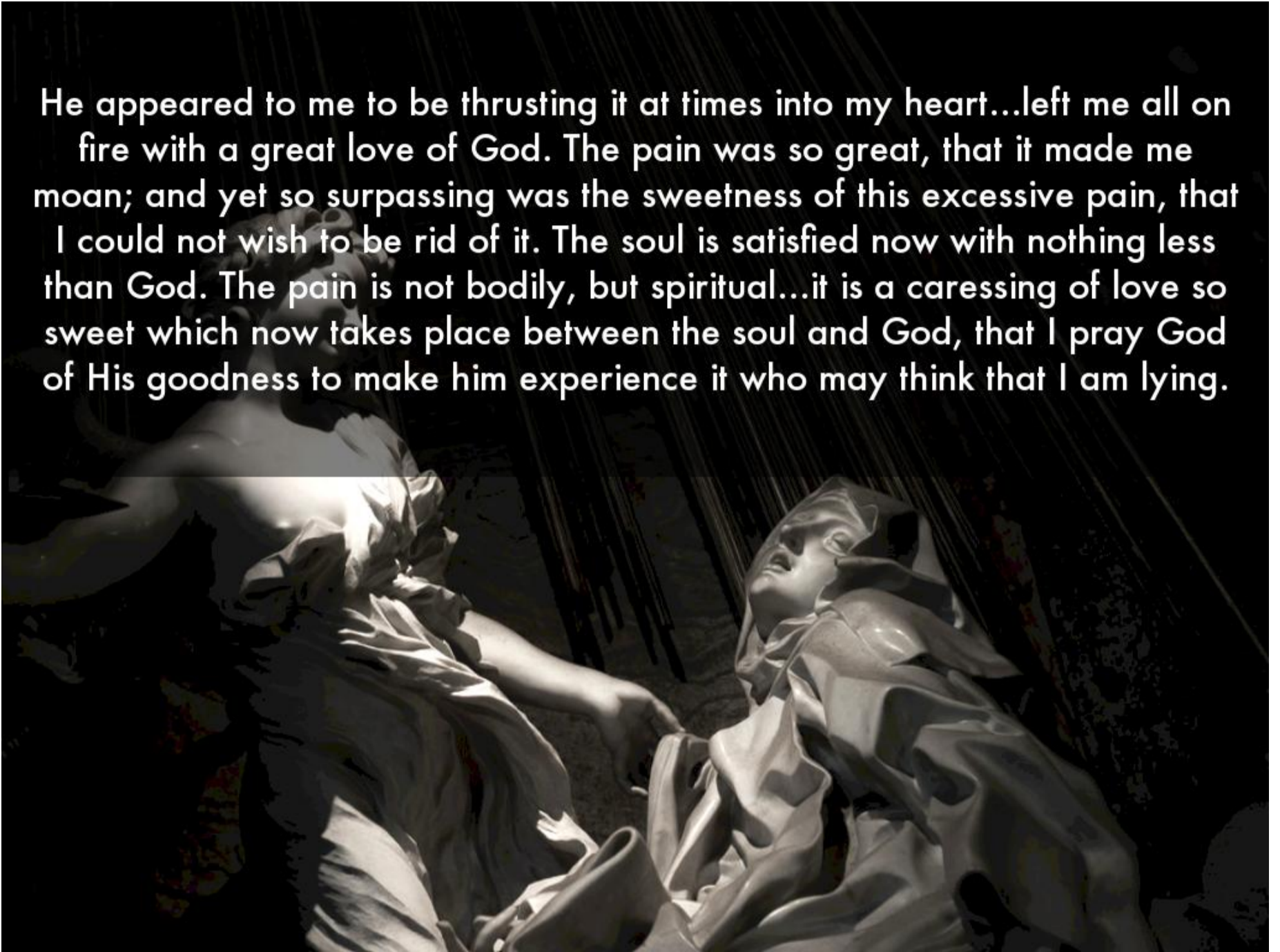
And a fantastic summary on the differences can be found here: <http://www.psychiatrictimes.com/impulse-control-disorders/understanding-differences-between-impulsivity-and-compulsivity/page/0/1>



Practices known to increase dopamine:  
meditation, music, yoga, exercise, diet,  
and many others



He appeared to me to be thrusting it at times into my heart...left me all on fire with a great love of God. The pain was so great, that it made me moan; and yet so surpassing was the sweetness of this excessive pain, that I could not wish to be rid of it. The soul is satisfied now with nothing less than God. The pain is not bodily, but spiritual...it is a caressing of love so sweet which now takes place between the soul and God, that I pray God of His goodness to make him experience it who may think that I am lying.



From the ecstasy of Saint Teresa



**“Awe, love/attachment, trust/faith, compassion, gratitude, forgiveness, joy and hope constitute what we mean by spirituality. These emotions have been grossly ignored by psychiatry” – George Vaillant**



**“Spirituality is not about about ideas, sacred texts and theology. Rather, spirituality is all about emotion and social connection that are more dependent on the limbic system than the cortex ” – George Vaillant**

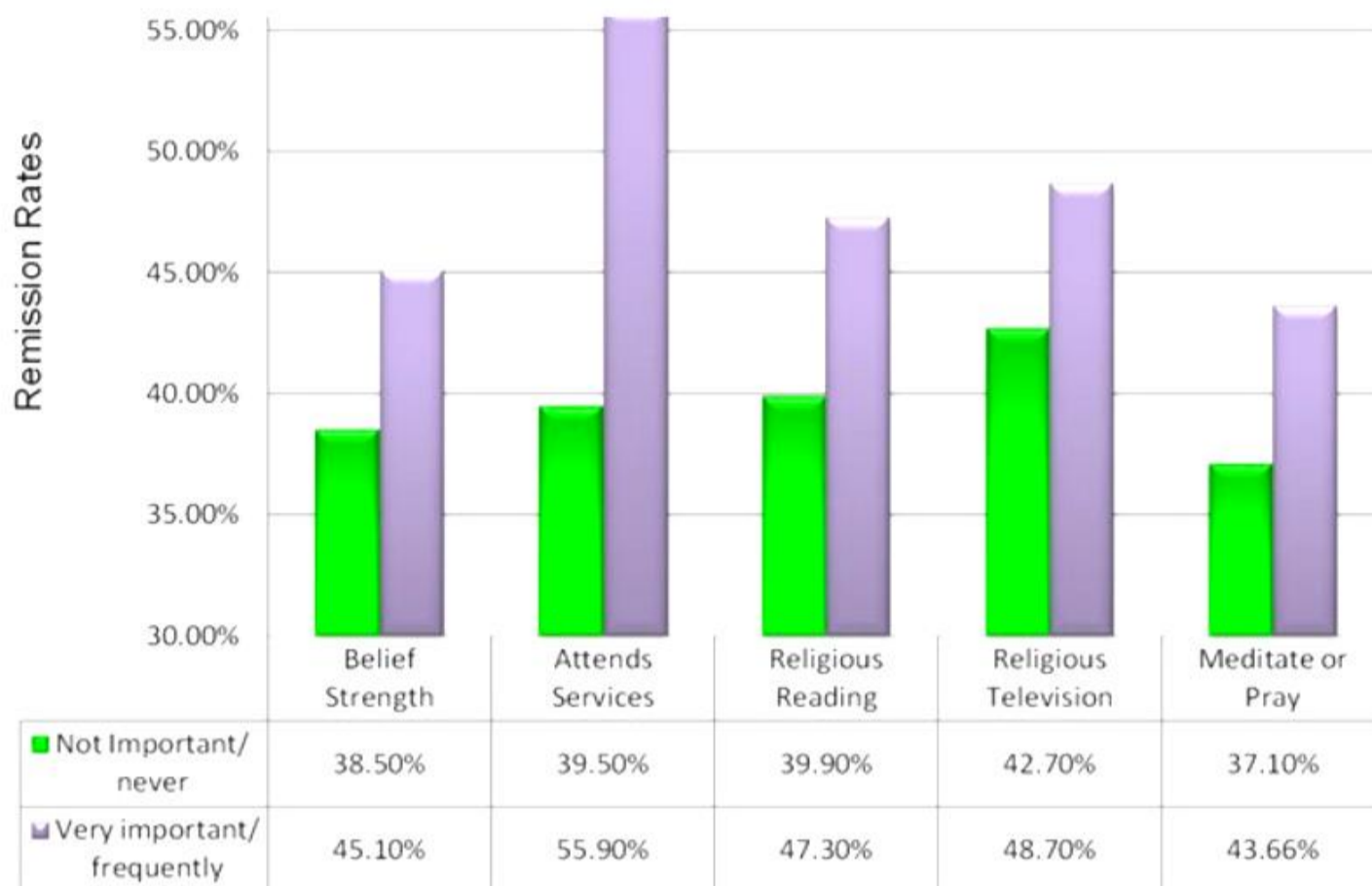


# Three levels of spiritual evolution: Genetic, Cultural & Lifetime



We know it helps some  
people, we don't know  
who or why.

**NIDA-Drug Addiction Treatment Outcome Study (DATOS) Relapse as a Function of Spirituality/Religiosity.**  
Schuckman, J., Bush, N., Brennan, L.H., Gorkens, J., Thompson, B., Ussal, B., Baker, M., Bakken, R., Maltby, M., Dube, R., L.M. Denstrom,  
 Z. Wang, N. Gao, M.



Analysis of 2,947 clients 12 months post intake from DATOS data

You can read the study here:  
<https://www.ncbi.nlm.nih.gov/pubmed/26052556>

But bottom line, any protective effect of spirituality seems to be more tied to actions than beliefs.

- AGLOC = Alcohol-related God Locus of Control Scale;
  - BMMRS = Brief Multidimensional Measure of Religiousness and Spirituality;
  - Brief RCOPEs = Brief Religious Coping Scale;
  - B-PRPI = Brown Peterson Recovery Progress Inventory;
  - DSE = Daily Spiritual Experiences (Loving & Controlling God Scales);
  - INSPIRIT = Index of Core Spiritual Experience;
  - MMRS = Multidimensional Measurement of Religiousness/Spirituality;
  - PIL = Purpose in Life;
  - RBB = Religious Background and Behavior Scale;
  - RPSS = Religious Problem-Solving Scale;
  - SEI = Spiritual Experience Index;
  - SBS = Spirit Belief Scale;
  - SWB = Spiritual Well-Being Scale.
-



AA/12-Step Focus				
Author/Year	Design	Sample	Method	Results
Carroll (1993)	Cross-sectional	100 participants from AA meetings; majority White; gender not reported	Tools: Step Questionnaire and PIL; data collection: tools distributed at AA meetings and submitted via return mail; outcome: length of sobriety	Length of sobriety had a significant positive correlation with the PIL scores.
Hendricks, Caldwell, and Katz (2003)	Cross-sectional	35 married couples; men, AA/wives, Al-Anon; 90% White	At least 6 months married and abstinent; tools: B-PRI, SWBS; data collection: same day; outcome: length of sobriety	Sobriety was not correlated with SWB but was correlated with B-PRI.
Kaskutas, Bond, and Weisner (2003)	Prospective cohort	Baseline: 926; 1-year follow-up: 655; 2-year follow-up: 587; public and private treatment programs; 55% men, 60% White	Tool: RBB (one item), "Have you had a spiritual awakening"; data collection: intake, 1 year and 3 years; outcome: abstinence in past 12 months	Religious self-definition was not associated with significantly increased odds of sobriety; individuals reporting a spiritual awakening at year 3 had highest odds of continuous sobriety.
Murray, Malcarne, and Goggin (2003)	Cross-sectional	144 participants from AA meetings: 38% women, 62% men	Tool: AGLOC, frequency of spiritual practice, and perceived importance; data collection: same day; outcome: length of sobriety	Individuals with low God/Higher Power control beliefs and those who endorse internal drinking-related control beliefs were associated with significantly longer sobriety.
Oakes, Allen, and Ciarrocchi (2000)	Cross-sectional	78 participants from AA meetings: ~ 50% men and 50% women, mean age = 45 years, majority White and employed full-time	Tools: RPSS, RBB, and SEI; data collection: same day; outcome: length of sobriety	After multivariate analysis, AA involvement was the only significant predictor of abstinence and sobriety.
Rush (2000)	Cross-sectional	125 participants from AA meetings: 100% women, mean age = 47 years, majority White upper-middle class	At least 1 year Abstinent tools: Spiritual Orientation Inventory; data collection: tools distributed at AA meetings and submitted via return mail; outcome: length of sobriety	Spirituality was significantly related to sobriety.
Zemore (2007)	Secondary analysis using data from previous clinical trial	733 participants at baseline and 537 participants at 1-year follow-up (73%); sample not otherwise described	Tools: RBB (spiritual awakening); data collection: intake and 1 year; outcome: abstinence for past 30 days	Increased participation in 12-step program predicted increase in abstinence. This change was partially explained by increases in spirituality.

These and the following slides are taken from Journal of Addictions Nursing & Volume 24 & Number 4, 217Y226 which is a great resource!

Author/Year	Design	Sample	Method	Results
Piderman, Schneekloth, Pankratz, Maloney, and Aitchuler (2007)	Longitudinal study, Part 1	74 participants with alcohol dependency, 51% women, mean age = 44 years, 93% White	Tool: SWB, Duke Religion Index, Brief RCOPEs; data collection: intake, discharge; outcome: alcohol abstinence efficacy	Stronger correlation was found between SWB and abstinence efficacy. Private religious practices and religious coping were not significant.
Piderman, Schneekloth, Pankratz, Maloney, and Aitchuler (2008)	Longitudinal study, Part 2	74 participants with alcohol dependency, 51% women, mean age = 44 years, 93% White	Tool: SWB, Duke Religion Index, Brief RCOPEs; data collection: 3, 6, and 12 months; outcome: 1 year of continuous abstinence	Abstinence was significantly associated with private spiritual practices. Abstinence was not significantly associated with religious coping or intrinsic religiosity.
Pringle, Emptage, and Barbetti (2007)	Secondary analysis using AA alcohol outpatients	158 (61% follow-up), 63% AA members at some point, 100% Black	Tools: PIL, SEI, and 6 items from the Religious Motivation Scale; data collection: intake and 3 months; outcome: retention, length of stay, discharge status (reason for leaving treatment)	After adjusting for gender, religious practice, baseline alcohol use, and other variables, none of the spirituality measures were significantly associated with discharge status.
Robinson, Cranford, Webb, and Brower (2007)	Prospective cohort	157 patients with alcohol use disorder, 55% full-time employed, 55% women, 83% White	Tools: 10 measures from Project Match, BMMRS, Loving & Controlling God Scales, RBB, DSE, PIL, Brief RCOPEs; data collection: 6 months; outcome: heavy alcohol use in past 90 days	DSE and PIL (after controlling for gender) were significant for absence of heavy alcohol use at 6 months. No other measures were significant.
Roland and Kaskutas (2002)	Prospective cohort	851 participants from public and private treatment programs; 63% White, 27% Black, 15% Hispanic	Tools: modified RBB (religious beliefs, practices, and church attendance); data collection: intake and 12 months (treatment end); outcome: length of sobriety and consequences of drinking	Blacks reporting higher AA and church attendance at year 1 had greater sobriety than Blacks attending church only. Whites and Hispanics reporting primarily AA attendance were more likely to report sobriety.
Sterling et al. (2006)	Longitudinal	405 participants, mean age = 42 years, 85% White	Tools: DSE, BMMRS, Spiritual Belief Scale, SEI, INSPIRIT; data collection: intake, 1 month, and 3 months; outcome: premature termination of treatment, abstinence, desire to drink	No matching effects for discharge efficacy or desire to drink. Persons with lower levels of spirituality participating in less spiritual programs had poorer outcomes.
Stewart, Koeske, and Pringle (2008)	Prospective cohort	158 participants at baseline; 96 participants at follow-up (61%), 61% men, mean age = 39 years, 100% Black	Tools: Spiritual Support subscale of SEI, PIL, six-item extrinsic religiosity, frequency of religion/faith; data collection: intake and 3 months; outcome: abstinence	Participants who regularly practiced their religion/faith at baseline were >5 times as likely to achieve abstinence 3 months later (statistically significant).

Author/Year	Design	Sample	Method	Results
<b>Alcohol and Other Drugs</b>				
Author/Year	Design	Sample	Method	Results
Walker, Tonigan, Miller, Corner, and Kahlich (1997)	Double-blind RCT	40 participants with alcohol abuse or dependence, 70% men, 72.5% Hispanic, 15% White	Intervention: intercessory prayer; tools: not applicable; data collection: 3 and 6 months; outcome: alcohol consumption	No significant relationship. No difference was found between the prayer intervention and the nonintervention groups on alcohol consumption.
Avants, Warburton, and Margolin (2001)	Cross-sectional	43 participants with HIV (79%) at follow-up, 30% women, 49% Black	Tools: one-item measuring degree to which religion or spirituality provides source of support/comfort; data collection: same day; outcome: abstinence	Faith was a significant predictor of abstinence.
Carter (1998)	Case control	63 participants; no further description provided	Tools: BRRP; data collection: same day; outcome: length of sobriety	Higher scores for spiritual practices were associated with fewer relapses and longer recovery.
Christo and Franey (1995)	Prospective cohort	101 polysubstance users in London; 26% women; 80% White, 11% Black, 8% Mixed, 1% Asian	Tools: seven-item scale developed for study; data collection: 6 months; outcome: self-reported drug use	No significant relationship between spirituality beliefs and drug use was found.
Chu and Sung (2009)	Secondary analysis of DATOS	40% woman; 1,169 Whites, 1,391 Blacks	Tools: church attendance, 1 item on frequency; data collection: intake and 12 months; outcome: abstinence	Religious behavior at 1 year was positively associated with recovery. This finding was not significant for Whites.
Connor, Anglin, Annon, and Longshore (2008)	Longitudinal	315 participants, 29% women, 40% Black, 35% Hispanic	Tools: SWB; data collection: intake, 12 months and 6 months after discharge; outcome: treatment status in or not in maintenance treatment	Persons with consistently low spirituality had significantly more days of heroin use.
Heinz, Epstein, and Preston (2007)	Prospective cohort	201 participants at baseline; 169 participants at follow-up (84%), 72% men, 66% Black	Tools: INSPiRiT; data collection: intake and 12 weeks; outcome: treatment retention and urine specimens	Higher INSPiRiT results predicted more cocaine negative urines, but results did not correlate with urines positive for cocaine or opiates. Treatment retention was not significant.
Jarusiewicz (2000)	Cross-control	20 relapsing and 20 recovering participants from addiction treatment center connected with a hospital, 60% men	Tools: SBS; data collection: same day; outcome: abstinence	Recovering individuals had greater levels of faith and spirituality.
Johnsen (1993)	Case control	58 participants, 20% women, mean age = 37 years	Tools: "How often do you use prayer or meditation?" and "Have you maintained sobriety since your treatment?"; data collection: same day; outcome: abstinence	Participants achieving abstinence more often used prayer or meditation.

Author/Year	Design	Sample	Method	Results
Richard, Bell, and Carlson (2000)	Prospective cohort	193 participants, 53% men, 66% Black	Tools; church attendance and "How often do you feel religion is really important in your life?"; data collection; intake and 6 months after charge; outcome; self-reported improvement in drug use	Individual religiosity at baseline had no effect on decreased overall drug use. Increased church attendance was associated with decreased crack use. Increased church attendance and 12-step attendance were associated with decreased alcohol use.
Stahler, Kirby, and Kerwin (2007)	RCT with attention control	18 participants, 100% women, 100% Black	Intervention: treatment, Bridges; data collection, baseline, 3 months, and 6 months; outcome, treatment retention	The treatment group was associated with increased retention.
Stewart (2008)	Prospective cohort	301 participants, 51% men, mean age = 35 years, 80% White	Tools: MMRS (short form); data collection: intake and 7 months after discharge; outcome: abstinence, drug use severity, treatment readmission	Many spiritual dimensions were important in treatment outcomes. Generally, the relationship was stronger for the spiritual than the religious dimensions.
Wolf-Branigin and Duke (2007)	Cross-sectional	46 participants, treatment program: faith-based residential substance abuse treatment, 26% women, 89% Black	Tools; brief questionnaire on involvement in spiritual practices (at least 1 hour/week in optional services); data collection: same day; outcome: treatment completion	Likelihood of involvement in spiritual activities and completing the program was 62.7%. Likelihood of not being involved in spirituality and completing the program was 4.7%.
Shields, Broome, Delany, Fletcher, and Flynn (2007)	Secondary analysis of DATOS	8,494 participants	Tools: seven-item composite scale for recovery/sobriety; data collection: intake (7-10 days after treatment entry); outcome: critical retention	For a typical program, individual religiosity and retention did not correlate.

The methods are mixed,  
the results are mixed  
and the mechanisms are  
mostly unknown



# How is addiction different from diabetes, COPD or Cancer?



# Chronic pain and spirituality

# Research

- spirituality is protective against distress in end-of-life palliative care patients
- Spiritual distress is associated with higher levels of pain in spinal chord injur
- Anger towards God associated with worse pain in chronic headaches, but "protest" (questioning, complaining, arguing" associated with reduced distress

References:

<https://www.ncbi.nlm.nih.gov/pubmed/28716616>

<https://www.ncbi.nlm.nih.gov/pubmed/27241444>

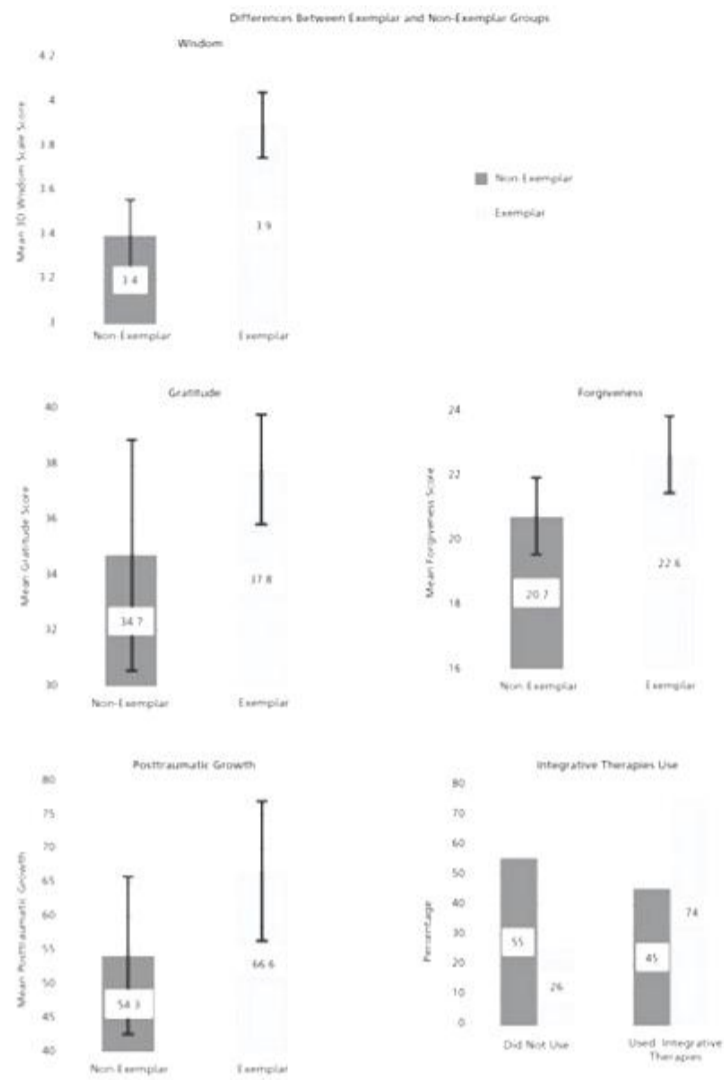
<https://www.ncbi.nlm.nih.gov/pubmed/27216030>



# Wisdom practices in chronic pain

- Demonstrate acceptance, openness, self-efficacy, hope, perseverance, self-regulation, kinesthetic awareness, holistic approaches and integrative therapies, self-care, spirituality, social support, and therapeutic lifestyle behaviors such as music, writing, art, gardening, and spending time in nature
- Exemplars of "wisdom practices"

This is from a fascinating qualitative study of chronic pain: <https://www.ncbi.nlm.nih.gov/pubmed/26937311>



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This is from a fascinating qualitative study of chronic pain: <https://www.ncbi.nlm.nih.gov/pubmed/26937311>

Religious involvement is associated with greater purpose, optimism, generosity and gratitude in persons with major depression and chronic medical illness

For a study on this, see here:

<https://www.ncbi.nlm.nih.gov/pubmed/25077855>

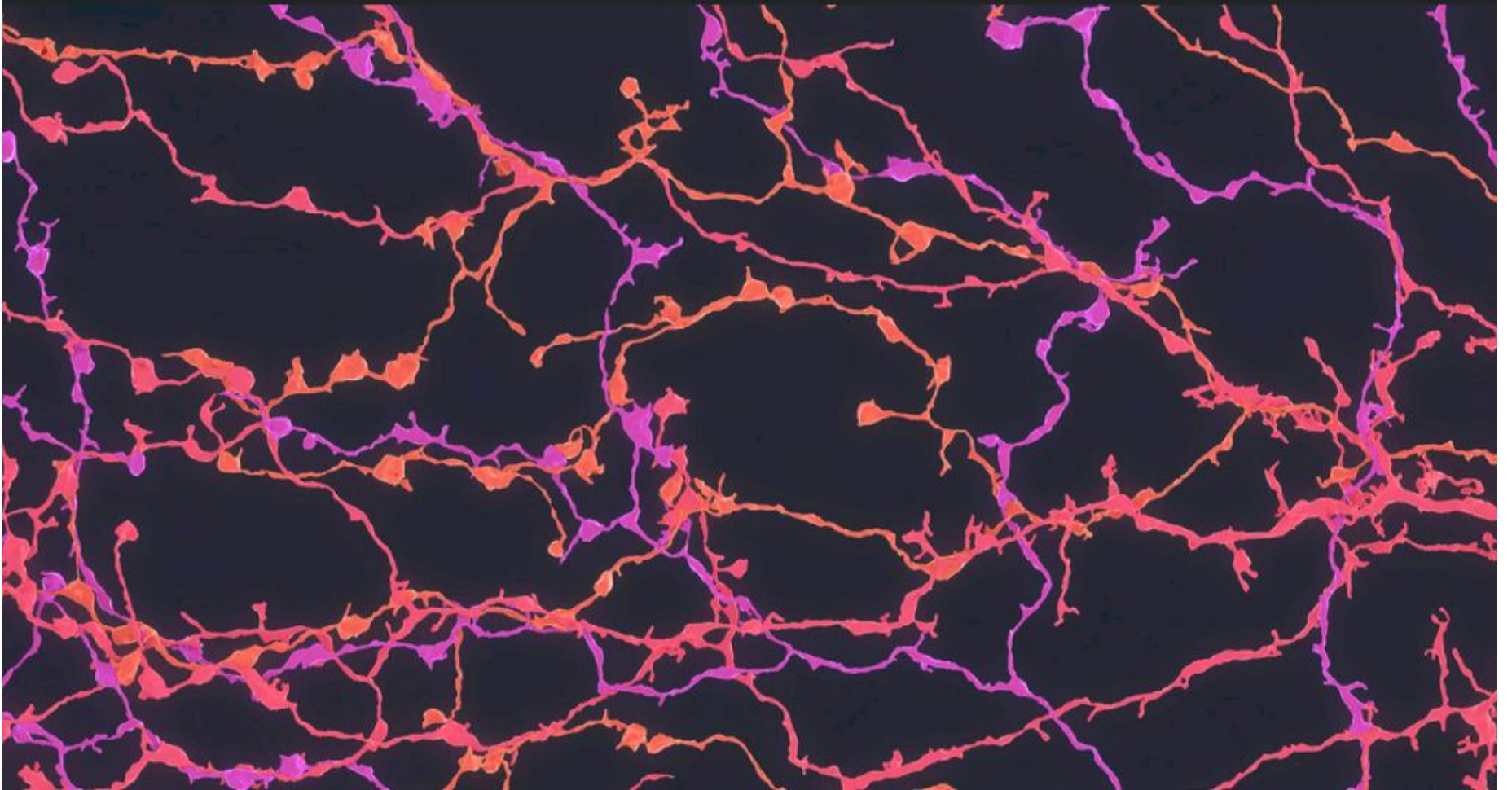


What does science understand about addiction?

# What does science NOT yet understand about addiction?



# What do we know about the neurobiology of 12-step recovery?



*J Reward Defic Syndr.* 2015 ; 1(1): 46–64. doi:10.17756/jrds.2015-008.

## **The Molecular Neurobiology of Twelve Steps Program & Fellowship: Connecting the Dots for Recovery**

**Kenneth Blum<sup>1,2,3,4,5,9</sup>, Benjamin Thompson<sup>6</sup>, Zsolt Demetrovics<sup>7</sup>, John Femino<sup>3,8</sup>, John Giordano<sup>9</sup>, Marlene Oscar-Berman<sup>10</sup>, Scott Teitelbaum<sup>1</sup>, David E. Smith<sup>3,11</sup>, A. Kennison Roy<sup>12</sup>, Gozde Agan<sup>3</sup>, James Fratantonio<sup>3</sup>, Rajendra D. Badgaiyan<sup>13</sup>, and Mark S. Gold<sup>14,15</sup>**

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<sup>9</sup>National Institute for Holistic Medicine, North Miami Beach, FL, USA

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<sup>11</sup>Institute of Health & Aging, University of California at San Francisco, San Francisco, CA, USA

<sup>12</sup>Biobehavioral Medical Corporation, Metairie, LA, USA



A field divided – but most still don't get help





**Mechanisms of impact are  
mostly unanswered questions**

# Impact of spirituality is clear—in many

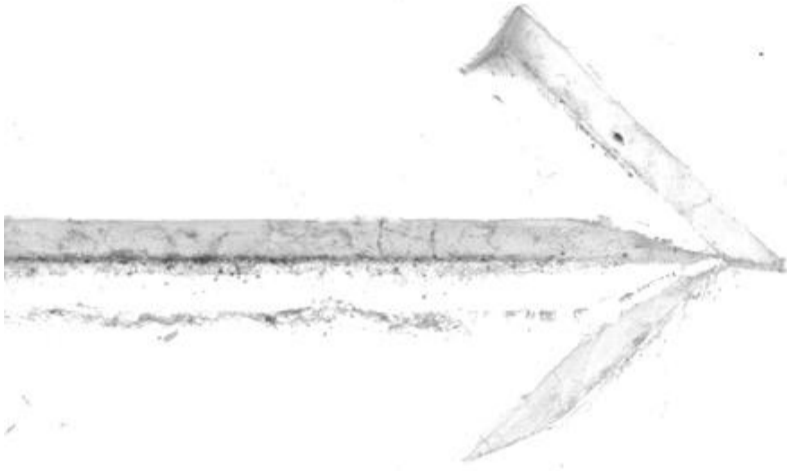




# Compassion and love



“If we are improving our relationships day in and day out we’re going to increase exponentially how love is expressed in the world.



**Three distinct benefits noted in the research associated with love are resiliency, wisdom and medical health...**



if you're lovingly interacting with other people you are much more likely to be healthy. Health benefits include vagal tone, heart health among other benefits. Memory can actually improve.



And when bad things come up, you're more likely to take care of them with ease." – Marv Seppala



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