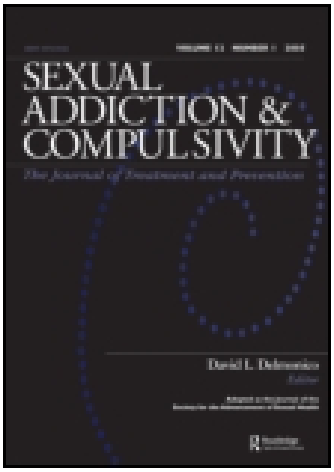

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Sex Addiction as a Disease: Evidence for Assessment, Diagnosis, and Response to Critics

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Sex Addiction as a Disease: Evidence for Assessment, Diagnosis, and Response to Critics

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The journey of addiction treatment is marked with significant societal, clinical, and scientific advances over the past few decades. Not too long ago, addiction was viewed as a moral failing and those suffering with addiction were treated harshly and with great prejudice and fear. One thing remains evident, significant change is difficult to come by is met with resistance, and it takes the perseverance and vision of a collective force of individuals to bring about the change. Addiction is one disease that has been maligned and misunderstood historically, as it presents in its myriad forms, yet clarity has emerged over the last 50 years to the recognition that it is a primary, chronic disease of brain reward, motivation, memory, and related circuitry, with manifestations along biological, psychological, social, and spiritual domains. The ongoing controversy over the acceptance of problem behaviors related to sex as part of addiction is very similar to the phenomenon which occurred with alcoholism and drug dependencies not that long ago however, when presented with the latest scientific advances the criticisms prove to be unfounded and outdated.

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INTRODUCTION

When reflecting on significant changes in science, medicine, culture, policies, and in communities there is often a period of great resistance leading up to those changes. Scott London stated, "Social change is an elusive concept. It is inevitable and yet, paradoxically, it depends on the will and the actions of ordinary individuals. We embrace change, yet something in our nature fiercely resists it. We structure social movements, political campaigns, and business strategies around the need for change, yet we hardly understand how it works" (London, 1996). This article will review how accepting addiction, including sex addiction as a legitimate disease process has followed a very similar journey met with significant challenges and criticisms.

Becvar and Becvar stated, "When the old belief system is ultimately replaced by a new one, the experience is similar to that of a gestalt switch. That is, the old world is seen from an entirely different perspective and old events take on new meaning. According to Kuhn, "the resulting transition to a new paradigm is scientific revolution" (Kuhn, 2012, p. 90). Obviously, such revolutions do not occur easily or without great resistance, nor should they" (1988, p. 32). In this discussion, they are referring to Thomas Kuhn's description of a scientific community's shift from being dominated by one particular paradigm to accepting another. In *The Structure of Scientific Revolutions*. Kuhn stated, "By ensuring that the paradigm will not be too easily surrendered, resistance guarantees that scientists will not be lightly distracted and that the anomalies that lead to paradigm change will penetrate existing knowledge to the core" (Kuhn, 2012, p. 65).

Family systems theory describes this process as homeostasis, which is the tendency for a system to strive for equilibrium and to keep things as they are and not allow any forces change the course of the system. The system itself has an internal force in order to prevent change. The system is governed by patterns and rules. Larger systems function within similar patterns and boundaries, the tendency of a system to keep things as they are.

Addiction is one disease that has also been maligned and misunderstood historically as it presents in its myriad forms, yet clarity has emerged over the last 50 years to the recognition that it is a primary, chronic disease of brain reward, motivation, memory, and related circuitry, with manifestations along biological, psychological, social, and spiritual domains. "Evidence supporting a broader conceptualization of addiction is emerging. For example, neurobiological research suggests that addictive disorders might not be independent: each outwardly unique addictive disorder might be a destructive expression of the same underlying addictive syndrome. Recent research pertaining to excessive eating, gambling, sexual behaviors, and shopping also suggests that the existing focus on addictive substances does not adequately capture the origin, nature, and processes of addiction" (Schaffer et al., 2004).

The struggle for change is met with resistance and for many the desire to keep things as they have always been. Even after his theory of relativity was supported with scientific evidence, many continued to deny and refute Einstein's discovery. Shortly after the confirmation of his theory of general relativity in 1919, Albert Einstein was transformed into a media star of Weimar Germany. The overwhelming public response to the theory of relativity was not always positive; numerous accounts published during the 1920s claimed to refute his new theory. Einstein's opponents were not limited to physicists and philosophers. Engineers, doctors, businessmen, and writers also raised strong objections to one of the most important scientific theories of the twentieth century. Those who continue to refute and criticize the reality of sex addiction fall into a similar category.

Criticisms of Sex Addiction

This article will address several of the main criticisms of sex addiction, including; sex addiction is not a recognized diagnosis and there is no unifying model or definition for sex addiction; sex addiction is based on moral and societal beliefs not on science and there is no scientific evidence for sex addiction, the sex addiction industry is a lucrative, money making industry, the diagnosis of sex addiction takes away personal responsibility, and the real issue is not sex addiction but in fact other underlying issues and disorders.

These criticisms will be addressed individually and collectively. In order to do so, we must first examine the history of addiction and the scientific developments which have underscored our understanding of the brain mechanisms involved in addiction and the development of the disease model of addiction.

The Disease Model of Addiction

The view of addiction as a disease has been challenging for people, largely because the focus has been on the use of substances and related behaviors. In the late 19th century, alcohol and opiate drugs were increasingly demonized, with the drugs themselves being seen as the basic cause of addiction and all the personal and social ills that went along with it. The result was the passage of state and federal laws outlawing most psychoactive drugs, as well as the rise of the American temperance movement that culminated in the Prohibition era in the 20th century. Drug addicts and alcoholics were dealt with harshly, as were those who tried to help them, and imprisonment was commonplace as a way to deter problem behaviors related to the excessive use of alcohol and drugs.

There were several critical moments in the past few decades which led to the general acceptance that drug and alcohol addiction is in fact a disease. In 1954 Dr. Ruth Fox established the New York City Medical Society on Alcoholism, which evolved into the American Society of Addiction Medicine

(ASAM), with significant efforts in the 1980s from the California Society for Treatment of Alcoholism and Other Drug Dependencies (CSTAODD), which had been established in 1972. The American Medical Association accepted alcoholism as a disease through the efforts of Dr. Elvin Morton "Bunky" Jellinek in 1960. In 1966, two federal Appeals Court decisions supported the disease concept of alcoholism. President Johnson appointed the first National Advisory Committee on Alcoholism and became the first President to address the country about alcoholism. He proclaimed: "The alcoholic suffers from a disease which will yield eventually to scientific research and adequate treatment." By the 1990s it became increasingly clear through neuroscience research that addiction is a brain disease, as initially asserted by Dr. Alan Leschner, the Director of National Institute of Drug Abuse, at the time. In addition, recent findings and clinical implications from studies in behavioral addictions such as internet addiction (Brand, et al., 2014), gambling (Leeman & Potenza, 2012), food (Kenny, 2011 & Tomasi & Volkow, 2013), internet sex addiction (Griffiths, 2012), and pornography addiction (Kuhn & Gallinat, 2014 & Voon et al., 2014) indicate a strong neurobiological link between behavioral addictions and substance addictions.

In the community, the 12-Step programs that began with Alcoholics Anonymous in the 1930s branched into other fellowships such as Gamblers Anonymous, Overeaters Anonymous, Narcotics Anonymous, Cocaines Anonymous, Sexaholics Anonymous, Sex Addicts Anonymous, and Sex and Love Addicts Anonymous, over the subsequent few decades. People recognized the common features of the disease of addiction and what was needed for recovery that eventually was verified by research. Brain imaging techniques enable researchers to observe drug effects while they are occurring in the brain and compare brain structure, function, and metabolism in drug-abusing and nonabusing individuals. The results to date have firmly established that drug addiction is a disease of the brain, causing important derangements in many areas, including pathways affecting reward and cognition (Fowler, et al., 2007).

Sex Addiction Is Not a Disease

One of the main criticisms of sex addiction is that it is not a disease. This criticism, however, lies in direct contrast to the vast number of studies, and scientific support of addiction, including sex addiction, as a brain disease, "a growing body of empirical and experiential evidence indicates that certain individuals can develop maladaptive patterns of consuming behaviors and substances that are essential for survival, including food and sex" (Blumenthal & Gold, 2010, p. 359).

By 2010, ASAM reached consensus to present the unified view of addiction as a standard, through an updated definition of addiction, which highlighted the biology and process underlying all aspects of this complex disease.

> Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors. ("Definition of Addiction," 2011)

This definition is significant in several ways. First it recognizes that addiction is in fact a disease which impacts mechanisms in the brain. Second, the definition recognizes that addiction goes beyond the substances and includes process aspects, such as gambling, sex, food, internet, etc. "Alcohol and other drugs have long been recognized as addictive substances and addiction is now generally recognized as a chronic disease of the brain that involves relapse, progressive development, and the potential for fatality if not treated. Developing brain science has set the stage for inclusion of the process addictions, including food, sex, shopping, and gambling, in this broader definition of addiction" (Smith, 2012, p.1). Angres & Bettinardi-Angres (2008) defined addiction as the continued use of mood-altering addicting substances or behaviors and discussed the common pathways in the reward circuitry which affect learning, memory, motivation, control, and decision making.

Addiction has frequently been described as a loss of control over a behavior and associated negative consequences, which is common with using substances and other addictive behaviors. The behavior is impulsive and obsessive, and often includes the feeling of craving. There is often interference with life (work, relationships, hobbies, etc.), repeated attempts to control or quit the behavior, development of tolerance, and withdrawal symptoms.

> The increased availability of powerful brain and genetic tools has opened a new era in the diagnostic classification for addictions. For the first time since the diagnostic manuals were developed more than half a century ago, a diagnosis of "addiction" will likely not require substance-taking. Boundaries for the construct will be carved somewhere beyond substances. Exactly where is not yet clear—but as the authors demonstrate, characterizing shared brain vulnerabilities for the compulsive pursuit of substance and non-substance rewards may aid not only in carving diagnostic boundaries, but in the etiologic understanding and treatment of these difficult disorders." (Frascella, Potenza, Brown, & Childress, 2010, p. 10)

The ASAM definition describes five characteristics that are known as the ABCDE of the disease:

A. Inability to consistently **A**bstain,
B. Impairment in **B**ehavioral control,
C. **C**raving or increased hunger for drugs or rewarding experiences,
D. **D**iminished recognition of significant problems with one's behaviors and interpersonal relationships and

E. A dysfunctional **E**motional response. ("Definition of Addiction," 2011).

> Neurobiological advances in modeling tobacco smoking, alcohol, and other drug addictions have enabled clinical scientists to study the brain systems of interest in humans. PET and fMRI studies have been conducted for decades, detailing the changes that routinely occur in human addicts and providing neurobiological insights that have changed physician acceptance of the importance of brain change in the addiction process. (Blumenthal & Gold, 2010, p. 364)

There Is No Unifying Definition or Common Diagnostic Criteria for Sex Addiction

If the literature is viewed from an atheoretical perspective, there are actually surprisingly congruent criteria related to sex addiction presented in the literature. In other words, despite what you call it, there is consensus on the behaviors which present issues. A recent article published in the *Journal of Addiction Medicine*, "Clinical Relevance of the Proposed Sexual Addiction Diagnostic Criteria: Relation to the Sexual Addiction Screening Test-Revised" (Carnes, Hopkins, O& Green 2014) addresses the issues related to diagnostic criteria for sex addiction. The study examined the potential clinical relevance of the sexual addiction diagnostic criteria in terms of endorsement rate in a sample seeking treatment, severity of sexual addiction in terms of DSM-V guidelines for severity of substance related disorder, and in terms of criterion validity based on relationship with the Sexual Addiction Screening Test-Revised, screener for sex addiction (Carnes, Green, and Carnes, 2010.) They reported:

> Given almost 50 years of controversy regarding diagnostic criteria among researchers of problematic sexual behavior, the literature is surprisingly congruent when distilled from an atheoretical perspective. Although disagreement remains as to the nomenclature (e.g., sexual addiction, hypersexuality), researchers across several perspectives are relatively consistent with regards to descriptions of related phenomena. Controversy can generally be attributed to either a lack of empirical investigation for proposed criteria (e.g., duration of symptoms) or a focus on etiology rather than phenomenology. As the literature was otherwise congruent, we assert that reasonably accurate measurement of the construct of sexual addiction should be possible apart from any consideration of etiological theories. The high prevalence rates of diagnostic criteria found among treatment seeking individuals presenting with elevations on the SAST-R suggest that the proposed criteria are highly applicable to individuals presenting for treatment for sexual addiction. Additionally, the generally high rates of endorsement of these criteria among participants elevated on the SAST-R scales support both the construct and criterion validity of these criteria. (Carnes, Hopkins, & Green, 2014, p. 16)

Ley (2012) discussed the issues with diagnostic validity and called for a distinction between excessive sexual activity or high libido and the behaviors of sexual addiction. The results of this study lend support to the diagnostic criteria for an addiction model and that patients seeking treatment for sexual addiction endorse items related to dependence, tolerance, and withdrawal at relatively high rates (Carnes, Hopkins, & Green, 2014).

R. D. Laing was a Scottish psychiatrist who wrote extensively on mental illness. He expressed views which ran counter to the mainstream thoughts on psychiatry during his time. His ideas and work are often referenced by the founders of the modern family therapy movement. He stated, "The range of what we think and do is limited by what we fail to notice. And because we fail to notice that we fail to notice, there is little we can do to change; until we notice how failing to notice shapes our thoughts and deeds." This quote has often been the case in the medical field's acceptance of the disease model of addiction. Years of work from committed individuals and organizations willing to speak out and treat those who were suffering from the disease of addiction eventually led to the medical community following suit in relation to problem behaviors related to alcohol and drugs. The ongoing controversy over the acceptance of problem behaviors related to sex as part of Addiction is very similar to the phenomenon which occurred with alcoholism and drug dependencies not that long ago.

There Is No Scientific Evidence for Sex Addiction and Most Scientists Have Rejected the Concept of Sex Addiction

The research and scientific revelations related to addiction confirm that the behavioral or process addictions, including sex addiction, are not merely based on the chemical dependency model but are based on the scientific understanding that there are common brain mechanisms at work in the brain related to all addiction.

Research on addictive behaviors, such as food addiction, gambling addition, and internet addiction, has continued to reveal that there are many common mechanisms. In fact, the brain reward circuitry exists to motivate people biologically to eat (food) and procreate (sex) to ensure individual and collective survival. The reward circuitry, with its linkages to memory, motivation and related circuitry in the pre-frontal cortex, has feedback mechanisms to say "enough," which with addiction appear to turn to "more." The American Society for Addiction Medicine (ASAM) as part of the long definition states, "Addiction affects neurotransmission and interactions within reward structures of the brain, including the nucleus accumbens, anterior cingulate cortex, basal forebrain, and amygdala, such that motivational hierarchies are altered and addictive behaviors, which may or may not include alcohol and other drug use, supplant healthy, self-care related behaviors. Addiction also

affects neurotransmission and interactions between cortical and hippocampal circuits and brain reward structures, such that the memory of previous exposures to rewards (such as food, sex, alcohol, and other drugs) leads to a biological and behavioral response to external cues, in turn triggering craving and/or engagement in addictive behaviors" ("Definition of Addiction," 2011).

According to the American Psychiatric Association (APA), the publisher of the DSM-5, "gambling disorder" is now classified under "Substance-related and Addictive Disorders." According to the APA, this change reflects the growing body of evidence supporting behavioral addictions, such as gambling. These behaviors activate the same brain reward system as those of drugs of abuse. Unfortunately, the focus in DSM-5 remains on behaviors rather than the underlying disease process. The classification of related behavior disorders under one chapter heading continues to be the goal for many clinicians who assess and treat eating disorders and sexual disorders under the addiction framework.

In 1997, Leschner wrote, "Scientific advances over the past 20 years have shown that drug addiction is a chronic, relapsing disease that results from the prolonged effects of drugs on the brain. As with many other brain diseases, addiction has embedded behavioral and social-context aspects that are important parts of the disorder itself. Therefore, the most effective treatment approaches will include biological, behavioral, and social-context components. Recognizing addiction as a chronic, relapsing brain disorder characterized by compulsive drug seeking and use can impact society's overall health and social policy strategies and help diminish the health and social costs associated with drug abuse and addiction" (Leschner, 1997, p. 190). Ken Blum in an article in 1996 described a reward deficiency syndrome that included not only alcoholism and drug addiction but also other compulsive behaviors, including gambling, sexual compulsivity, and compulsive overeating (Blum, Cull, Braverman, & Comings 1996).

Unfortunately addiction remains one of the most significant financial, criminal, and health crisis in our country. According to the Substance Abuse and Mental Health Services Administration's (SAMHSA's) National Survey on Drug Use and Health,[1] A total of 23.5 million persons aged 12 or older needed treatment for an illicit drug or alcohol abuse problem in 2009 (9.3% of persons aged 12 or older). Of these, only 2.6 million—11.2% of those who needed treatment—received it at a specialty facility. Addiction continues to be a major burden on society with the economic costs as only part of the overall picture related to the devastation of the disease. The costs alone are estimated to exceed a half a trillion dollars annually in the United States when you total the costs related to health, crime, and losses in productivity. The economic burden in the United States for addiction is twice that of any other disease affecting the brain, including Parkinson's and Alzheimer's diseases, as well as all the others, yet we continue to struggle with appropriate funding

for research and treatment. The personal impact to individuals, families, and communities exceeds the economic cost.

Key research continues to reveal the underlying brain mechanisms involved and impacted by addiction. As these issues are better understood, more comprehensive and effective treatment strategies can be developed and implemented. A recent imaging study revealed that the involvement of the prefrontal cortex in addiction is more central than previously thought, impacting the regulation of limbic reward regions and its involvement in higher-order executive function in areas such as self-control, salience attribution, and awareness. (Goldstein & Volkow, 2011). Similar processes are seen in process addictions such as addiction to food, sex, gambling, and the internet (Blumenthal & Gold, 2010; Lin et al., 2012; Potenza, 2008; van Holst, van den Brink, Veltman, & Goudriaan, 2010; Voon et al., 2014).

In regard to addiction we are still fighting ignorance, prejudice, and sexual aspects remain at the forefront of that stigma and prejudice.

Despite the years of writing, model development, and research on sexual addiction there remains a strong resistance by many in the clinical field to accepting sex as an addiction. Dr. Patrick Carnes started working in mental health in 1970. Through the years, the changes to addiction treatment, and specifically sex addiction treatment, have come in stages which have been tracked through research. Starting with *Don't Call it Love* (Carnes, 1992), Dr. Carnes' research resulted in a picture involving families, addiction, trauma, and what works in treatment. This was invaluable and continues to serve as the backbone of sex addiction treatment across the country. With the publication of *Out of the Shadows*, the concept of sex addiction became more mainstream and has garnered ongoing attention and scrutiny through the years. As part of the foundations of the "Thirty Task Model," Carnes writes, "There was a period in the 1930s and the 1940s when alcoholics and drug addicts were seen as untreatable. Compulsive gamblers were, at best, objects of curiosity and more often deemed people without character. Perverts and gluttons were perceived to have a moral problem, if they were talked about at all. Today we understand that addiction is an illness, a very serious disease. Furthermore, problems such as drug, food, gambling, and sex addiction are actually related and rely on similar physical processes. Most important, we know that people can get help and that a good prognosis exists. Sex addiction is the last addiction to be understood." (Carnes, 2001, p. 27).

Early in his writing, Dr. Carnes stated, "In our culture, numerous ways exist to render compulsive sex invisible. We still have that deep, sex-negative bias that creates endless shame, dysfunction, and aversion. The result is that sexual desire is driven underground. We also live in a culture of excess, in which the good life means that there are no limits. Sex, food, spending, drugs, alcohol, nicotine, and high-risk experiences are part of living on the edge. With this backdrop of cultural extremes, the profile of addiction becomes

diffuse and blurred, or blends into the background. In short, it becomes invisible" (Carnes, 1998, p. 40). Many have turned a blind eye to addiction, while for others it has ground for criticism. Carnes also wrote about the concept of addiction interaction disorder which presented addiction as taking many forms such as gambling, food, sex, work, certain financial behaviors, and even religiosity. He went on to state that addictions do not just coexist; they reinforce one another. One of the major factors in relapse with the use of substances is a failure to recognize companion addictive thinking and behaviors that are part of the overall addictive process.

"The emerging understanding of sex addiction as a mental health problem has paralleled a growing acceptance of multiple addictions, including both chemical and behavioral addictions. Some researchers have noticed how these extreme behaviors would be "balanced" by extreme deprivation or avoidance behaviors. Thus from a treatment perspective, clinicians have long noted that sex addiction was woven into an intricate web of addictions, compulsions, and avoidance strategies. Across the behaviors one is struck by how both polythetic and monothetic characteristics coexist. That is, each addiction or deprivation/avoidance has not only unique qualities but also remarkably similar characteristics" (Carnes, P. J. et al., 2005, p. 79).

Research is also revealing what many have been fighting for in reference to sex addiction as a recognized diagnosis. "Sexual addiction is thus not a bizarre aberration, not a new fad, nor even a unique disease. It is simply the addictive process being expressed through sex, the compulsive dependence on some form of sexual behavior as a means of regulating one's feelings and sense of self" (Goodman, 1992, p. 312). This quote from 1992 is just as meaningful and true today. The addictive process can be expressed through sex as another addictive behavior. Those with the disease of sex addiction have known this for years as have the pioneers in the field who recognized the addictive properties of our sexuality.

Scientific Advances

Scientific advances are helping us understand the nature of addiction as a brain disease now more than ever. Groundbreaking efforts in neurosciences provide a deeper understanding of how the brain functions, grows, handles stress, and is actually able to heal itself through neuroplasticity and establishment of neural circuits that compensate for the dysfunctional ones that cannot be erased or deleted. With sufficient and appropriated stimulation, we could make the old dysfunctional brain different and more functional! In his book, *The Brain that Changes Itself* Norman Doidge points out beautifully through real life stories the amazing capacity for the brain to not only change, but to heal itself. He states, "The idea that the brain can change its own structure and function through thought and activity is, I believe, the most important alteration in our view of the brain since we first sketched out

its basic anatomy and the workings of its basic component, the neuron. Like all revolutions, this one will have profound effects." (Doidge, 2007, p. xx*)*

These discoveries have also impacted addiction treatment. These discoveries continue to expand as we are now able to see the impact of sex addiction on the brain. "For many years, experts believed that only alcohol and powerful drugs could cause addiction. Neuroimaging technologies and more recent research, however, have shown that certain pleasurable activities, such as gambling, shopping, and sex, can also co-opt the brain." (www.helpguide.org/harvard/addiction) Blum (2012) discussed sexual addiction as being a pathological form of neuroplasticity which involved a cascade of neurochemical changes primarily in the brain's reward circuitry.

Two decades ago our understanding of how learning changes the brain physically began with studies on music examining gray matter change with acquiring musical skill. (Draganski et al., 2006). Other learning templates such as juggling, taxi driving, and intense studying all have characteristic "footprints" in the brain, with enlargement of gyri specific to the learning activity examined, these studies demonstrating a causative, not just correlative role, for this learning. It is interesting that correlative studies examining addictive behaviors also demonstrate an "addiction footprint" of sorts; this footprint appears to be associated with atrophy rather than enlargement, however. "Virtually every study on addiction has demonstrated atrophy of multiple areas of the brain, particularly those associated with frontal volitional control and the reward-salience centers. This is true for drug addictions such as to cocaine, methamphetamine, and opioids, and also for behavioral conditions associated with pathologic overconsumption of natural rewards and behaviors such as food, sex, and Internet addiction." (Hilton, 2013, p. 8) The recent Kuhn study, while correlative, does conform to an atrophy footprint for pornography, as was predicted based on a neuroplastic model for pornography and sexual addiction (Hilton & Watts, 2011). These findings support the assertion that addiction represents a pathological and powerful form of learning and memory (Kauer & Malenka, 2007). Mark Lewis described the "footprinting" learning process as related to addiction neuroplasticity for both substances and behaviors: "Whether in the service of food or heroin, love or gambling, dopamine forms a rut, a line of footprints in the neural flesh. And those footprints harden and become indelible, beating an intractable path to a highly specialized – and limited – pot of gold" (Lewis, 2011, p. 156).

As non-biased research reveals what those struggling already knew, we continue to develop more scientifically grounded interventions. The brain experiences reward regardless of the source and addiction can be present when there is continued destructive behavior in spite of any adverse consequences (Hilton, 2014). In a recent study, those who are addicted to pornography showed similar brain activity to alcoholics or drug addicts. Brain scans revealed that the reward centers in the brain reacted to seeing

explicit material in the same way an alcoholic's might on seeing an alcohol advertisement or seeing a friend consume alcohol. Compared to healthy volunteers, Compulsive Sexual Behavior (CSB) volunteers had greater subjective desire or wanting to explicit cues and had greater liking cues, thus demonstrating dissociation between wanting and liking consistent with theories of incentive motivation underlying CSB as in drug addictions. CSB subjects also had greater impairments of sexual arousal and erectile difficulties in intimate relationships but not with sexually explicit materials highlighting that the enhanced desire scores were specific to the explicit cues (Voon et al., 2014).

Ley (2012) stated, "Currently, attempts to identify neurochemical pathways for sexual or pornography addiction are, at best, "speculative not scientific," according to brain researchers Reid, Carpenter, and Fong and UCLA and Brigham Young University" (p. 102). Despite these criticisms, what we see in people addicted to porn is the same as what we see with people addicted to drugs such as cocaine, supporting the theory that addiction to porn really is an addiction, and not merely a bad habit. The most significant areas of change are in the control and pleasure centers of the brain. Dr. Eric Nestler, head of neuroscience research at Mount Cedar Sinai in New York and one of the most respected addiction scientists in the world, published a paper in the journal *Nature Neuroscience* in 2005 titled "Is There a Common Pathway for Addiction?" In this paper he said that the dopamine reward systems mediate not only drug addiction, but also "natural addictions (that is, compulsive consumption of natural rewards) such as pathological overeating, pathological gambling, and sexual addictions" (p. 1445).

In one of the most recent studies, researchers investigated the impact of pornography consumption based on the assumption that it resembled other addictive reward-seeking and novelty-seeking behavior. Based on this assumption, changes in the structure and function of the brain were expected. In their results the researchers found significant differences in the brain for those who were watching more hours of pornography and a significant negative association between reported pornography hours per week and gray matter volume (Kuhn & Gallinat, 2014). Gray matter volume of the brain was measured by voxel-based morphometry and resting state functional connectivity was measured on 3-Tmagnetic resonance imaging scans.

Since this study is correlative with no longitudinal data there two possible explanations for this decrease in gray matter – either a neuromodulatory response consistent with an addiction model, or inherently atretic gyri in individuals born with a predisposition for compulsively consumptive behavior. While we know that genetic factors do account for a significant percentage of those struggling with addiction, current learning models predict gray matter "footprints" with learning, as we discussed earlier. Informed by this perspective, it is much more likely than not that some, if not most, of the gray matter change in the Kuhn study are related to plasticity, and thus supportive of an addiction model.

One of the characteristics of addiction has been the increase in desire or wanting and the decrease in liking. Robinson & Berridge (1993) discussed the process of increased cravings and the decrease in pleasure. As drugs come to be wanted more and more, they are often liked less and less. Another finding of the Cambridge study supported this aspect of addiction in those subjects with compulsive sexual behavior. "Our findings focusing on CSB (compulsive sexual behavior) in the general population similarly dovetail with incentive motivation theories emphasizing aberrant wanting or motivation towards the drug or sexual cue, but not liking or hedonic tone" (Voon et al., 2014, p. 5).

According to Robinson and Berridge (2003, pp. 44–46), "Addiction involves drug-induced changes in many different brain circuits, leading to complex changes in behaviour and psychological function. We have argued that the core changes leading to addiction occur when incentive sensitization combines with defects in cognitive decision making and the resulting 'loss of inhibitory control over behaviour and poor judgment, combined with sensitization of addicts' motivational impulses to obtain and take drugs, makes for a potentially disastrous combination". Thus, bolstered by the evidence that has accumulated over recent years, we remain confident in concluding "that at its heart, addiction is a disorder of aberrant incentive motivation due to drug-induced sensitization of neural systems that attribute salience to particular stimuli. It can be triggered by drug cues as a *learned motivational response* of the brain, but it is not a disorder of aberrant learning *per se*. Once it exists, sensitized wanting may compel drug pursuit whether or not an addict has any withdrawal symptoms at all. And because incentive salience is distinct from pleasure or liking processes, sensitization gives impulsive drug wanting an enduring life of its own".

Another researcher summarizes, "During adolescence there is an increase in the activity of the neural circuits utilizing dopamine, a neurotransmitter central in creating our drive for reward. Starting in early adolescence and peaking midway through, this enhanced dopamine release causes adolescents to gravitate toward thrilling experiences and exhilarating sensations. Research even suggests that the baseline of dopamine is lower but its release in response to experience is higher which can explain why teens report a feeling of being bored unless they are engaging in some stimulating and novel activities. It can lead them to focus solely on the positive rewards they are sure are in store for them, while failing to notice or give value to the potential risks and downsides" (Siegel, 2014, p. 67).

This vulnerability seems to be supported by Voon et al. (2014), whose results found that age correlated with enhanced reward circuit activity when exposed to porn cues. The role of age was seen when in the CSB group younger age was associated with greater activity in the ventral striatum. The ventral striatum is generally considered that part of the striatum that is connected with limbic structures, such as the amygdala, hippocampus, midline

thalamus, and certain regions of the prefrontal cortex. Thus, in line with the characteristics of its inputs, the ventral striatum is functionally strongly associated with emotional and motivational aspects of behavior. Moreover, structural and functional disturbances of ventral striatal areas have been shown to be correlated with various forms of psychopathology, such as schizophrenia, addictive behavior, and obsessive-compulsive disorder.

In an additional study of individuals with compulsive sexual behavior, Mechelmans et al. (2014) assessed attentional bias to sexually explicit cues and found that those with compulsive sexual behavior as compared to healthy volunteers have enhanced attentional bias to sexually explicit cues. Attentional bias in substance dependent individuals is the tendency to automatically direct attention to substance related cues in the environment. This study provides another scientific link between process and chemical addictions (Mechelmans et al., 2014).

Naming Sex Addiction as a Disease Takes Away Personal Responsibility and Gives an Excuse for Bad Behavior

The scientific support for sex and other behaviors to be accepted as addiction goes well beyond one individual, model, or treatment program hoping to advance their agenda and gain professionally and economically. It represents a growing unity in the understanding of the addictive process and how addiction impacts both the individual and the larger community as a whole. Accepting addiction does not limit or take away personal responsibility or offer excuse; rather, allows each person to understand the biological, emotional, spiritual, and relational impact of addiction and take appropriate action. It decreases our collective denial of the problem and allows us to advance effective treatment responses. "The purpose is not to justify or rationalize but to understand. Justification is another form of judgment every bit as debilitating as condemnation. When we justify, we hope to win the judge's favor to hoodwink her. Justification connives to absolve the self of responsibility; understanding helps us assume responsibility. When we don't have to defend ourselves against others or, what's more, against ourselves, we are open to seeing how things are. I become free to acknowledge the addiction the moment the fact of having behaved along addictive patterns no longer means that I'm a failure as a person, unworthy of respect, shallow and valueless. I can own it and see the many ways it sabotages my real goals in life" (Mate, 2010, p. 354). Changing the cultural prejudice related to addiction and increasing understanding both individually and collectively does not hamper responsible action. Rather it increases understanding, awareness, change, and compassion. Dr. Alan Leschner, director of the National Institute on Drug Abuse from 1994–2001 stated, "Moreover, as with any illness, behavior becomes a critical part of recovery. At a minimum, one must comply with the treatment regimen, which is harder than it sounds. Treatment compliance

is the biggest cause of relapses for all chronic illnesses, including asthma, diabetes, hypertension, and addiction. Moreover, treatment compliance rates are no worse for addiction than for these other illnesses, ranging from 30 to 50 percent. Thus, for drug addiction as well as for other addictions treatment approaches attend to the entire individual, combining the use of medications, behavioral therapies, and attention to necessary social services and rehabilitation. These might include such services as family therapy to enable the patient to return to successful family life, mental health services, education, and vocational training, and housing services" (Leschner, 2001). Acknowledging and being aware of the problem increases responsibility and personal action.

Despite the growing scientific evidence supporting the anecdotal evidence which has been offered for years, there are many critics of sex addiction as a viable addiction disorder and brain disease. As the acting director of NCAAD in 1950, Yvelin Gardner recognized that the problem of addressing alcoholism as a moral problem as being met with moral weapons such as condemnation, punishment, shame, and ostracism. This quotation represents the same fight for those suffering from sex addiction who continue to face shame, prejudice, and labels which are counterproductive to treatment and recovery.

Some critics have stated that most scientists have rejected the model for sex addiction and that recent studies have failed to provide support for the model of pathological hypersexuality (Ley, Prause, & Finn, 2014; Steele, Staley, Fong, & Prause, 2013). Research continues to reveal that hypersexuality can in fact be pathological and problematic. In preparation for the potential addition of the diagnosis of Hypersexual Disorder to the DSM-5. Psyciatirst and Harvard Medical School instructor, Dr. Martin Kafka reviewed the entire body of scientific literature related to hypersexuality and sex addiction. He states, "It must be noted, on the basis of this current review, that the number of 'cases' of Hypersexual Disorder reported in peer-reviewed journals greatly exceeds the number of cases of some of the codified paraphilic disorders such as Fetishism and Frotteurism. Hypersexual Disorder, as operationally defined in this review, is not synonymous with sexual addiction, sexual compulsivity or paraphilia-related disorder but all of these aforementioned designations describe increased and intensified sexual fantasies, urges, and behaviors with significant adverse personal and social consequences. Hypersexual Disorder is a serious and common clinical condition that can be associated with specific morbidities, such as unplanned pregnancy, pair-bond dysfunction, marital separation and divorce, and the morbidity/mortality risk associated with sexually transmitted diseases including HIV" (Kafka, 2010).

Recently the media sensationalized the publications from studies conducted at The Sexual Psychophysiology and Affective Neuroscience (SPAN) Laboratory at UCLA as being non-supportive of addiction as a disease. The SPAN lab's mission states that "the team is devoted to increasing the understanding of sexual responses in individuals and their partners, including sexual behaviors that risk physical and emotional health. One of the primary

goals is to provide research in order to inform the treatments health care professionals use and to close the gap between science and application." These studies are hampered by some *a priori* assumptions about what addiction should look like in the brain rather than assessing and evaluating how the findings fit together to clarify the role of sexual arousal in healthy relationships with others and oneself. For instance, a recent paper from the SPAN lab (Steele et al., 2013) claimed to demonstrate that those claiming to suffer from sexual addiction were merely experiencing a constitutionally high libido, and their paper seems to discount any possibility that this desire could be modified by learning models. For instance, they term this addictive craving "merely high desire." A response to their paper published in the originating journal states, "To trivialize, minimize, and de-pathologize compulsive sexuality is to fail to understand the central biological role of sexuality in human motivation and evolution. It demonstrates a naiveté with regard to what is now an accepted understanding of current reward neuroscience, in that it pronounces sexual desire as inherent, immutable, and uniquely immune from the possibility of change either qualitatively or quantitatively. Even more critically, however, as illustrated by the Steele et al. paper, is that this myopic dogma fails to comprehend the truth that neuroscience now tells us that 'high desire,' when it results in compulsive, unwanted, and destructive behavior, is 'merely' an addiction" (Hilton, 2014).

The Issue Is Not Sex Addiction, but Rather Untreated Underlying Issues

Critics often comment that the real issue is not out-of-control sexual behavior, or sex addiction but rather the presence of untreated underlying issues. Addressing the concept of diagnosis of addiction and comorbid disorders, Nora Volkow, Director of the National Institute on Drug Abuse (NIDA) states, "It is often difficult to disentangle the overlapping symptoms of drug addiction and other mental illnesses, making diagnosis and treatment complex. Correct diagnosis is critical to ensuring appropriate and effective treatment. Ignorance of or failure to treat a comorbid disorder can jeopardize a patient's chance of recovery. We hope that our enhanced understanding of the common genetic, environmental, and neural bases of these disorders—and the dissemination of this information—will lead to improved treatments for comorbidity and will diminish the social stigma that makes patients reluctant to seek the treatment they need" (Volkow, 2008). Patients often have both an addiction disorder as well as another mental illness disorder, dictating that both be treated and recognized. "Taken together, the NESARC results provide clear and persuasive evidence that mood and anxiety disorders must be addressed by alcohol and drug treatment specialists and that substance use disorders must be addressed by primary care physicians and mental health treatment specialists" (Grant et al., 2004).

TABLE 1 Criticisms of Sex Addiction and Responses

Criticisms	Response	Reference
There is no scientific evidence for sex addiction.	Research on addictive behaviors, such as food addiction, gambling addiction, and internet addiction, has continued to reveal that there are many common mechanisms.	Sussman, S., Lisha, N., & Griffiths, M. (2011). Prevalence of the addictions: a problem of the majority or the minority? *Evaluation & the Health Professions, 34*, 3–56.
	Addiction also affects neurotransmission and interactions between cortical and hippocampal circuits and brain reward systems, such that the memory of previous exposures to rewards (such as food, sex, alcohol, and other drugs) leads to a biological and behavioral response to external cues, in turn triggering craving and/or engagement in addictive behaviors.	Kelley, A. E., & Berridge, K. C. (2002). The neuroscience of natural rewards: relevance to addictive drugs. *The Journal of Neuroscience, 22*, 3306–3311.
	Virtually every study on addiction has demonstrated atrophy of multiple areas of the brain, particularly those associated with frontal volitional control and the reward-salience centers. This is true for drug addictions such as to cocaine, methamphetamine, and opioids, and also for behavioral conditions associated with pathological overconsumption of natural rewards and behaviors such as food, sex, and internet addiction.	Hilton D. L. (2014). High desire, or "merely" an addiction? A response to Steele et al. *Socioaffective Neuroscience and Psychology, 4*, 23833.
	In a recent study, those who are addicted to pornography showed similar brain activity as alcoholics or drug addicts. Brain scans revealed that the reward centers in the brain reacted to seeing explicit material in the same way an alcoholics might on seeing a friend consume alcohol.	Voon, V., Mole, T. B., Banca, P., Porter, L., Morris, L., Mitchell, S., … Irvine, M. (2014). Neural correlates of sexual cue reactivity in Individuals with and without compulsive sexual behaviours. *PloS One, 9*, e102419.

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TABLE 1 Criticisms of Sex Addiction and Responses *(Continued)*

Criticisms	Response	Reference
	Evidence supporting a broader conceptualization of addiction is emerging. For example, neurobiological research suggests that addictive disorders might not be independent: each outwardly unique addictive disorder might be a destructive expression of the same underlying addictive syndrome. Recent research pertaining to excessive eating, gambling, sexual behaviors, and shopping also suggests that the existing focus on addictive substances does not adequately capture the origin, nature, and processes of addiction.	Shaffer, H. J., LaPlante, D. A., LaBrie, R. A., Kidman, R. C., Donato, A. N., & Stanton, M. V. (2004). Toward a syndrome model of addiction: Multiple expressions, common etiology. *Harvard Review of Psychiatry, 12*, 367–374.
	Attentional bias to sexually explicit cues was assessed, and revealed that those with compulsive sexual behavior as compared to healthy volunteers have enhanced attentional bias to sexually explicit cues. Attentional bias in substance-dependent individuals is the tendency to automatically direct attention to substance-related cues in the environment. This study provides another scientific link between process and chemical addiction.	Mechelmans, D. J., Irvine, M., Banca, P., Porter, L., Mitchell, S., Mole, T. B., . . . Voon, V. (2014). Enhanced attentional bias towards sexually explicit cues in individuals with and without compulsive sexual behaviours. *PloS One, 9*, e105476.
Most scientists have rejected the concept of sex addiction.	Ken Blum in an article in 1996 described a reward deficiency syndrome that included not only alcoholism and drug addiction but also other compulsive behaviors, including gambling, sexual compulsivity, and compulsive overeating. He later described sex addiction as being a pathological form of neuroplasticity which involved a cascade of neurochemical changes primarily in the reward circuitry.	Blum, K., Cull, J. G., Braverman, E. R., & Comings, D. E. (1996). Reward deficiency syndrome. *American Scientist*, 132–145.
	For many years, experts believed that only alcohol and powerful drugs could cause addiction. Neuroimaging technologies and more recent research, however, have shown that certain pleasurable activities, such as gambling, shopping, and sex, can also co-opt the brain.	Goldstein, R. Z., & Volkow, N. D. (2011). Dysfunction of the prefrontal cortex in addiction: neuroimaging findings and clinical implications. *Nature Reviews Neuroscience, 12*, 652–669.25.
		Grant, J. E., Potenza, M. N., Weinstein, A., & Gorelick, D. A. (2010). Introduction to behavioral addictions. *The American Journal of Drug and Alcohol Abuse, 36*, 233–241.

	Whether in the service of food or heroin, love or gambling, dopamine forms a rut, a line of footprints in the neural flesh. And those footprints harden and become indelible, beating an intractable path to a highly specialized, and limited pot of gold.	Lewis, M. (2011). *Memoirs of an addicted brain: A neuroscientist examines his former life on drugs.*, New York, NY: Public Affairs.
		Shaffer, H. J., LaPlante, D. A., LaBrie, R. A., Kidman, R. C., Donato, A. N., & Stanton, M. V. (2004). Toward a syndrome model of addiction: Multiple expressions, common etiology. *Harvard Review of Psychiatry, 12*, 367–374.
	Dr. Eric Nestler, head of neuroscience research at Mount Sinai Medical Center in New York and one of the most respected addiction scientists in the world, published a paper in the *Journal of Nature Neuroscience* in 2005 titled, "Is there a common pathway for addiction?" In this paper, he stated that the dopamine reward systems. mediate not only drug addiction, but also "natural addictions" (that is, compulsive consumption of natural rewards) such as pathological overeating, pathological gambling, and sexual addiction.	Nestler, E. J. (2005). Is there a common molecular pathway for addiction? *Nature Neuroscience, 8*, 1445–1449.
There is no unifying definition or diagnostic criteria for sex addiction.	Although disagreement remains as to the nomenclature (sexual addiction, hypersexuality), researchers across several perspectives are relatively consistent with regards to the description of related phenomena. As the literature was otherwise congruent, we assert that reasonably accurate measurement of the construct of sexual addiction should be possible apart from any consideration of etiological theories. The high prevalence rates of diagnostic criteria found among treatment-seeking individuals presenting with elevations on the SAST-R suggest that the proposed criteria are highly applicable to individuals presenting for treatment for sex addiction.	Carnes, P. J., Hopkins, T. A., & Green, B. A. (2014). Clinical relevance of the proposed sexual addiction diagnostic criteria: Relation to the Sexual Addiction Screening Test-Revised. *Journal of Addiction Medicine, 8*, 450–461.
	There are surprisingly congruent criteria in the literature when viewed from an atheoretical perspective. In other words, despite what you call it, there is consensus on the behaviors which present issues.	Carnes, P. J., Hopkins, T. A., & Green, B. A. (2014). Clinical relevance of the proposed sexual addiction diagnostic criteria: Relation to the Sexual Addiction Screening Test-Revised. *Journal of Addiction Medicine, 8*, 450–461.

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TABLE 1 Criticisms of Sex Addiction and Responses *(Continued)*

Criticisms	Response	Reference
The issue is not sex addiction but rather underlying issues.	This argument continues to focus on behaviors rather than the underlying disease processes. Some who focus on personality disorders as the cause of sex addiction are adding to the stigma and marginalization.	Leshner, A. I. (1997). Addiction is a brain disease, and it matters. *Science, 278*, 45–47.
Sex addiction is a lucrative and unregulated industry.	The sex industry is a lucrative and unregulated industry with more money being spent in the promotion of pornography and the sex industry for personal gain, in addition to the high cost to individuals and society in general, than what the treatment industry can afford to effectively educate people about healthy sexuality and problems with addiction that involve sex and pornography. Given the evidence that today's internet pornography fuels stereotypes of misogyny and aggression towards women, there is a fascinating schism here in these critics of sex addiction's wholehearted embrace of such material without even a whimper of protest or concern.	Bridges, A. J., Wosnitzer, R., Scharrer, E., Sun, C., & Liberman, R. (2010). Aggression and sexual behavior in best-selling pornography videos: A content analysis update. *Violence Against Women, 16*, 1065–1085. Hilton Jr., D. L., & Watts, C. (2011). Pornography addiction: A neuroscience perspective. *Surgical Neurology International, 2*.
Calling sex addiction a disease serves as an excuse for bad behavior and takes away personal responsibility.	Accepting the disease model of addiction does not take away personal responsibility rather it allows each person to understand the biological, emotional, spiritual, and relational impact of addiction and take appropriate action. It decreases our collective denial of the problem and allows us to advance effective treatment responses. What appears to be bad behavior is actually driven by the brain disease that has a genetic basis and results from dysfunction in brain reward, motivation, memory and related circuitry that is there for the natural rewards, primarily food and sex, as motivators for survival. Understanding the dysfunction that further impacts biological, psychological, social and spiritual domains actually encourages personal responsibility for being more responsible and accountable in recovery.	Wilson, W. A., & Kuhn, C. M. (2005). How addiction hijacks our reward system. *Cerebrum, 7*, 53–66. Kauer, J. A., & Malenka, R. C. (2007). Synaptic plasticity and addiction. *Nature Reviews Neuroscience, 8*, 844–858.

When treating addiction, examining the underlying issues is most often also part of the protocol. However, this does not remove addiction as its own significant and treatable entity. As explained by Dr. Gabor Mate (2010, p. 246), "Addiction can never truly replace the life needs they temporarily displace. The false needs they serve, no matter how often they are gratified, cannot leave us fulfilled. The brain can never, as it were, feel that it has had enough, that it can relax and get on with other essential business. It's as if after a full meal you were left starving and had to immediately turn your efforts to procuring food again. In a person with addictive behaviors, the orbitofrontal cortex and its associated neurological systems have been tricked since childhood onward into valuing false wants above real needs-hence the desperation of the behavioral addict, the urgency to have that want answered immediately, as if it really were an essential requirement" (Mate, 2010, p. 246). This description illustrates the development of addiction as both underlying issues and also a system within the brain, both of which need treatment.

Briken et al., (2007) states, "Sexual addictive symptoms in paraphilic as well as in nonparaphilic individuals can be accompanied by high rates of other psychiatric disorders (up to 40% have anxiety disorders (Kafka & Hennen, 2002; McElroy et al., 1999), 70% have mood disorders (Kafka & Hennen, 2002; Raymond, Coleman, and Miner, 2003), 30–50% have substance abuse disorders (Coleman et al., 2003; Goodman, 1993; Kafka & Hennen, 2002; McElroy et al., 1999). In an anonymous survey of 75 persons suffering from sexual addiction problems (Schneider and Schneider, 1990), 39% reported also having substance abuse problems, 32% had an eating disorder, 13% characterized themselves as compulsive spenders, and 5% as compulsive gamblers. Persons with sexual addiction may also present with complications to their physical health, such as sexually transmitted diseases or abuse of sexual performance enhancers (e.g., "poppers") (Coleman et al., 2003)" (p. 133).

To diagnose sex addiction, professionals must first rule out concurrent drug abuse, as well as those major mental health disorders that also include hypersexuality as a symptom. Examples of these include bipolar disorder, obsessive-compulsive disorder, and adult attention deficit disorder, all of which have hypersexual or impulsive sexual behavior as a potential symptom. Some individuals may have both a major mental disorder and sexual addiction, both of which need to be addressed, much as one might be both alcoholic and bipolar.

The Industry Treating Sex Addiction Is Lucrative and Highly Unregulated

Critics suggest that sexual addiction is a diagnosis contrived to fuel careers of therapists who are treating a non-existent condition. Ley, et. al (2014)

present the criticism that the treatment of pornography and sex addiction is a lucrative and unregulated industry with no data supporting their claims for treatment success yet fail to mention the fact that there is a lot more money being spent in the promotion of pornography and sex industry for personal gain, in addition to the high cost to individuals and society in general, than what the treatment industry can afford to effectively educate people about healthy sexuality and problems with addiction that involve sex and pornography.

Rather than considering pornography as having an addictive potential, Ley, Prause, and Finn support the concept that pornography is actually beneficial in preventing rape. This premise is based on their acceptance of data by Milton Diamond, who mirrors a paper by Anthony D'Amato (D'Amato, 2006), which purports to prove that an increase in pornography decreases rape (Diamond et al., 2011). Remarkably, these authors, and those who support them such as Ley, Prause, and Finn, fail to grasp that the papers supporting pornography as preventing rape are correlative, and have no causative predictive value. Furthermore, they fail to understand that these papers, both those from the United States and from other countries, are based on notoriously inaccurate government statistics, with law enforcement agencies intentionally underreporting rape for political expediency. This has been demonstrated in the recent paper by Corey Yung titled "How to Lie with Rape Statistics: America's Hidden Rape Crisis" (Yung, 2014). He summarizes: "Instead of experiencing the widely reported 'great decline' in rape, America is in the midst of a hidden rape crisis.... Based upon the findings of this study, governments at all levels must revitalize efforts to combat the cloaked rise in sexual violence and the federal government must exercise greater oversight of the crime reporting process to ensure accuracy of the data provided" (2014, Iowa Law Review, pp. 1197–1241). This certainly counters Diamond and others who postulate that increasing pornography will decrease rape. These data support the premise that pornography may contribute to, rather than help, sexual violence, particularly with emerging data casting an addictive light on compulsive sexuality.

CONCLUSION

As we continue to face a myriad of individual, family, and societal issues related to addiction, how we treat addiction also has to change. Addiction treatment has come a long way but has a long way yet to go. As seen throughout this article, the common criticisms of sex as a legitimate addiction do not hold up when compared to the movement within the clinical and scientific communities over the past few decades. There is ample scientific evidence and support for sex as well as other behaviors to be accepted as addiction. This support is coming from multiple fields of practice and

offers incredible hope to truly embrace change as we better understand the problem.

Decades of research and developments in the field of addiction medicine and neuroscience reveal the underlying brain mechanisms involved in addiction. Scientists have identified common pathways affected by addictive behavior as well as differences between the brains of addicted and non-addicted individuals, revealing common elements of addiction, regardless of the substance or behavior. However, there remains a gap between the scientific advances and the understanding by the general public, public policy, and treatment advances.

The realities of addiction in our country and in the world must be faced. One of these realities includes accepting natural or process aspects of addiction, such as sex, food, and gambling as integral to the disease processes just as chemicals, such as alcohol, tobacco and other drugs.

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